

TA  
610  
.U6  
U55  
1984

FILE COPY

# DESCRIPTIONS OF BENCH MARKS

(Reprinted from PRECISE LEVELING IN THE UNITED STATES, 1903-1907)

WITH A READJUSTMENT OF THE LEVEL NET  
AND RESULTING ELEVATIONS



U.S. DEPARTMENT OF COMMERCE

COAST AND GEODETIC SURVEY

WASHINGTON, D.C.

U.S. DEPARTMENT OF COMMERCE

DANIEL C. ROPER, Secretary

COAST AND GEODETIC SURVEY

R. S. PATTON, Director

Serial No. 572

7A  
610  
.46  
455  
1934

# DESCRIPTIONS OF BENCH MARKS

(Reprinted from PRECISE LEVELING IN THE UNITED STATES, 1903-1907)

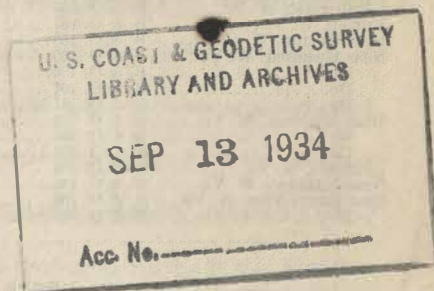
## WITH A READJUSTMENT OF THE LEVEL NET AND RESULTING ELEVATIONS

By

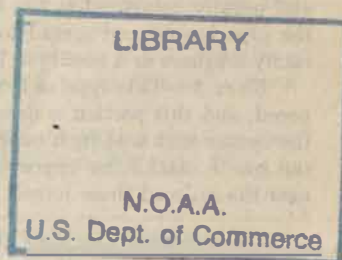
JOHN F. HAYFORD

and

L. PIKE



UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1934



*Corrected elevations of permanent bench marks—Continued.*

Place.	Designation of bench mark.	Corrected elevation	Place.	Designation of bench mark.	Corrected elevation.
		<i>meters.</i>			<i>meters.</i>
Near Barrackville, W. Va.	B. & O. 132.	278.3947	Near Board Tree, W. Va.	B. & O. 168.	308.5416
Near Katy, W. Va.	B. & O. 133.	280.1659	Near Bellton, W. Va.	B. & O. 169.	284.4361
Near Farmington, W. Va.	B. & O. 134.	281.1673	Do.	B. & O. 170.	273.5705
Do.	B. & O. 135.	284.0032	Near Denver Sta., W. Va.	B. & O. 170A.	270.9798
Underwood Station, W. Va.	B. & O. 136.	284.8554	Near Bellton, W. Va.	B. & O. 171.	277.6329
Near Farmington, W. Va.	B. & O. 137.	285.6092	Near Woodruff, W. Va.	B. & O. 172.	288.5007
Do.	B. & O. 138.	286.6148	Do.	B. & O. 173.	308.3787
Near Downs, W. Va.	B. & O. 139.	288.9993	Near Cogley, W. Va.	B. & O. 174.	331.4485
Do.	B. & O. 139A.	290.4971	Do.	B. & O. 175.	350.0496
Do.	U. S. G. S.	290.5039	Near Cameron, W. Va.	B. & O. 176.	305.5244
Downs, W. Va.	B. & O. 140.	293.2782	Do.	B. & O. 177.	343.0378
Near Downs, W. Va.	B. & O. 141.	293.5120	Do.	B. & O. 178.	323.9492
Near Mannington, W. Va.	B. & O. 142.	295.2662	Do.	B. & O. 179.	315.4555
Do.	B. & O. 143.	295.6423	Loudenville, W. Va.	B. & O. 180.	303.5117
Mannington, W. Va.	B. & O. 144.	297.0238	Near Loudenville, W. Va.	B. & O. 181.	300.6636
Do.	U. S. G. S.	297.1644	Near Glen Easton, W. Va.	B. & O. 182.	298.0746
Near Mannington, W. Va.	B. & O. 145.	297.1410	Do.	B. & O. 183.	294.0413
Do.	B. & O. 146.	299.2739	Do.	B. & O. 184.	282.4085
Do.	B. & O. 147.	301.6045	Do.	B. & O. 184A.	282.5775
Do.	B. & O. 148.	302.1113	Do.	B. & O. 185.	275.0472
Near Metz, W. Va.	B. & O. 149.	304.7391	Near Rosbys Rock, W. Va.	B. & O. 186.	262.6913
Do.	B. & O. 150.	305.8229	Do.	B. & O. 187.	258.3516
Do.	B. & O. 151.	310.2480	Do.	B. & O. 188.	245.1935
Near Glover Gap, W. Va.	B. & O. 152.	315.5132	Do.	B. & O. 189.	240.4904
Do.	B. & O. 153.	322.4004	Do.	B. & O. 190.	232.9940
Do.	B. & O. 153A.	330.5161	Do.	B. & O. 191.	226.0836
Do.	B. & O. 154.	341.0548	Do.	B. & O. 192.	218.9130
Near Cottonwood, W. Va.	B. & O. 155.	343.3094	Do.	B. & O. 193—U. S. G. S.	207.4149
Cottonwood, W. Va.	B. & O. 156.	332.4421	Near Moundsville, W. Va.	B. & O. 194.	197.9742
Burton, W. Va.	B. & O. 157.	324.7038	Do.	B. & O. 195—U. S. G. S.	197.0559
Near Burton, W. Va.	B. & O. 158.	316.7363	Do.	B. & O. 196.	196.8510
Near Hundred, W. Va.	B. & O. 159.	313.9880	Do.	B. & O. 197.	203.6681
Do.	B. & O. 160.	308.7311	Do.	B. & O. 198.	203.4805
Do.	B. & O. 161.	303.4360	Do.	B. & O. 199.	204.0314
Do.	B. & O. 161A.	300.5860	Near Benwood Jct., W. Va.	B. & O. 200.	200.7170
Near Littleton, W. Va.	B. & O. 162.	295.4333	Do.	B. & O. 200A.	200.5442
Do.	B. & O. 163.	289.7087	Do.	B. & O. 201.	202.8564
Do.	B. & O. 163A.	287.9051	Do.	B. & O. 202.	203.8291
Littleton, W. Va.	B. & O. 164.	286.9139	Do.	B. & O. 114.	209.7623
Near Littleton, W. Va.	B. & O. 165.	309.7366	Benwood, W. Va.	U. S. E. 94A.	197.5221
Near Board Tree, W. Va.	B. & O. 166.	337.9832	Marietta, Ohio.	U. S. E. 171B.	180.2311
Do.	B. & O. 167.	330.3747			

## DESCRIPTIONS OF BENCH MARKS.\*

GENERAL NOTES DESCRIBING DIFFERENT FORMS AND MARKINGS OF BENCH MARKS CONNECTED WITH THE LEVEL NET.

NOTE 1.—This type of bench mark is the red metal disk designed by the Coast and Geodetic Survey, lettered "U. S. Coast and Geodetic Survey, B. M. \$250 fine or imprisonment for disturbing this mark." The disk is 3 inches in diameter, with a 3-inch tenon upon the back for setting it, and is set in cement flush with a horizontal or vertical surface. In the latter case a horizontal mark cut on it, or the horizontal mark of a cross, is the bench mark.

NOTE 2.—This type of bench mark has the same lettering as that referred to in note 1, and is a 3-inch red metal cap, somewhat curved, screwed upon a 4-foot or 4½-foot iron pipe set in the ground and usually cemented at the base, from 4 to 6 inches being exposed above the ground. The base of the pipe is split and spread to a diameter of about a foot. For placing the foot of the level rod accurately a square or a small circle was cut in outline in the center of the cap.

NOTE 3.—This type of bench mark is a stone post 4 feet long set in the ground with 6 inches exposed, and this portion is dressed. The upper surface is 6 inches square and plane, being marked in the center with a ½-inch copper bolt, 2 inches long, set flush with the surface; the top of the bolt is the bench mark; the upper surface of the stone is lettered "U. S. B. M." and when the post is set near the railroad these letters face the track.

\* Any person who finds that one of the bench marks here described is disturbed, or that the description no longer fits the facts, is requested to send such information to the Superintendent of the Coast and Geodetic Survey, Washington, D. C.



NOTE 4.—This type of bench mark is a  $\frac{3}{8}$ -inch copper bolt, 2 inches long, set in lead or cement, flush with a horizontal or vertical surface. In the latter case, a horizontal mark cut on the face of the bolt, or the horizontal mark of a cross, is the bench mark.

NOTE 5.—This type of bench mark is the bottom of a hole in a horizontal surface, 25 millimeters square, 4 millimeters deep, lettered "U. S. B. M."

NOTE 6.—Where hydrants have been used as bench marks, the highest point is meant, a brass nut used as a check valve. These may not be considered stable points. They are, however, the most accurately defined of the city bench marks.

NOTE 7.—Bench marks referred to this note are upon a Coast and Geodetic Survey triangulation station mark or witness mark, a terra cotta pipe filled and surrounded with concrete, from which projects the point of a nail. The bench mark is a square hole cut near the nail.

NOTE 8.—This type of bench mark is the smooth bottom of a round cut, or shallow drill hole, 8 millimeters deep and 25 millimeters in diameter, in a horizontal stone surface.

NOTE 9.—Bench marks referred to this note are upon a Coast and Geodetic Survey triangulation station mark, a terra cotta pipe filled and surrounded with concrete, from which projects the point of a nail, against which the rod was held.

NOTE 10.—Bench marks referred to this note consist of a copper bolt in a bench mark stone, set 4 feet underground, covered by a 3-inch iron pipe marked "U. S. B. M."

NOTE 11.—The bottom of a hole 25 millimeters square and about 4 millimeters deep, cut in the top of a stone or cement post, 4 feet long and 6 or 7 inches square, projecting about 6 inches from the ground. The top of the post is lettered "U. S. B. M."

NOTE 12.—The top of a copper bolt cemented in the top of a 4-foot reenforced concrete post, 7 inches square, with edges beveled, projecting about 6 inches from the ground, with the top marked "U. S. B. M."

NOTE 13.—The surface within an outlined square, 1 inch on each side, on a horizontal surface of masonry, unlettered.

NOTE 14.—The surface within an outlined square, 1 inch on each side, on a horizontal surface of masonry, lettered "U. S."

NOTE 15.—The bottom of a hole in a horizontal surface, 25 millimeters square and 4 to 6 millimeters deep, lettered "U. S."

NOTE 16.—The bottom of a hole in a horizontal surface, 25 millimeter square, 4 millimeters deep, not lettered.

NOTE 17.—A 3-inch aluminum or bronze disk \* lettered "U. S. Geological Survey B. M. \$250 fine or imprisonment for disturbing this mark. Elevation above sea — feet. Datum —." Each disk is stamped with the approximate elevation in feet and a letter or letters to indicate the datum plane. This elevation and the datum letter or letters usually form the name by which the bench mark is designated in this publication.

NOTE 18.—This type of bench mark has the same lettering as that referred to in note 17, and is a 3-inch aluminum or bronze cap riveted upon a 3-inch iron pipe, set in the ground, 5 to 6 inches being exposed above the ground. A cross cut in the center of the top is the bench mark.

NOTE 19.—A bench mark referred to this note was established by the Corps of Engineers, U. S. Army. It is the top of a long section of iron rail driven in the center of the railroad track on the south jetty, Galveston, Tex.

NOTE 20.—A cross on the top of a section of rail set vertically in the ground. Those designated "M. M." (mile monument) mark the exact mile which is indicated by the numeral following; the others are designated "R. M." (rail monument).

NOTE 21.—A bench mark of the Baltimore and Ohio Railroad, being a section of rail, sometimes marked with a cross, set vertically between the tracks; when there are several tracks it is set between the main tracks.

NOTE 22.—A bench mark of the Baltimore and Ohio Railroad, consisting of a section of rail set vertically in the ground near the track. It is to the right, when proceeding from Warwick, Ohio, to Wheeling, W. Va.

\* See illustration on p. 550, Appendix 8, Report for 1899; also U. S. Geological Survey Report, 1896-97, Part I, pp. 226-228.



NOTE 23.—A bench mark of the Baltimore and Ohio Railroad, consisting of a copper bolt set in an abutment of a bridge. It is in the right-hand end of the farther abutment, when proceeding from Cumberland, Md., toward Wheeling, W. Va.

NOTE 24.—A bench mark of the Baltimore and Ohio Railroad, consisting of a copper bolt in the bridge seat of an abutment. It is in the right-hand end of the bridge seat of the farther abutment, when proceeding from Cumberland, Md., toward Wheeling, W. Va.

NOTE 25.—This type of bench mark is a square post of concrete made of Portland cement and fine gravel, of the grade called artificial stone, somewhat finer than that of which sidewalk blocks are made. It is 4 feet long, projecting 3 inches above the ground, 6 inches square at the base, and 4 inches square at the top, with a copper bolt set flush with the top surface, which is lettered "U. S. B. M."

NOTE 26.—A bench mark of the Baltimore and Ohio Railroad, consisting of a copper bolt set in a culvert or bridge. It is in the farther end of the right-hand coping, when proceeding from Cumberland, Md., toward Wheeling, W. Va.

NOTE 27.—A bench mark of the Baltimore and Ohio Railroad, consisting of a copper bolt set in rock in place, on the left-hand side of the track when proceeding from Cumberland, Md., toward Wheeling, W. Va.

NOTE 28.—A bench mark of the Baltimore and Ohio Railroad, consisting of a copper bolt set in rock in place, on the right-hand side of the track when proceeding from Foley, Pa., toward Chicago Junction, Ohio.

NOTE 29.—A bench mark of the Baltimore and Ohio Railroad, consisting of a section of rail set vertically in the ground on the left-hand side of the track, when proceeding from Foley, Pa., toward Chicago Junction, Ohio.

NOTE 30.—A bench mark of the Baltimore and Ohio Railroad, consisting of a copper bolt set in the end of the bridge seat of a bridge. When proceeding from Foley, Pa., toward Chicago Junction, Ohio, it is in the right-hand end of the nearer of the two abutments of the bridge.

NOTE 31.—A bench mark of the Baltimore and Ohio Railroad, consisting of a copper bolt set in the end of the bridge seat of a bridge. When proceeding from Foley, Pa., toward Chicago Junction, Ohio, it is in the right-hand end of the farther of the two abutments of the bridge.

NOTE 32.—A bench mark of the Baltimore and Ohio Railroad, consisting of a copper bolt set in an abutment of a bridge or culvert. It is on the right-hand end of the nearer abutment when proceeding from Foley, Pa., toward Chicago Junction, Ohio.

NOTE 33.—A bench mark of the Baltimore and Ohio Railroad, consisting of a copper bolt set in an abutment of a bridge or culvert. It is on the right-hand end of the farther abutment when proceeding from Foley, Pa., toward Chicago Junction, Ohio.

NOTE 34.—This type of bench mark is a stone post of Sioux quartzite, or so-called pink jasper, 4 feet long, set in the ground with 6 inches exposed, and this portion is rough dressed. The upper surface is 6 inches square, being marked in the center with a  $\frac{3}{8}$ -inch copper bolt, 2 inches long, set flush with the surface; the top of the bolt is the bench mark; the upper surface of the stone is lettered "U. S. B. M." and when the post is set near the railroad these letters face the track.

NOTE 35.—The bottom of a hole 1 inch square and about  $\frac{1}{4}$  inch deep, cut in the top of a reinforced concrete post, 4 feet long and 7 inches square, projecting about 6 inches above the ground. The top of the post is lettered "U. S. B. M."

NOTE 36.—This type of bench mark is a  $\frac{3}{8}$ -inch copper bolt, 2 inches long, set in lead or cement, flush with a horizontal or vertical surface, lettered "U. S." In the latter case, a horizontal mark on the face of the bolt is the bench mark.

NOTE 37.—A bench mark referred to this note was described by the Baltimore and Ohio Railroad as "a copper bolt set as described above in foundation for P. & L. E. R. R. signal bridge." The reference "as above" is to the description of B. & O. 359A, immediately preceding: "Copper bolt set in a concrete foundation of P. & L. E. R. R. signal bridge \* \* \* in the more easterly of two northern pedestals." In the original descriptions of all the Baltimore and Ohio Railroad bench marks the expressions "easterly," "northerly," etc., referred to the general direction of the railroad and not to the actual direction at the point.

NOTE 38.—These bench marks were set and located geodetically in winter of 1892-93, and their geographical positions are published in Report of 1893, pages 3608-3619.

The stone-line bench marks consist of a vitrified tile 18 by 18 by 4 inches. A copper bolt is leaded vertically in the center of this tile, the upper end projecting slightly above face of tile. On the surface of the tile surrounding the bolt is the inscription Mississippi River Commission.

U. S.

B.   M.

1893.

The tile is buried in the ground from 18 to 40 inches deep, the depth varying with the nature of the material.

On top of the tile a 4-inch wrought-iron gas pipe 4 feet long is set concentric with the copper bolt. The lower end of the pipe is expanded and fits in a circular groove molded in the tile. A cast-iron cap fits over the top of the pipe and is fastened thereto with bronze bolts. The top of the cap bears a similar inscription to that on the tile. (See Report of Chief of Engineers for 1894, Part 5, p. 2768.)

NOTE 39.—All bench-mark monuments referred to as pipestone benches consist of pieces of lime-

U S

stone 46 centimeters square and 15 centimeters thick, marked  with spherical-headed copper bolts

B M

leaded in upper faces and buried 1.2 meters under ground, access being given through 12-centimeter iron pipes set on top. Each pipe has a cast-iron cap, fastened by a horizontal bolt through cap and pipe.

USE

The cap has a small boss and the letters  raised on top. Elevations apply to the top of the bolt in

B M

the underground stone. Elevation of boss of pipe cap can be found in any case by adding 1.24 meters to elevation of copper bolt. (See Report of Chief of Engineers for 1902, Part 2, p. 1467.)

NOTE 40.—All bench-mark monuments referred to as pipe-flange benches consist of 4-centimeter gas pipes about 1.6 meters long, capped at upper end and having a 12-centimeter circular flange attached near lower end by lock nuts. Monuments set with about 0.1 meter above ground surface. Flanges are surrounded in the usual case by a matrix of neat cement, approximately doubling the bearing area of the monument. Elevations apply to the top of cap. (See Report of Chief of Engineers for 1902, Part 2, p. 1467.)

NOTE 41.—A permanent bench mark (P. B. M.) referred to this note consists of a  $\frac{3}{8}$ -inch copper bolt leaded vertically into the center of the dressed upper surface of a limestone block 18 inches square by about 6 inches thick. The bolt projects a little above the surface of the stone, on which are inscribed the words "Ill. River U. S. Survey 1903." This stone is set about 3.5 feet below the level of the ground, with its upper surface in a horizontal position. On the top of the stone so placed is set vertically and concentric with the copper bolt a 3-inch wrought-iron pipe, 4 feet long, split at the bottom, and expanded into two flat foot-like bases which rest on the stone and also serve to prevent the pipe from being pulled up. A nipple, having an external diameter equal to the internal diameter of the pipe and being of sufficient length to extend from the stone up into the pipe a short distance above the split, is placed at the bottom of the pipe to prevent the earth from closing around the copper bolt. A cast brass cap fits over the top of the pipe, to which it is riveted by two bolts at right angles to each other passing through the pipe and the flange of the cap. On the top of the cap is inscribed in sunken letters, "Illinois River Survey. \$250 fine for disturbing this mark. 1903. U.  S. Latitude . Longitude . Elevation above sea ." Two elevations are obtained for such benches—the elevation of the top of the copper bolt in the stone in the ground and the elevation of the center mark, between the letters "U" and "S," on the top of the cap. (See Document No. 263, House of Representatives, 59th Cong., 1st sess.)

NOTE 42.—A bench mark referred to this note is the highest point in a square cut in stone and marked thus:

U  S

NOTE 43.—A bench mark referred to this note consists of a copper bolt leaded vertically into stone, the top of the bolt being the bench mark. It is lettered thus:

U S

P B M



NOTE 44.—A bench mark referred to this note is the center of a cross (+) cut on the cross section or end of a piece of railway rail set vertically in the ground.

NOTE 45.—A bench mark referred to this note is the highest point in a square cut in a stone surface and marked:

S D  
□  
P B M

NOTE 46.—A bench mark referred to this note is center punch mark in the end of a copper bolt leaded into stone, and lettered:

S D  
○  
P B M

NOTE 47.—A bench mark referred to this note is similar to that described in note 46 except it is lettered "U. S. P. B. M." instead of "S. D. P. B. M."

NOTE 48.—The bench marks in the line Fort Adams to Vicksburg, 1905-6, were said to be "the regulation tile pipe and bronze cap used by the Mississippi River Commission for some years." They were therefore of the same type as those described in the Report of the Chief of Engineers for 1900, Part 7, as follows: "The new precise bench marks established on lines Biloxi, Miss., to New Orleans, La., and Baton Rouge, La., to Fort Adams, Miss., are of the B. M. form as used in 1898 above St. Paul, Minn., for ordinary bench marks, and consist of tile and pipe as follows: A vitrified tile 18 by 18 by 4 inches, in the center of which is set vertically with lead a three-eighths inch copper bolt, the upper end being a little above the upper surface of the tile. Surrounding the bolt on the surface of the tile is the inscription, 'Mississippi River Commission, 1898, U. S. B. M.' This tile is buried in the ground about 3 feet beneath the surface. On top the tile is placed a 4-inch wrought-iron gas pipe 4 feet long, concentric with copper bolt; the lower end of the pipe is split into quarters and spread out to prevent its being pulled up. A cast brass cap fits over the top of the pipe and is riveted thereto. The cap has the following inscription in sunken letters: 'Mississippi River Commission, \$250 fine for disturbing this mark, 1898, P. B. M. U. S., latitude □, longitude □, elevation above sea □.' The P is put on with a prick punch. The elevation of the top of the cap is determined; the structure has thus two bench marks."

NOTE 49.—A bench mark referred to in this note is the top of a copper bolt set vertically in the top of a truncated square pyramid of concrete built below the ground surface and surmounted by a square cast-iron cover with removable lid.

NOTE 50.—A 3-inch aluminum or bronze disk \* lettered "U. S. Geological Survey B. M. \$250 fine or imprisonment for disturbing this mark."

NOTE 51.—This type of bench mark is a 3-inch aluminum or bronze cap\* (lettered as in note 50) riveted upon a 3-inch iron pipe set in the ground.

#### DESCRIPTIONS OF ADDITIONAL PERMANENT BENCH MARKS ON ENGINEER LINES IN LOUISIANA, MISSISSIPPI, AND ARKANSAS.

[These descriptions are published in the Report of the Chief of Engineers for 1902, Part 2, and are republished here, only those changes being made which are necessary for indexing and for reference to the notes of types of bench marks.]

T. B. M. 11.—Near *Vicksburg, Warren Co., Miss.*; cross on head of 20d nail in S. chimney of Manuel Sweet's residence. Nail is 0.4 meter above ground. House stands at the junction of Yazoo and Old rivers.

T. B. M. 2.—Head of railroad spike driven horizontally in retaining wall just N. of St. Louis, Iron Mountain and Southern Ry. depot at *Little Rock, Pulaski Co., Ark.* Spike is at corner of wall adjoining depot, about 0.5 meter above railway platform, and projects 0.02 meter from wall.

B. i. M. 3 (Merrill, 1871).—On top projecting layer of brick on E. corner of court-house, *Alexandria, Rapides Parish, La.*

B. i. M. 4 (Merrill, 1871).—Top surface of lower iron plate of iron pedestal of SE. pillar of vestibule of river entrance of court-house, *Alexandria, Rapides Parish, La.*

T. B. M. 23= 362.—Near *Egg Bend Landing, Avoyelles Parish, La.*; nail in top of jar on Jamesi Adams's place, 4 meters from road and 48 meters from levee.

P. B. M. 79.—*Egg Bend Landing, La.*; destroyed.

\* See footnote on page 127.



M. R. C. B. M. 142.—A pipestone bench, on side of hedge on main road by side of levee, 1 100 meters S. of *Smithland, Pointe Coupee Parish, La.*, and 110 meters S. of house occupied by Simon Smith on George Bienvenue's place. (Note 39, p. 129.)

T. B. M. 72a.—Vicksburg, Shreveport and Pacific Railroad B. M.—Near *Ruston, Lincoln Parish, La.*; cross on steel rail 3 meters S. of center of track and 60 meters W. of milepost 104 from Delta.

Vicksburg, Shreveport and Pacific Railway B. M.—Near *Ruston, Lincoln Parish, La.*; cross on steel rail 3 meters S. of center of track and 200 meters from milepost 104 from Delta.

T. B. M. 91a.—Vicksburg, Shreveport and Pacific Railway B. M.—Near *Dubberly, Webster Parish, La.*; cross on steel rail 3 meters S. of track and 25 meters W. of bridge 294.

T. B. M. 116a.—Cross on anchor bolt on first pier at E. end of railway bridge at *Shreveport, La.*, and on S. side of bridge.

Mark for barometer.—Cross cut in stone sill of back door of post-office in public building in *Shreveport, Caddo Parish, La.*

Bayou Pierre B. M. 2.—Cross cut on lower course of stone of the top stones on S. side of west abutment of the Vicksburg, Shreveport and Pacific Ry. bridge at *Shreveport, La.*

T. B. M. 121.—Near *Curtis, Bossier Parish, La.*; cross on pipe of  $\triangle$  148 of Red River survey.

#### DESCRIPTIONS OF BENCH MARKS BETWEEN DELHI AND TENSAS RIVER, LOUISIANA, 1899.

[These descriptions are published in the Report of the Chief of Engineers for 1902, Part 2, pages 1505-1506, and are republished here, only those changes being made which are necessary for indexing and for reference to the notes of types of bench marks.]

P. B. M. 13.—*Delhi, La.* (See App. 8, Report for 1899, p. 676.)

T. B. M. 1.—On NE. corner of brick pier of NE. corner of S. Blum's store at *Delhi, Richland Parish, La.* Pier supports iron column at NE. corner of porch in front of store.

P. B. M. Griffin.—Pipe-flange bench on Jackson place near *Pullaway Landing, Franklin Parish, La.*, in W. corner of barn lot adjoining yard to plantation house owned by Tom Griffin. Is about 830 meters from mouth of Pullaway Bayou and near Jackson or Pullaway Landing. (Note 40, p. 129.)

P. R. P. Newcomer.—Pipe-flange bench at *Sunrise Landing, Franklin Parish, La.*, in NW. corner of lot adjoining front yard of J. L. Newcomer's residence, about 1.6 kilometers below Warsaw Landing, on Bayou Maçon. (Note 40, p. 129.)

P. B. M. Gray.—Pipe-flange bench on Gray place, near *Crowville, Madison Parish, La.*, in SW. corner of yard of house occupied by James McPherson. Bench is 44 meters back from right bank of Tensas River. (Note 40, p. 129.)

#### DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN BARBIN AND ACME, LA., NEAR THE MOUTH OF THE BLACK RIVER, 1899.

[These descriptions were published in the Report of the Chief of Engineers for 1902, Part 2, page 1514, and are republished here, only those changes being made which are necessary for indexing and for reference to the notes of types of bench marks.]

P. B. M. White.—Near *Murrays Landing*, about 8 miles NE. of *Marksville, Avoyelles Parish, La.*, and about 6 miles E. of *Vick*; pipe-flange bench in NW. corner of yard to residence of Mr. John White, 1 kilometer below lower end of Saline Point. Bench is 33 meters from R. B. of Red River, 8 meters W. from W. end of house, and 11 meters N. of N. line of porch on N. side (front) of house. (Note 40, p. 129.)

P. B. M. Barbin.—Pipe-flange bench in the back downstream corner of yard to residence at *Barbin Landing, Avoyelles Parish, La.*, 17 meters S. of gate in E. fence of yard and 40 meters SW. of SW. corner of warehouse. (Note 40, p. 129.)

#### DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN GILBERT AND NEW LIGHT, LA., 1899.

[These descriptions were published in the Report of the Chief of Engineers for 1902, Part 2, pages 1511-1512, and are republished here, only those changes being made which are necessary for indexing and for reference to the notes of types of bench marks.]

P. B. M. Gilbert.—*Gilbert, Franklin Parish, La.* (See App. 8, Report for 1899, p. 680.)

P. R. P. Osborne.—Pipe-flange bench in NE. corner of front yard to residence of W. R. Osborne, at *Osbornes Ferry*, on Bayou Maçon, *Franklin Parish, La.* Bench is 21 meters from R. B. of bayou. (Note 40, p. 129.)

P. B. M. New Light.—Pipe-flange bench in the NE. corner of James R. Lynch's front yard, at *New Light, Tensas Parish, La.*, and 10 meters back from L. B. of Tensas River. (Note 40, p. 129.)

## DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN ARCHIBALD AND COLUMBIA, LA., 1899.

[These descriptions were published in the Report of the Chief of Engineers for 1902, Part 2, pages 1508-1511, and are republished here, only those changes being made which are necessary for indexing and for reference to the notes of types of bench marks.]

P. B. M. Archibald.—*Archibald, Richland Parish, La.* (See App. 8, Report for 1899, p. 679.)

P. R. P. Alto.—Pipe-flange bench at *Alto, Richland Parish, La.*, in SW. corner of yard of E. H. Cook, on N. side of Archibald road and 20 meters E. of L. B. of Boeuf River. (Note 40, p. 129.)

P. B. M. Harland.—Pipe-flange bench at NW. corner of store at Harland Field, near *Charlottesville, Richland Parish, La.*, 20 meters from bank of Boeuf River and 75 meters above point where second bank joins main bank. (Note 40, p. 129.)

P. A. P. Stokes.—Pipe-flange bench on Stokes place, opposite *Charlottesville, Richland Parish, La.*, 40 meters from R. B. of Boeuf River, 25 meters from cabin, and 150 meters below Stokes's residence. (Note 40, p. 129.)

P. R. P. Stokes.—Pipe-flange bench on Stokes place, near *Charlottesville, Richland Parish, La.*, on R. B. of Boeuf River, 18 meters from main top bank and 20 meters upstream from cabin occupied by Henry Hunter. (Note 40, p. 129.)

P. R. P. Hatch.—Pipe-flange bench at *Holly Grove Ldg., Richland Parish, La.*, in NW. corner of yard in front of Frank Hatch's residence, 60 meters NW. from residence, 100 meters E. from landing, and 20 meters from L. B. of Boeuf River. (Note 40, p. 129.)

P. R. P. Noble 2.—Pipe-flange bench on property of C. M. Noble, near *Holly Grove, Richland Parish, La.* It is 40 meters from L. B. of Boeuf River, in corner of pasture where road from Holly Grove Ldg. turns down L. B. of river after crossing neck of first bend below Holly Grove. (Note 40, p. 129.)

P. R. P. Elmore.—In *Richland Parish*, near *Landerneau, Caldwell Parish, La.* Pipe-flange bench on property of Elmore and King, 400 meters below cabin on Thomason place, Richland Parish, La., 5 meters W. of road cutting across neck from Thomason place to Landerneau and 90 meters from L. B. of Boeuf River. (Note 40, p. 129.)

P. R. P. Doucier.—Pipe-flange bench on property of the "Green Grove" Church, opposite *Landerneau*, and in *Richland Parish, La.* It is on the E. side of road crossing neck, 40 meters E. of E. wall of church, extended, and 15 meters S. of S. wall, extended. (Note 40, p. 129.)

P. R. P. Harris.—Pipe-flange bench on Harris place, 300 meters above Bird Lake Landing, near *Boeuf River, Caldwell Parish, La.* It is 3 meters W. of road, on field side of fence, 10 meters below angle, 100 meters above SW. corner of field, and 40 meters from bank of Boeuf River. (Note 40, p. 129.)

P. R. P. Wheeler.—Pipe-flange bench at old Doucier Landing, on Paul Brandin's place, near *Boeuf River, Caldwell Parish, La.*, 12 meters from R. B. of Boeuf River, 300 meters below where road crossing neck from the old Doucier place reaches river. (Note 40, p. 129.)

P. R. P. Hebert.—Pipe-flange bench 250 meters above Heberts Landing, near *Boeuf River, Caldwell Parish, La.*, in NW. corner of garden back of house of Widow Johnson, 16 meters from R. B. of Boeuf River and 60 meters below a deep gully entering river. (Note 40, p. 129.)

P. R. P. La Fourche.—Pipe-flange bench, 400 meters SW. of Heberts Landing, near *Boeuf River, Caldwell Parish, La.*, in SE. corner of field on Hebert's place and on W. side of road to Columbia, which crosses neck from Boeuf River to Bayou La Fourche. Bench is on top bank of Bayou La Fourche. (Note 40, p. 129.)

P. R. P. Columbia.—Pipe-flange bench about 2.4 kilometers below and opposite *Columbia*, and in *Caldwell Parish, La.*, 7 meters N. of fence forming S. boundary, and 210 meters W. of fence forming E. boundary of I. Davis's place. (Note 40, p. 129.)

P. R. P. Wade.—Pipe-flange bench on Wade place, near *Columbia, Caldwell Parish, La.*, 5 meters below cabin occupied by Henry Neil (1896) and on line with posts of front gallery, 15 meters E. from road, 58 meters from L. B. of river, 50 meters S. of dune, and 150 meters below steam gin. (Note 40, p. 129.)

P. R. P. Three Rivers.—Near *Columbia, Caldwell Parish, La.* Pipe-flange bench at the Boeuf River crossing of road to Columbia from Winnsboro. Bench is in grove of small pecans, 30 meters W. of R. B. of Boeuf River, 25 meters W. of stretch of road paralleling river, 25 meters N. of an E. and W. stretch in road, and 75 meters below lower end of small island in river. (Note 40, p. 129.)



## DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN CAMDEN, ARK., AND SHREVEPORT, LA.

These descriptions were published in the Report of the Chief of Engineers for 1902, Part 2, pages 1479-1484, and are republished here. Usually only those changes are made which are necessary for indexing, and for reference to the notes of types of bench marks.]

P. B. M. Camden IV.—*Camden, Ouachita Co., Ark.* (See App. 8, Report for 1899, p. 686.)

P. B. M. Camden III.—*Camden, Ouachita Co., Ark.* (See App. 8, Report for 1899, p. 686.)

H. S. 287.—Described by U. S. Engineers as "A standard bench of the Geological Survey at *Buena Vista, Ouachita County, Ark.* Is 35 meters W. of the NW. corner of depot, and in corner formed by post-office building and fence around adjoining yard." Described by the United States Geological Survey in Annual Report No. 21, Part 1, page 478, as "Opposite station, about 75 feet south of main track of St. Louis Southwestern Ry., in front of residence of Mrs. Martha E. Sifford; iron post, marked 'H. S. 287.' " (Note 18, p. 127.)

P. B. M. Buena Vista.—Pipestone bench at *Buena Vista, Ouachita County, Ark.* It is 9 meters W. of main track and 110 meters S. of SE. corner of depot. (Note 39, p. 129.)

R. R. B. M.—On a 0.4-meter sweet gum 20 meters W. of track, 130 meters S. of trestle 853, and about 1 kilometer below *Ogamaw, Ouachita County, Ark.* The tree has the letters U S cut on it. It is the higher one of two spikes on the same tree.

P. B. M. Stephens.—Pipestone bench at *Stephens, Ouachita County, Ark.* In NE. corner of yard to hotel belonging to Mrs. S. Boggs, 25 meters W. of St. Louis Southwestern Ry. track, 25 meters from corner of hotel, 24 meters from corner of gin, and 78 meters from corner of depot. (Note 39, p. 129.)

R. R. B. M.—Near *Stephens, Ouachita Co., Ark.* In root of a 0.4-meter holly 15 meters from L. B. of Smackover Creek, 20 meters S. of track, on a line even with beginning of trestle over creek. The letters U S are cut on tree. It is the higher one of two spikes on the same tree.

P. R. M. McNeil.—Pipestone bench at *McNeil, Columbia County, Ark.* On E. side of cattle pen at the NE. corner, 28 meters S. from the main track of the St. Louis Southwestern Ry.,  $11\frac{1}{2}$  meters from the corner of transfer shed and about 170 meters from depot. (Note 39, p. 129.)

P. B. M. Waldo.—Pipestone bench at *Waldo, Columbia County, Ark.* At S. edge of the St. Louis Southwestern Ry. right of way, 48 meters from track, 60 meters from switch at end of siding, and 270 meters E. from depot. (Note 39, p. 129.)

R. R. B. M.—Near *Buckner, Columbia Co., Ark.* A railroad spike in a 0.4-meter post oak, 20 meters S. of track at a point 40 meters W. of T. B. M. 232, which is described as a boat spike in root of a 0.3-meter water oak, 25 meters N. of track, 90 meters W. of trestle over Bayou D'Orcheat, 70 meters W. of sign reading "Station, 1 mile." (Referring to *Buckner*.) The letters U S are cut on tree above bench.

P. B. M. Stamp.—Pipestone bench at *Stamps, Lafayette County, Ark.* It is in the NE. corner of lot inclosing offices and buildings of the Louisiana and Arkansas R. R., 38 meters N. of main track of the St. Louis Southwestern Ry. and about 50 meters from depot. (Note 39, p. 129.)

P. B. M. Lewisville.—Pipestone bench at *New Lewisville, Lafayette County, Ark.* At E. corner of cattle pen, 28 meters E. of main track of St. Louis Southwestern Ry., 90 meters SW. from depot. (Note 39, p. 129.)

T. B. M. 239.—*Lewisville, Lafayette Co., Ark.* Cross chiseled on head of boiler rivet holding two sheets of sheet iron resting on stone foundation pier for water tank at junction of Shreveport branch with main line of St. Louis Southwestern Ry. Bench is on pier next to main track and toward Lewisville and on the SW. corner of sheet-iron plate.

P. B. M. Garland.—Pipestone bench at *Garland, Miller County, Ark.* On R. B. of Red River, 100 meters NW. of pier approach to railway drawbridge, 24 meters W. of main track and about 500 meters S. of depot. (Note 39, p. 129.)

B. M. 4. (Red River survey).—Pipestone bench at *Garland, Miller County, Ark.*, at NW. corner of St. Louis Southwestern Ry. section house. It is 2 020 feet from center pier of railway drawbridge and 70 feet N. of track. (Note 39, p. 129.)

P. B. M. Jordan.—Pipestone bench about 150 meters E. of L. B. of Red River at *Jordan Ferry, Lafayette County, Ark.*, at edge of road 3 meters S. of Terrell Bayou and on Ward place. (Note 39, p. 129.)

P. R. P. 14 (Red River survey).—Pipestone bench on L. B. of Red River about 800 feet back of *Jordan Ldg., Lafayette County, Ark.*, and 500 feet S. of Terrell Bayou at angle in levee between the Terrell and Dixon plantations. (Note 39, p. 129.)



P. B. M. Canfield.—Pipestone bench at *Canfield, Lafayette County, Ark.* Is 2.7 meters from SW. corner of cattle pen, 19 meters W. of main track, and 95 meters NW. of corner of depot of the St. Louis Southwestern Ry. (Note 39, p. 129.)

P. B. M. Bradley.—Pipestone bench at *Bradley, Lafayette County, Ark.* At NW. corner of depot, 13 meters W. of main track of the St. Louis Southwestern Ry. (Note 39, p. 129.)

P. B. M. Lusk.—Pipestone bench at *Millers Bluff, about 7 miles W. of Plain Dealing, Bossier Parish, La.* In the SW. corner of yard of Jake Lusk, 5 meters N. of road and 400 meters from bank of Red River at Lusk's Ferry and on edge of crest of hills known as Millers Bluff. (Note 39, p. 129.)

P. R. P. 25 (Red River survey).—Near *Millers Bluff, about 8 miles W. of Plain Dealing, Bossier Parish, La.* Pipestone bench. Is 250 feet from L. B. of Red River and 160 feet below Posten Bayou near mouth. (Note 39, p. 129.)

P. B. M. Plain Dealing.—Pipestone bench at *Plain Dealing, Bossier Parish, La.* Is 100 meters N. of depot, 18 meters W. of St. Louis Southwestern Ry. track at a point 10 meters S. of point of curvature. (Note 39, p. 129.)

P. B. M. Alden Bridge.—Pipestone bench at *Alden Bridge, Bossier Parish, La.* On NE. side of yard, 3.6 meters from hotel building, 80 meters W. of main track of the St. Louis Southwestern Ry. at a point 125 meters NE. of depot. (Note 39, p. 129.)

P. B. M. Hurricane Bluff.—Pipestone bench at *Hurricane Bluff, about 4 miles from Benton, Bossier Parish, La.* Is 70 meters from L. B. of Red River and in yard to residence of Walter Ivory, 20 meters from road to Hurricane Bluff Ferry. (Note 39, p. 129.)

P. R. P. 30 C.—About 4 miles west of *Benton, Bossier Parish, La.*; top of boss to standard B. M. pipe (no stone). Bench is 1 650 feet from river and 1 000 feet above mouth of small bayou at *Hurricane Bluff, Bossier Parish, La.*

P. B. M. Benton.—Pipestone bench at *Benton, Bossier Parish, La.*, in NE. corner of section-house yard. (Note 39, p. 129.)

T. B. M. 274.—Near *Vanceville, Bossier Parish, La.*; cross cut on third brick of second offset course from NW. corner of brick chimney to a deserted cabin, 60 meters W. of track,  $3\frac{1}{2}$  telegraph poles N. of milepost 443. Plantation road crosses track and runs in front of bench. The letters "U S" are cut in the course of brick just above bench.

P. R. P. 32 (Red River survey).—Near *Vanceville, Bossier Parish, La.*; pipestone bench on plantation of T. J. Vance, in front of plantation house, and on top of levee about 420 feet above Benoit Bayou. (Note 39, p. 129.)

P. B. M. 45.—Near *Shreveport, Caddo Parish, La.* (See App. 8, Report for 1899, p. 670.) In the Report of the Chief of Engineers for 1902, Part 2, page 1484, the B. M. is described as a *pipestone* bench mark (note 39, p. 129), "200 meters from the Bossier end of Vicksburg, Shreveport and Pacific bridge over Red River, 30 meters SE. of track. Bench is covered by SW. slope of levee and is marked by a post set over a bench and painted white. 'Post is marked P. B. M. 45.'" This is probably the post which was reported loose in 1902.

B. M. "B. P." (Not Bayou Pierre survey B. M. 2).—Is + cut on top capstone of retaining wall on SW. side of Vicksburg, Shreveport and Pacific Ry. bridge at *Shreveport, Caddo Parish, La.*

P. B. M. 46.—*Shreveport, Caddo Parish, La.* (See App. 8, Report for 1899, p. 670.)

#### DESCRIPTIONS OF STONE-LINE BENCH MARKS, NEW ORLEANS TO BATON ROUGE, LA.\*

[These descriptions are published in the Report of the Chief of Engineers for 1894, Part 5, pages 2769-2776, and are republished here. Usually only those changes are made which are necessary for indexing and for reference to the note of types of bench marks. The elevations of these B. Ms. were determined in 1897-98.]

$2\frac{1}{5}$ .—*New Orleans, Orleans Parish, La.*, on NE. corner of Forstall and Villers streets, back of New Orleans and Southern R. R., and at SW. corner of Mr. Boman's land; just outside of fence corner and between fence and ditch; 346.2 meters back of railway. (Note 38, p. 128.)

$2\frac{1}{5}$  A.—Cap over  $2\frac{1}{5}$ .

$2\frac{1}{1}$ .—*Carrollton, Jefferson Parish, La.*, on line of fence running back from Steamship Exchange saloon, 50 meters above Illinois Central R. R. tracks and Southport elevator; pasture on upper side, lower side cultivated. (Note 38, p. 128.)

\*For other bench marks along this line, see Appendix 3, Report for 1903, pp. 607-612.

<sup>208</sup><sub>1</sub>.—One-fourth mile above landing at *Kenner, Jefferson Parish, La.*, in lane leading to swamp,  $\frac{1}{2}$  meter E. of W. fence of lane, 2 meters S. of an E. and W. ditch which crosses lane, about 150 meters S. of line of timber. Lane is the one 27 meters W. of B. M. <sup>203</sup><sub>2</sub> and runs N. and S. (Note 38, p. 128.) B. M. <sup>203</sup><sub>2</sub> was not recovered in 1897-98, but was described in the 1894 Report as back of fence, back of road, back of levee, in upper part of Kennerville, 27 meters below first street in upper part of town. House occupied by E. Stahl (white) is on opposite corner. Bench mark is just below a prominent bend in levee, 50 meters above house occupied by Walter Davis (colored). e

<sup>207</sup><sub>1</sub>.—About  $\frac{1}{4}$  mile below landing on *Patterson plantation, St. Charles Parrish, La.*, on right of way of Louisville, New Orleans and Texas R. R., 15 rail lengths above a road crossing, on upper side of third ditch above road; 17 rail lengths below milepost "14;" 10 rail lengths below levee on line between plantations of Patterson and Rose; 400 meters W. of old Almadia sugarhouse. (Note 38, p. 128.)

<sup>206</sup><sub>1</sub>.—About  $\frac{1}{4}$  mile above old incline of Texas and Pacific R. R., on *Pecan Grove plantation, St. Charles Parish, La.*, on right of way of Louisville, New Orleans and Texas R. R., 7 meters in front of track, 125 rail lengths below milepost 17, 48 rail lengths below upper switch to siding. (Note 38, p. 128.)

<sup>205</sup><sub>1</sub>.—About  $\frac{1}{4}$  mile below government light on *Good Hope plantation*, near line between Good Hope and Prospect plantations, *St. Charles Parish, La.*, on Louisville, New Orleans and Texas R. R. right of way, on line of front row of telegraph poles, 32 rail lengths below *Sarpy station*;  $4\frac{3}{4}$  rail lengths below lower switch stand, 6 meters in front of track; between the fifth and sixth ditch below the lower section house; at fifth telegraph pole below telegraph station. (Note 38, p. 128.)

<sup>204</sup><sub>1</sub>.—About  $\frac{1}{4}$  mile above depot at *La Place, St. John the Baptist Parish, La.*, on Montague plantation, on river side of road almost in front of Montague's house, 75 meters above junction of roads, also Montague's store. (Note 38, p. 128.)

<sup>203</sup><sub>0</sub>.—About  $\frac{3}{4}$  mile below St. Peter's Church, at *St. Peters, St. John the Baptist Parish, La.*, on land owned by Nicaïsse Madere, 7 meters N. of live-oak tree, 30 inches in diameter. Live oak is between two ditches. B. M. is on upper bank of upper ditch and 100 meters N. of E. and W. fence between pasture and rice field. (Note 38, p. 128.)

<sup>199</sup><sub>1</sub>.—Near *Garyville, St. John the Baptist Parish, La.*, 6 meters in front of Louisville, New Orleans and Texas R. R. beside road;  $30\frac{1}{2}$  rail lengths below milepost "36 mi. to N. O.;" on property of Valsin Oubree (colored), 10 meters above line of canal between Oubree's and Union plantations; 10 meters below road running back from B. M. <sup>193</sup><sub>2</sub> across railroad. (Note 38, p. 128.) B. M. <sup>193</sup><sub>2</sub> was not recovered in 1897-98. It was described in the 1894 Report as 1109.7 meters from <sup>199</sup><sub>0</sub> on property of Valsin Oubree, 40 meters below Four Seasons store, owned by Geauguard, and below square-topped house occupied by Altores Montz.

<sup>197</sup><sub>1</sub>.—Near *Lutcher, St. James Parish, La.*, on Golden Grove plantation, 417 meters back of Louisville, New Orleans and Texas R. R.; back of and on embankment of canal, which runs directly from Thompson sugarhouse, which is 700 meters above; 157 meters directly W. from junction of road from Golden Grove sugarhouse and road running NW.; 60 meters above road running NW. (Note 38, p. 128.)

<sup>196</sup><sub>1</sub>.—Near *Lutcher, St. James Parish, La.*, on Bellevue plantation, 7 meters back of Louisville, New Orleans and Texas R. R.; 25 rail lengths below milepost "44 miles to N. O.;" 10 rail lengths above road crossing and also culvert No. 787; on upper side of third ditch above road. (Note 38, p. 128.)

<sup>195</sup><sub>1</sub>.—Near *Hester, St. James Parish, La.*,  $\frac{1}{2}$  meter back of fence which runs back of road inside of new levee. It stands 16 meters above fourth ditch, above residence grounds of plantation, and is 340 meters above plantation sugarhouse; on Hester (Belle Alliance) plantation. (Note 38, p. 128.) Distance between <sup>193</sup><sub>2</sub> and <sup>195</sup><sub>1</sub> is 975.3 meters. <sup>193</sup><sub>2</sub> was not recovered in 1897-98, but was described in the 1894 Report as on Belle Alliance plantation, owned by J. C. Ross, of New Orleans. Stone is on high embankment, back of canal running E. and W. on line between church back of quarters and Belmont sugarhouse; 288 meters above first road above Ross residence, running back from river; on same canal that telephone line is on.

<sup>194</sup><sub>1</sub>.—About  $\frac{3}{4}$  mile below *College Landing*, at College Point, *St. James Parish, La.*, back of road, back of levee on property of Noel Mather (colored), 10 meters below line of fence between Mather and Adolph Feuran (colored), 58 meters SW. of Mather's house, 66 meters SW. of new Sunrise Store, 40 meters S. of Adolph Feuran's house,  $\frac{1}{2}$  mile below 60-mile post to New Orleans. (Note 38, p. 128.) <sup>194</sup><sub>1</sub> is 744.3e meters from <sup>194</sup><sub>4</sub>, which is College triangulation station. <sup>194</sup><sub>4</sub> was not recovered in 1897-98, but was described in the 1894 Report as 20 meters E. of W. boundary line of college property; 15 meters back of a short cross fence, in low, wet ground covered with cottonwood timber. e



<sup>192</sup>.—About  $\frac{1}{4}$  mile above Lily store and landing, *St. James Parish, La.*, on *Celestine plantation*, property of Felician Ory. It is 48 meters back of Louisville, New Orleans and Texas R. R.,  $14\frac{1}{2}$  rail lengths below milepost "52 miles to N. O.;" on upper bank of second ditch above road leading from river to sugarhouse. (Note 38, p. 128.)

<sup>191</sup>.—On *Alta Vela plantation*, near *Whitehall, St. James Parish, La.*, on Louisville, New Orleans and Texas R. R. right of way, between main track and siding;  $57\frac{1}{2}$  rail lengths below Whitehall station; 20 rail lengths above lower end of switch at an old road crossing. (Note 38, p. 128.)

<sup>190</sup>.—About 800 meters below *Miles, St. James Parish, La.*,  $\frac{1}{4}$  mile below landing on *Bagatelle plantation*,  $\frac{1}{2}$  mile above Union post-office; on *St. Mary plantation*, 28 meters below line between *Bagatelle* and *St. Mary plantations*, on line of Louisville, New Orleans and Texas R. R. It is  $17\frac{3}{4}$  rail lengths below milepost "58 miles to N. O. and 397 miles to Memphis," on the upper side of first ditch below boundary line. (Note 38, p. 128.) An 18-inch sycamore tree 30 meters, N.  $60^{\circ}$  W. is blazed with a triangle.

#### DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN FORT ADAMS AND VICKSBURG, MISS., 1905-6.

[These descriptions were furnished by the Chief of Engineers in the form of a copy of the manuscript for publication and are here reprinted without change, except the reference to note 48 and the addition of the name of a town, with the county and State, to each description, for the purpose of indexing.]

P. B. M. Point Breeze.—On *Point Breeze, Concordia Parish, La.* (See App. 3, Report for 1903, p. 621.)

P. B. M. XLVIII.—*Fort Adams, Wilkinson Co., Miss.* (See App. 3, Report for 1903, p. 621.)

P. B. M. Fort Adams.—*Fort Adams, Wilkinson Co., Miss.* (See App. 3, Report for 1903, p. 621.)

P. B. M. XLIX.—*Fort Adams, Wilkinson Co., Miss.* (See App. 3, Report for 1903, p. 621.)

P. B. M. Knox.—Near *Nocks, Concordia Parish, La.*; tile and pipe set  $2\frac{1}{2}$  on meters SE. of NE. corner of front gallery of cabin occupied by W. E. Wheat, on land of A. W. Reagan, 13 meters back of new levee, back of and a little above the cotton gin at Knox Ldg., La. The pipe is about in line of front line of gallery. (Note 48, p. 130.)

P. B. M. Ballymagan.—Near *Black Hawk, Concordia Parish, La.*; tile and pipe set in NE. corner of yard surrounding house of A. D. Kirby, overseer for George Scott's Ballymagan plantation, about  $3\frac{1}{4}$  miles below Black Hawk Ldg., La. It is 2 feet from either fence. (Note 48, p. 130.)

T. B. M. 13.—Near *Black Hawk, Concordia Parish, La.*; top of 40d boat spike driven vertically into bench cut on SE. root of a 20-inch chinaberry tree standing in road between levee and fence, 3 meters below lower end of cabin occupied by Lee Kenny (colored), on the Ballymagan plantation,  $1\frac{3}{4}$  miles along levee below Black Hawk Ldg., La. It is 150 meters below where B. M. 14<sup>1</sup> should be, the pipe being dug up, and levee built over stone.

T. B. M. 14.—Near *Black Hawk, Concordia Parish, La.*; top of 30d wire nail driven vertically into bench cut on E. root of a 3-foot chinaberry tree standing in road 5 meters back of levee, and 20 meters above negro church standing just outside of levee on Black Hawk plantation,  $\frac{3}{4}$  mile below Black Hawk Ldg., La., and a short distance below Black Hawk depot on the R. R.

L<sup>1</sup> (C. & G. S.).—Near *Black Hawk, Concordia Parish, La.*; bottom of square cavity cut in top of granite post buried in the ground to the right of the steps leading to the E. entrance of Mr. George Scott's residence on Black Hawk plantation,  $\frac{1}{4}$  mile above the present Black Hawk Ldg., La., which is at the cotton gin on the river bank. Top of stone is about 3 inches above ground.

T. B. M. 15.—Near *Black Hawk, Concordia Parish, La.*; top of 30d wire nail driven vertically into bench cut on W. root of a 4-foot pecan tree standing just outside of levee, immediately in front of residence of A. J. McCleary, and immediately above his store. It is  $\frac{3}{4}$  mile below Grand Cut-off.

T. B. M. 17.—Near *Black Hawk, Concordia Parish, La.*; top of spike driven vertically into bench cut on root on road side of a 30-inch pecan tree standing just outside of fence at small angle in same, and 8 meters back of levee. It is 80 meters below small house of W. L. Shaw, occupied by M. Rothchild, and 70 meters above store of Rothchild & Co. It is 160 meters above Grand Cut-off and about 200 meters above a point opposite Shaw station on the R. R.

P. B. M. Union Point.—Near *Black Hawk, Concordia Parish, La.*; tile and pipe set in SE. corner of yard surrounding house of Tyler Watson on property of Benjamin Newgrass, about  $\frac{3}{4}$  mile below Union Point Ldg., La. It is 50 meters below Union Point gin, back of road and slough. It is  $2\frac{1}{2}$  feet from either fence. (Note 48, p. 130.)



B. M.  $1\frac{1}{3}^2$ .—Near *Bougere, Concordia Parish, La.*; stone post standing 1 meter N. of fence on S. e. side of road, 1 000 meters above Bougere Ldg., and P. O., La. It is 310 meters below a negro church. A 24-inch and a 30-inch pecan tree stand on opposite or N. side of road, the first below the stone, the other above and distant 36 and 40 meters, respectively. Both trees blazed with triangle facing stone.

LIV (C. & G. S.).—Near *Bougere, Concordia Parish, La.*; bottom of square cavity cut in top of granite post buried in the ground on the left of the steps leading to the front entrance of residence of Mr. Charles Johnson, agent of Mr. Learned, of Natchez, Miss., on the Ashland plantation. It is 1 mile above Bougere Ldg., and P. O., La. Top of stone is 2 inches above ground. It stands about midway between the steps and the W. end of the gallery.

T. B. M. 31.—Near *Fairview, Concordia Parish, La.*; top of 40d boat spike driven vertically into bench cut on N. root of a 16-inch pecan tree standing at the N. edge of road, 50 meters S. of levee, and 63 meters below, or W. of B. M.  $1\frac{1}{3}^1$ . Tree bears a blazed triangle facing the B. M.

New B. M.  $1\frac{1}{3}^1$ .—Near *Fairview, Concordia Parish, La.*; tile and pipe in position of stone whose top was broken off, on Excelsior plantation, back of Fritz Island, 90 meters back of low ground which formerly was a chute. It is 47 meters S. of levee, 2 meters S. of center of road and in edge of cotton field, and opposite a large burnt snag standing at base of levee. Another large snag stands 25 meters above pipe. Pipe is 199 meters above cabin occupied by Maggie Meyers (colored), 213 meters below cabin occupied by Sam Gains (colored), both standing between road and levee. It is 260 meters below cross fence, at road which leads across slough toward river. See T. B. M. 31 for witness tree.

T. B. M. 32.—Near *Fairview, Concordia Parish, La.*; top of boat spike driven vertically into bench cut on root on levee side of a 36-inch sycamore tree standing 3 meters outside of levee, on property belonging to the Excelsior plantation, about  $2\frac{1}{2}$  miles below Fairview Ldg., La., and  $1\frac{1}{4}$  miles below Fairview P. O., La. It is 60 meters above a road that crosses levee and leads to Excelsior store.

T. B. M. 35.—Near *Arnot, Wilkinson Co., Miss.*; top of 30d boat spike driven vertically into bench cut on S. root of a 36-inch oak tree standing on N. side of lane, 286 meters back of Kindling Altar Church (colored), on L. B. of river, a little below middle of Dead Man's Bend. It is 9 meters W. of P. B. M. Kindling. Wire fence is nailed to S. side of this tree, tree in field and S. root in lane.

P. B. M. Kindling.—Near *Arnot, Wilkinson Co., Miss.*; tile and pipe standing on L. B. of river, among some trees at back edge of field on land of Mrs. Margaret Winchester,  $1\frac{1}{2}$  meters N. of N. fence of lane leading back from the river past the Kindling Altar Baptist Church (colored), which stands on N. side of lane on land of M. Rothchild, of Kienstra, La. It is a little below Gaines Ldg., a little below the middle of Dead Man's Bend. It is 9 meters back of tree bearing T. B. M. 35, 295 meters back of the church, and 414 meters back of L. B. of river. A 12-inch gum tree standing just N. of fence is 3 meters W. of pipe, an 18-inch hackberry stands NNE. 3 meters, a 15-inch gum stands ENE. 3(?) meters; all blazed with a triangle facing pipe. (Note 48, p. 130.)

T. B. M. 36.—Near *Fairview, Concordia Parish, La.*; top of boat spike driven vertically into bench cut on root on levee side of a 4-foot pecan tree which bears H. W. gauge No. 54, which is on R. B. about center N. and S. of Point Pleasant plantation,  $1\frac{1}{2}$  miles below Fairview Ldg., La. It is  $\frac{1}{2}$  mile below stone line No. 140. It is about 50 meters below several brick tombs in graveyard back of levee at 3 cedar trees.

B. M.  $1\frac{1}{3}^2$ .—Obers Triangulation Station.—Near *Fairview, Concordia Parish, La.*; highest point on stone post, standing in grass, 6 inches above ground, about 15 meters back of top of main R. B. of river, about 150 meters outside of levee, 325 meters below hedge fence dividing the Roseland and Point Pleasant plantations. It is about 1 mile below Fairview Ldg., La. It is  $350^{\circ} 05'$ —1 180 meters from Roseland gin.

T. B. M. 38.—Near *Fairview, Concordia Parish, La.*; top of boat spike driven vertically in top of stump of 6-inch willow, standing at outer base of levee, and 8 meters above large ramp where road crosses levee, 15 meters above hedge which divides the Roseland and Fairview plantations.

P. B. M. Jones.—Near *Fairview, Concordia Parish, La.*; tile and pipe standing 1 meter from either fence in SE. corner of yard around cabin of Richard Jones (colored), agent for Mr. C. B. De Long, of Fithian, Ill. It is on Promised Land plantation, or Glasscock Swamp, on R. B. of river, 73 meters back of base of levee. It is about opposite or 400 meters back of H. W. gauge No. 55, which is a little below Boyds Ldg., La., and opposite lower half of Glasscock Island. (Note 48, p. 130.)

T. B. M. 42.—Near *Fish Pond, Concordia Parish, La.*; top of 30d boat spike driven vertically in 5-inch stump of SE. limb of a 12-inch cottonwood stump standing at fence back of levee, and about 75 meters below corner of field, which corner is at base of levee. T. B. M. is about 20 meters back of levee and about 800 meters above P. B. M. Jones.

P. B. M. Fish Pond.—Near *Fish Pond, Concordia Parish, La.*; tile and pipe at inner base of new levee, 2 meters below base of ramp where road crosses levee from Fish Pond Ldg., La., to Fish Pond station on Port Allen Branch of T. & P. R. R. It is on the property of D. H. Breton,  $\frac{1}{2}$  mile back of and a little above the landing. It is 450 meters toward river from station on R. R., and 58 meters above a prominent slough. (Note 48, p. 130.)

T. B. M. 50.—Near *Fish Pond, Concordia Parish, La.*; top of 30d boat spike driven vertically into top of 12-inch osage orange stump, 1 meter S. of S. tree in hedge, 8 meters back of base of new levee, and 1 meter N. of P. B. M. Hedge. The hedge runs back from the river at the old Lehmann store just above Greens Ldg., La.

P. B. M. Hedge.—Near *Fish Pond, Concordia Parish, La.*; tile and pipe set 2 meters S. of S. end of hedge, 7 meters N. or back of base of new levee. Said hedge, etc., see T. B. M. 50, above. (Note 48, p. 130.)

B. M.  $1\frac{3}{4}$ .—Near *Morville, Concordia Parish, La.*; stone post (leaning) on inner slope of levee, about  $\frac{1}{3}$  up from base, rod was held on cut on E. side of top of stone. It is in front of Ashley plantation, owned by S. B. Yeager, 100 meters above large barn and 50 meters above house occupied by William Smith. It is 390 meters above junction of levees where old levee continues southeasterly to the top of the main bank. It is 553 meters below a prominent angle in levee, and  $1\frac{1}{2}$  miles below Morville Ldg., La.

P. B. M. Yeager.—Near *Morville, Concordia Parish, La.*; tile and pipe set 2 feet back of fence 16 meters back of base of levee, on property of S. B. Yeager, on N. line of levee running back from Morville Ldg. to woods, and dividing Morville and Warnicott plantations. It is on N. side of ramp of this road and at gate in mouth of levee. It is 40 meters (?) above a prominent angle in the levee. (Note 48, p. 130.)

B. M.  $1\frac{3}{4}$ .—Near *Morville, Concordia Parish, La.*; stone and new pipe at back of edge of road at third turn row, back of road along levee. It is on the Moro plantation, 37 meters below a ditch which divides Moro from Bails plantation. Both plantations are run by Isaac Freidler. It is 442 meters back of fence, back of road, back of levee, and opposite a point 1 500 meters below the foot of Natchez Island.

T. B. M. 61.—Near *Vidalia, Concordia Parish, La.*; top of boat spike driven vertically in bench cut on downstream root of a 2-foot honey locust tree, 15 meters toward river, and 25 meters above P. B. M. Lucerna.

P. B. M. Lucerna.—Near *Vidalia, Concordia Parish, La.*; tile and pipe set  $\frac{1}{2}$  meter outside of fence, 4 meters back of center of road along fence, 94 meters back of base of levee of main road, 9 meters above a ditch leading back past the gin on the Lucerna plantation, belonging to Harry Lambert. There is a string of 8 or 10 cabins beginning about 75 meters below the pipe, 1 cabin about 75 meters above it. It is opposite 6-mile post below Vidalia, La., and opposite where the chute at the head of Natchez Island joins the main bank. (Note 48, p. 130.)

T. B. M. 62.—Near *Vidalia, Concordia Parish, La.*; a nail driven vertically in bench cut on root of a 3-foot cottonwood, on road side of tree, standing in fence line, back of road, back of levee, at end of hedge dividing Lucerna from St. Genevieve plantation.

T. B. M. 63.—Near *Vidalia, Concordia Parish, La.*; top of boat spike driven vertically in bench cut on N. side of a 12-inch willow tree, standing at S. edge of road along S. side of levee. It is about 100 meters above prominent angle in levee where road crosses to go back across field to plantation residence, and is  $1\frac{1}{4}$  miles below Whitehall Ldg., La.

New B. M.  $1\frac{3}{4}$ .—Near *Vidalia, Concordia Parish, La.*; tile and pipe set at inner base of levee at angle immediately back of where the old B. M.  $1\frac{3}{4}$  was on levee and now covered by levee enlargement. It is 261 meters below where the road crosses levee from Whitehall Ldg., La. It is due S. of the W. end of the Whitehall quarters, and  $355^\circ$  from negro church below quarters.

T. B. M. 66.—Near *Vidalia, Concordia Parish, La.*; top of boat spike driven vertically into bench cut on S. root of 3-foot pecan tree, 3 meters back of base of levee, 50 meters above prominent angle in same, 140 meters from R. B. of river. It is the lower tree in a pecan grove. It is on the Whitehall plantation 600 meters toward river from Vidalia road,  $2\frac{1}{4}$  miles below town of Vidalia, La.,  $\frac{3}{4}$  mile above Whitehall Ldg., La. A triangle is blazed on the tree above B. M. Levee B. M. 448 is on the same tree.

Levee B. M. 448.—Near *Vidalia, Concordia Parish, La.*; top of head of galvanized spike driven horizontally into levee face of same tree bearing T. B. M. 66. Elevation marked on copper plate beside spike=86.58, which is above Cairo datum.



LXI (C. & G. S.)=Gaither Triangulation Station.—Near *Vidalia, Concordia Parish, La.*; cross cut on top of iron screw pile marking triangulation station Gaither. It is in field  $2\frac{1}{2}$  meters S. of fence along S. side of Whitehall-Vidalia road. It is 107 meters W. (measured along road) of fence surrounding small cabin on S. side of road. It is 300 meters N. of an angle in the levee, and 680 meters W. of a square angle in levee where it turns S. from main road after following along its S. side from Vidalia. It is one land of Henry Gaither and  $1\frac{1}{4}$  miles below Vidalia, La. (See also App. 8, Report for 1899, p. 608.)

T.eB. M. 69.—*Vidalia, Concordia Parish, La.*; top of spike driven vertically into bench cut on W. e root of a lone 3-foot pecan tree, standing in the yards of the N. O. & N. W. R. R., in the lower end of the town of Vidalia, La. It is 160 meters N. of river, 75 meters N. of levee, 50 meters W. of round house, and 50 meters S. of road in front of office of Union Oil Mill.

LXII (C. & G. S.)—*Vidalia, Concordia Parish, La.*; bottom of square cavity cut in top of marble post set in ground at the right of the steps to the front entrance to Judge L. F. Mason's residence in the lower part of the town of Vidalia, Concordia Parish, La. Top of post is 2 inches above ground. (See also App. 8, Report for 1899, p. 608.)

LXIII (C. & G. S.)=East Base.—*Vidalia, Concordia Parish, La.*; top of copper bolt in center of top of monument marking SE. end of the Vidalia base line. It is in a lot immediately back of the court-house and jail at Vidalia, Concordia Parish, La. It is 14 inches square at top and projects about as much above ground. Lot is owned by J. Conti, of Natchez, Miss. Stone is marked 1878 on river side, and U.S. C. S. on the opposite side. It is 55 meters from Lake Concordia road on Trinity st., 80 meters from levee. Top of bolt is slightly battered. Level party from Vicksburg U. S. Engr. office connected with these B. M.'s in 1893 and said this B. M. was disturbed, but did not say in what way. It shows a settlement of about 50 millimeters over the other C. & G. S. B. Ms. in the vicinity, and probably this difference in elevation is the disturbance intended. It seems to be intact. No one in the neighborhood knows of its ever being disturbed, but they say the ground in the vicinity is soft under the surface. (See also App. 8, Report for 1899, p. 608.)

B.eM.  $1\frac{3}{4}$ .—*Vidalia, Concordia Parish, La.*; flat stone and iron pipe on W. side of Trinity street, Vidalia, La., 440 meters back from N. line of street nearest the river,  $135^{\circ} 20'$ —420 meters from court-house, and  $194^{\circ} 00'$ —448 meters from church. Rod held on (+) on stone 83 millimeters NE. of center of stone. This point is outside of pipe, but stone is smooth and nearly level. (See also App. 8, Report for 1899, p. 677.)

T. B. M. 71.—Near *Vidalia, Concordia Parish, La.*; top of 30d boat spike driven vertically into stump of 6-inch honey locust tree, 1 meter back of fence, back of road, back of levee, on R. B., 1 000 meters above the court-house at Vidalia, La. It is 120 meters below cabin occupied by Demp Pierce (colored).

P. B. M. Waterworks.—*Natchez, Adams Co., Miss.*; tile and pipe set 1 meter N. of S. fence of inclosure of Natchez waterworks pumping station, under the hill. It is  $1\frac{1}{2}$  meters below pipe leading out of ground to SW. corner of settling basin. It is in line with the fence leading downstream from said inclosure along the E. side of the road leading to ice plant. (Note 48, p. 130.)

B.eM. N. (Ewens 1886).—At *Natchez, Adams Co., Miss.*; top of head of boat spike driven horizontally into second mortar course above ground, 0.75 meter (or  $2\frac{1}{2}$  feet) above the downstream river corner of the brick building owned by the Natchez Ice Co. B. M. is on the river face of the building, and has the letter N cut in the second brick above the spike. This was formerly used as one of the bench marks for the U. S. gauge at Natchez, but its settlement had caused it to be abandoned for some years. (See also App. 8, Report for 1899, p. 677.)

T. B. M. 77.—At *Natchez, Adams Co., Miss.*; top of 40d wire nail driven vertically in bench cut on upstream root of a 10-inch chinaberry tree, 0.9 meter above upstream river corner of brick building on which is situated B. M. 3 (Babbitt 1874). Useful as Natchez gauge B. M.

B.eM. 3 (Babbitt 1874).—At *Natchez, Adams Co., Miss.*, long used as gauge B. M. for Natchez U. S. e Engr. gauge. It is marked thus—V cut on iron door sill, 0.065 meter back from river end of sill, on upstream side of brick building known as the Ray & Grant building, under the hill. Building is on the river side of the street and electric railroad track to the ferry, and below the street leading to coal office and elevator. B. M. is 3.5 meters toward river from upstream land corner of the building. (See also App. 8, Report for 1899, p. 677.)

B.eM. A. (Ewens 1892).—At *Natchez, Adams Co., Miss.*, one of the Natchez U. S. Engr. gaugee B.eMs. Is top of head of a large nail driven horizontally into third mortar course above floor of gallerye of John Contis' building, standing on the E. or land side of the street and electric railroad track leadinge



up the hill from the ferry, Natchez, Miss. It is 45 meters above or N. of B. M. 3 (Babbitt 1874). Nail is now flush with wall. It is 1.35 meters or  $4\frac{1}{2}$  feet to the left of the center of the center door to said building. This door is No. 79. Building is used as a boarding house by Miss E. Mason.

P. B. M. 1.—*Natchez, Adams Co., Miss.*, for United States Engr. gauge, is stone and pipe in middle park on the bluff at head of street leading up from "under the hill." It is near a large red-oak tree and in line with the N. side of Bontura alley, which is midway between and parallel with Main and State streets. The cap on the pipe has the raised letters U. S. E. B. M. around a raised knob in the center. (See also App. 8, Report for 1899, p. 677.)

LXIV (C. & G. S.)=Palo Alto Triangulation Station.—*Palo Alto, Concordia Parish, La.*; a cross on top of iron screw pile on R. R.,  $1\frac{1}{4}$  miles above the court-house at Vidalia, La., on Palo Alto plantation belonging to D. Minor, of Natchez, Miss. It marks the Triangulation Station Palo Alto of the C. & G. S. It stands in turn row, 256 meters back of levee, 7 meters back of road where it turns from back end of an old barn to toward upriver. It is 155 meters back of downstream land corner of old barn. It is 64 meters S. of the western one of two old cisterns where stands an old double bushy tree. It is  $170^{\circ}$ —44 meters from a 30-inch pecan tree which is the upstream one of a scattering grove of six. It is opposite a curve in the main levee, and 15 meters S. of the western prolongation of a spur of levee leading toward the river. It is approximately  $110^{\circ}$  from the old marine hospital on bluff above Natchez, Miss. (See also App. 8, Report for 1899, p. 608.)

B. M.  $1\frac{3}{4}$ .—Near *Vidalia, Concordia Parish, La.*; stone post standing on W. side of ditch, W. of road, 7 meters W. of base of levee, about 20 meters below an angle in levee and 141 meters below square angle in levee, at junction with old levee, where new levee turns W. to go upriver. It is on land of D. Minor, of Natchez, Miss. An 8-inch pecan tree stands 14 meters below the stone on the W. bank of the ditch, and is blazed with a triangle facing the stone. It is the first tree below the corner of levee above mentioned.

B. M.  $1\frac{3}{4}$ .—*Vidalia, Concordia Parish, La.*; flat stone and new pipe standing on the NE. edge of ditch between two roads 96 meters SE. from the junction of these two roads with road running NE. and SW. parallel with the levee. It is 250 meters S. of prominent angle in levee, which is at upper end of a clump of brush and trees in low ground along the levee. It is  $32^{\circ} 10'$ , 325 meters from junction of levees on R. B., on Dr. Carter's plantation. Cap was gone off old pipe. A new pipe was placed over stone. Its cap is only 3 inches above ground. Set the old pipe in the corner of the hole as a finder for the new. It is  $\frac{1}{2}$  meter S. of the new.

T. B. M. 84.—Near *Vidalia, Concordia Parish, La.*; top of a boat spike driven vertically into bench cut on the root on inner or land side of 3-foot elm tree, on R. B. on land of F. D. Brown (Minorca plantation) near foot of old Lake Concordia, and about 6 miles above Vidalia, La. It is 28 meters back of base of levee and 4 meters outside of fence, 4 meters below old Minorca store building,  $4\frac{1}{2}$  meters out from P. B. M. Minorca. Tree is just back of head of willow and cottonwood bar, and back of and 40 meters below H. W. gauge No. 60.

P. B. M. Minorca.—Near *Vidalia, Concordia Parish, La.*; tile and pipe set  $\frac{1}{2}$  meter back of fence in small garden, 4 meters below old Minorca store building, on Minorca plantation owned by F. D. Brown, on R. B. opposite head of willow and cottonwood bar, near foot of old Lake Concordia. It is 44 meters back of top of levee, and about 40 meters below, and 65 meters back of H. W. gauge No. 60. (Note 48, p. 130.)

P. B. M. Sycamore.—Near *Bullitt Bayou, Concordia Parish, La.*; tile and pipe set  $1\frac{1}{4}$  meters back of fence, 25 meters back of inner base of levee, 21 meters above the Sycamore store, on Sycamore plantation owned by A. T. Caloit, run by H. W. Carter, agent, on R. B. It is halfway between store and gate to the road leading back to the plantation house. It is 500 meters above a point opposite foot of Vidal Island. (Note 48, p. 130.)

T. B. M. 92.—Near *Bullitt Bayou, Concordia Parish, La.*; top of boat spike driven vertically into bench cut on root on inner or land side of a 30-inch lone thorn tree on the property of A. H. Gillaspay, near river side of Vidal Island and near its middle from head to foot. Tree is at inner base of levee, 35 meters from and a little below Potowamac gin. Tree is 19 meters SW. of P. B. M. Vidal.

P. B. M. Vidal.—Near *Bullitt Bayou, Concordia Parish, La.*; tile and pipe on the property of A. H. Gillaspay, about the middle of river side of Vidal Island. It is 30 meters back from bank of old Lake Concordia, and about 300 meters above colored Baptist church. It is in line with the lower wall of the Potowamac gin, and 27 meters out from same. It is 8 meters back of base of levee, 1 meter out from

fence,  $2\frac{1}{2}$  meters below cotton storehouse, and 19 meters NE. of a lone 30-inch thorn tree bearing T. B. M. 92 and blazed with a triangle facing the pipe. (Note 48, p. 130.)

T. B. M. 93.—Near *Bullitt Bayou, Concordia Parish, La.*; top of boat spike driven vertically into bench cut on the outer or S. root of 24-inch pecan tree standing in line of fence at upper end of Vidal Island. It is about  $\frac{7}{8}$  mile by road westwardly from main levee, 40 meters N. of bank of Lake Concordia, and about 360 meters below or westwardly from the uppermost cabin on island, and about 125 meters eastwardly from another cabin.

T. B. M. 95.—Near *Bullitt Bayou, Concordia Parish, La.*; top of boat spike driven vertically into bench cut on root of levee side of a 24-inch pecan tree, standing in line of fence, back of road, back of levee. It is 25 meters below, or W. of, B. M.  $1\frac{1}{4}$ <sup>9</sup>.

B.eM.  $1\frac{1}{4}$ <sup>9</sup>.—Near *Bullitt Bayou, Concordia Parish, La.*; tile and new pipe standing 2 meters back of fence line in field on N. side of road N. of levee. It is 143 meters above junction of levees and 85 meters below where road leads back through Grasmere plantation. It is 34 meters below one and 25 meters above another blazed 2-foot pecan tree in fence line. The lower or westerly one bears T. B. M. 95. It is 700 meters back or N. of former Good Hope Ldg., now abandoned on account of sand bar in front. It is 1 400 meters up old levee from the present Bullitt Bayou Ldg.

T. B. M. 96.—Near *Bullitt Bayou, Concordia Parish, La.*; top of 30d boat spike driven vertically into bench cut on S. root of a 3-foot pecan tree standing 1 meter outside of fence, and 475 meters below angle in levee, and 860 meters above B. M.  $1\frac{1}{4}$ <sup>9</sup>. This tree is the lower one of two large pecans standing 25 meters apart.

T. B. M. 98.—Near *Mabel, Concordia Parish, La.*; top of 30d boat spike driven vertically into center of 6-inch honey locust stump standing at back or NW. edge of borrow pit (water in it) and 24 meters toward angle in levee from P. B. M. Vaucuse.

P. B. M. Vaucuse.—Near *Mabel, Concordia Parish, La.*; tile and pipe set 1 meter SE. of fence around yard of a large double cabin, 5 meters NE. of center road leading back across the Vaucuse plantation; George Kelly, owner; William Dicks, agent. It is 50 meters W. of inner base of levee at prominent angle where it turns upriver. It is about 400 meters up levee from prominent angle at junction with old levee where it runs out to river. There is a large cluster of cabins below this road which passed just below the B. M. (Note 48, p. 130.)

B.eM.  $1\frac{1}{4}$ <sup>7</sup>.—Near *Mabel, Concordia Parish, La.*; flat stone and pipe in field on James Branham's plantation, 210 meters N. of old road along Lake St. John. It is back of the present Gibson Ldg., and directly back of where landing road crosses levee. It is 226 meters back of base of levee.

T. B. M. 103.—Near *L'Argent, Tensas Parish, La.*; top of wire nail driven vertically into bench cut on root on levee side of 30-inch pecan tree, standing in road, 2 meters outside of fence, and 6 meters back of base of levee on "Hole-in-the-Wall" plantation. It is just back of the former "Hole-in-the-Wall" Ldg., now obsolete on account of willow bar in front. It is 144 meters above the "Hole-in-the-Wall" store, and 470 meters above a prominent angle in levee. Triangle blazed on tree above nail.

B.eM.  $1\frac{1}{3}$ <sup>6</sup>.—Near *L'Argent, Tensas Parish, La.*; stone post standing  $\frac{2}{3}$  meter above one fence and  $2\frac{3}{4}$  meters out from another in small stable lot, below cabin of Amos Daniel (colored), on Monona plantation, run by J. A. Turpin. It is 200 meters below the old Monona Ldg., now obsolete, 40 meters back of levee, and 150 meters above road running back to New Quarters Lake, past Mr. Turpin's house. It is 840 meters below where levee crosses L'Argent Bayou. Rod was held on S. edge of hole in stone, it being highest part of stone. Stone is about 1 foot above ground.

T. B. M. 104.—Near *L'Argent, Tensas Parish, La.*; top of 30d boat spike driven vertically into bench cut on S. root of a 5-foot cottonwood tree, standing on slope of E. bank of L'Argent Bayou, back of road back of levee. It is 118 meters toward the river and landing from L'Argent P. O., La.

P. B. M. Fairchilds Island.—*Fairchilds Island, Tensas Parish, La.*; tile and pipe on L. B. on upper half of Fairchilds Island, on Fairchilds Island plantation, property of Britton and Kuntz Bank, of Natchez, Miss.; Shelly Baker, agent. It is about 300 meters above stone line 126, 75 meters back of top of L. B. of river, on line of lower face of a large gin and 2 meters SE. of corner of same. (Note 48, p. 130.)

B.eM.  $1\frac{1}{3}$ <sup>2</sup>.—Near *Waterproof, Tensas Parish, La.*; stone post in field on R. B. on Sunnybank plantation, 355 meters E. of main levee, 155 meters W. of an old levee. It is  $\frac{3}{4}$  mile below the lower end of the town of Waterproof, La. Stone stands 18 inches above the ground, but appears solid. There are three cisterns around stone; one W. of N., 16 meters; one W. of S., 38 meters; and one ENE., 32 meters. Rod held on highest part of stone, which is the E. part of the letter S.



LXXI (C. & G. S.).—*Waterproof, Tensas Parish, La.*; bottom of square cavity cut in top of marble post, 5 inches square and 2.5 feet long, buried in ground on left of and quite near the steps leading to the front entrance of Mr. A. P. Martin's residence at Waterproof, Tensas Parish, La. It is the lower residence on the street along the base of the levee, and is 250 meters below a lane leading back into the country past a church on its N. side and at upper edge of town of Waterproof, La.

P. B. M. Melwood.—Near *Goldman, Tensas Parish, La.*; tile and pipe in the yard surrounding the old Melwood plantation house on R. B., owned by G. C. Goldman, and 700 meters back, along levee, from Goldman Ldg., La., 290 meters below square angle in levee where it turns N. to continue up river. It is in SE. or upstream corner of yard, 0.8 meter from either fence. (Note 48, p. 130.)

T. B. M. 114=T. B. M. 65a for H. W. Gauge No. 65.—Near *Goldman, Tensas Parish, La.*; top of levee B. M. pipe at junction of levees back of Goldman Ldg., La. Rod held on W. edge of pipe.

P. B. M. Kempe Bend.—Near *Goldman, Tensas Parish, La.*; tile and pipe set in field, cleared in woods, on R. B., on property of G. C. Goldman, and known as Miller's ridge. It is about  $2\frac{1}{4}$  miles above Goldmans Ldg., La., 800 meters above upper road crossing to levee to Kempes Ldg. It sets 3 feet SW. of SW. corner of fence surrounding small cabin occupied by Isaac Kennedy (colored). It is 98 meters back of base of levee and 400 meters below junction of new loop with old levee. (Note 48, p. 130.)

T. B. M. 120.—Near *Goldman, Tensas Parish, La.*; top of 30d boat spike driven vertically into bench cut on SW. corner of a 6-foot triple cypress tree, standing  $4\frac{1}{2}$  meters N. of P. B. M. Stackhouse.

P. B. M. Stackhouse.—Near *Goldman, Tensas Parish, La.*; tile and pipe set on top of S. bank of a bayou,  $\frac{1}{2}$  meter W. of a wire fence,  $4\frac{1}{2}$  meters S. of two large cypress trees, standing at the water's edge in bayou, blazed with triangles facing pipe. It is on property of Mr. Stackhouse, rented by Charles Miller (colored), who lives in the house on same bank of bayou, 64 meters back of pipe. It is 63 meters back of inner base of levee, about 80 meters above prominent angle in the levee. It is on R. B. in upper part of Kempes Bend and 1 500 meters below the present Beelers Ldg. It is  $2\frac{1}{2}$  miles below the plantation residence of Mr. Frank C. Curry on the Villa Clara plantation and former Beelers Ldg. (Note 48, p. 130.)

No. 297 or LXXIII (C. & G. S.).—In *Tensas Parish, La.*, near *Rodney, Jefferson Co., Miss.*; bottom of square cavity in top of 5-inch square, 2.5 feet long marble post buried in ground on the left of, and quite near, the steps leading to the front entrance of Mr. Frank C. Curry's residence on the Villa Clara plantation, Tensas Parish, La., at former Beelers Ldg. The characters U. S. B. M. 1881 are cut on top of post around the cavity. Post stands about 8 inches above ground.

B. M.  $1\frac{3}{4}$ .—In *Tensas Parish, La.*; between *St. Joseph, La.*, and *Rodney, Miss.*; stone post, corners battered off, standing in back yard of Mr. Frank C. Curry's Villa Clara plantation residence. Rod held on highest point of stone, which is its NE. corner.

B. M.  $1\frac{1}{4}$ .—Near *St. Joseph, Tensas Parish, La.*; flat stone and pipe on R. B. in field on land of George Wallace. It is 15 meters in front of base of new levee, on upper slope of ramp where road crosses levee. It is 360 meters above house of George Wallace. A large barn outside levee stands in field about 100 meters above the B. M.; it is about 1 mile above the head of Rodney Island and  $1\frac{3}{4}$  miles below the lower St. Joseph Ldg.

No. 291 (C. & G. S.).—Near *St. Joseph, Tensas Parish, La.*; center of head of copper bolt leaded horizontally in the N. face of brick chimney of gin house on Duck Pond plantation, owned by Capt. Robert Worrell. It is in fifth brick from NE. edge of the chimney, and in seventh course below the projecting course. The gin is about 2 000 meters below the town of St. Joseph, La., and 500 meters back from St. Joseph Lower Ldg.

B. M. A (1892)=St. Joseph M. R. C. Gauge B. M.—*St. Joseph, Tensas Parish, La.*; top of head of large boat spike driven horizontally into W. side of large cottonwood tree bearing high-water section of gauge and is 40.89 feet on gauge. This spike was set beside the old one in November, 1900, at same elevation, as old one was grown over. This is the lower one of eleven large cottonwoods nearly in a row along outside of spur levee.

P. B. M. Worrell.—*St. Joseph, Tensas Parish, La.*; tile and pipe on R. B. on property of Capt. Robert Worrell, just back of and a little above lower St. Joseph Ldg., La. It is on inner slope of small spur levee, 145 meters above warehouse and gauge bulletin. It is  $1\frac{1}{2}$  meters S. of fence crossing levee and leading back to Captain Worrell's residence. A blazed 30-inch pecan tree stands 5 meters N. of pipe on

inner slope of levee, a 4-foot blazed cottonwood stands at outer base of levee, 13 meters SE. of pipe, and is the upper one of eleven large cottonwoods nearly in a row along the outside of spur levee. Another blazed 4-foot cottonwood stands at the junction of fences 18 meters SW. of pipe. (Note 48, p. 130.)

P. B. M. Woodland.—Near *Rodney*, in *Claiborne Co., Miss.*, opposite *St. Joseph, Tensas Parish, La.*; tile and pipe on L. B. opposite a point about midway between the upper and lower *St. Joseph Ldgs.* On Woodland plantation about 250 meters below the house of Neal-Bailey (colored). It is 2 feet outside of fence of small inclosure, 24 meters above a small cabin, 128 meters back of top of L. B. of river. A blazed 30-inch pecan tree stands E. of S., 32 meters, a blazed 30-inch pecan stands N. of W. 62.5 meters, and a blazed 14-inch honey locust tree stands S. 18.5 meters. (Note 48, p. 130.)

T. B. M. 136.—*St. Joseph, Tensas Parish, La.*; top of 30d boat spike driven vertically into bench cut on S. root of a 30-inch soft maple tree standing just back of the SW. corner of the old Masonic Hall in *St. Joseph, La.*

P. B. M. *St. Joseph*.—*St. Joseph, Tensas Parish, La.*; tile and pipe set in court-house square in lower end of town of *St. Joseph, La.* It is in outer middle half of square, 57 meters back of levee in line with a 36-inch gum tree and near door of old Masonic Hall. It is 10 meters from rear steps of Masonic Hall, and  $2\frac{1}{2}$  meters from said gum tree. A 30-inch soft maple tree bearing T. B. M. 136 stands 10 meters SE. of pipe. (Note 48, p. 130.)

No. 286.—Near *St. Joseph, Tensas Parish, La.*; center of hole (the copper bolt being gone) in center of face of fourth brick from NE. corner, twenty-third course from ground, of brick chimney of gin house on Panola plantation, owned by J. M. Gillespie. It is about 2 000 meters above the town of *St. Joseph, La.*, and about 1 500 meters below where levee crosses Bayou Bruin. (Note 48, p. 130.)

P. B. M. Bruin.—Near *St. Joseph, Tensas Parish, La.*; tile and pipe on R. B., set  $\frac{1}{2}$  meter S. of fence around garden on W. side of the Bruin Bayou store, 1.3 meters E. of the corner of fence on E. side of lane leading in a northwesterly direction to go to Bruin Island. It is 25 meters W. of Bruin Bayou store, run by Geary Neal, on Chetwind plantation. It is 118 meters W. of square angle in levee, 1 400 meters back of Claggett Ldg. It is 61 meters NE. of NE. bank of Bayou Bruin, and 1 600 meters along levee above the Panola gin. (Note 48, p. 130.)

T. B. M. 141.—Near *St. Joseph, Tensas Parish, La.*; top of boat spike driven vertically into bench cut on SE. root of a 15-inch gum tree standing on N. slope of levee, 250 meters below junction of levees back of Claggett Ldg.

P. B. M. Botany Bay.—Near *St. Joseph, Tensas Parish, La.*; tile and pipe set on top of N. bank of Catfish Bayou, on Botany Bay plantation, on R. B., owned by Mr. James Curry. It is 32 meters S., or downstream, from SE. corner of gin, and 34 meters W. of inner base of levee, 7 meters W. of gate leading into gin-house yard from ramp over levee of road leading to Bondurant Ldg. It is about 1 mile from river along road along S. side of Catfish Bayou. It is 1 meter NE. of junction of wire fences. It is about E. of Mr. Curry's house, which stands on bank of Lake Bruin. (Note 48, p. 130.)

P. B. M. Winter Quarters.—Near *Hard Times Landing, Tensas Parish, La.*; tile and pipe on Winter Quarters plantation on R. B., owned by J. M. G. Gillespie. It is about 2 miles NE. of Lake Bruin, and  $\frac{3}{4}$  mile back of bank of river, 1 mile above a prominent angle in levee,  $1\frac{1}{2}$  miles below junction of old and new levees. It is 8 meters back of base of levee, 3 meters S. of ditch, and 10 meters above center of road that runs back to plantation residence and store, same road crosses levee and runs straight out to river to a point  $\frac{1}{4}$  mile below end of levee and U. S. Light. (Note 48, p. 130.)

P. B. M. Hard Times.—Near *Hard Times Landing, Tensas Parish, La.*; tile and pipe set at innere base of small spur levee, and 3 meters SE. of another spur levee running along S. bank of Lake *St. Joseph*. It is 180 meters back of junction of levees back of Hard Times Ldg., La., on Hard Times plantation, owned by D. Morris. It is 35 meters back of cabin occupied by Nick Walker (colored), and about 30 meters E. of the line of the Nutt plantation (line is not marked). (Note 48, p. 130.)

T. B. M. 157.—Near *Hard Times Landing, Tensas Parish, La.*; top of a 20d boat spike driven vertically into bench cut on SE. root of a 2-foot sycamore tree standing 8 meters below old spur levee and 13 meters above P. B. M. 272. Tree blazed with a triangle facing the pipe.

No. 272 (C. & G. S.)—Near *Hard Times Landing, Tensas Parish, La.*; tile and pipe put in in 1892 to replace old C. & G. S. P. B. M. 272 which was broken, the connection being by ordinary levels. It is on the Hard Times plantation, owned by D. Morris, 135 meters back of his residence, back of the old landing. It is 22 meters below the old spur levee leading back from the old landing to junction of



levees, on lower bank of Lake St. Joseph. It is at upper edge of a small clump of black locusts, 8 meters toward river and 13 meters below a small cabin. A 2-foot sycamore tree stands NNW. 13 meters and bears a triangle blazed facing the pipe, and also bears T. B. M. 157. It is 380 meters E. of junction of levees back of Hard Times Ldg. The cap on the pipe is of the B. M. form which has a square in center with the letters U. S. B. M. around it. (Note 48, p. 130.)

T. B. M. 161.—Near *Hard Times Landing, Tensas Parish, La.*; top of boat spike driven vertically into bench cut on outer or E. root of a 3-foot pecan tree, in woods, 23 meters back of base of levee, in upper half of a piece of woods from which the brush has been cleared away, and once used as a levee camp ground. Same tree bears levee B. M. or U. S. B. M. No. 133. A large square blaze is cut on levee side of tree. It is just 3 miles, measured along the levee, above junction of levees back of Hard Times Ldg.

Levee B. M. 133.—Near *Hard Times Landing, Tensas Parish, La.*; top of head of galvanized spike driven horizontally into levee face of a 3-foot pecan tree bearing T. B. M. 161. Copper plate beside spike gives elevation 101.34, which is feet above Cairo datum.

P. B. M. Bland.—Near *Point Pleasant, Tensas Parish, La.*; tile and pipe set 1 meter outside of fence, at inner base of levee, and approximately on the plantation line between Buck Ridge and Limerick. The Buck Ridge place is owned by Lucien Bland, the Limerick is run by Harry R. Guthrie, agent. It is 120 meters below angle in the levee where it turns from WSW. to E., and on the lower side of the neck of land below Lake Palmyra, and about 2 miles NW. of Ship Bayou Ldg. (Note 48, p. 130.)

T. B. M. 170.—Near *Point Pleasant, Tensas Parish, La.*; top of boat spike driven vertically into bench cut on SW. root of a lone 40-inch cottonwood tree standing 32 meters back or S. of inner base of levee on Limerick plantation, run by Harry R. Guthrie, agent. It is about  $\frac{3}{4}$  mile back from Limerick Ldg., on Lake Palmyra, and 50 meters W. of a cabin occupied by Neal Brooks (colored).

P. B. M. McMillan.—Near *Point Pleasant, Tensas Parish, La.*; tile and pipe set in corner of cotton field on the Burn plantation, owned by Dr. McMillan. It is about 1 mile above the lower mouth of Lake Palmyra, and 135 meters back of bank of lake at Burn Ldg. It is 2 feet inside of fences, 4 meters back of base of levee, and 10 meters above or W. of center of road that crosses the levee and runs to plantation residence. (Note 48, p. 130.)

T. B. M. 175.—Near *Ashwood, Tensas Parish, La.*; top of boat spike driven vertically into bench cut on the NE. root of a  $3\frac{1}{2}$ -foot water oak tree on the property of Perkins estate, known as Somerset plantation. It is about  $\frac{1}{4}$  mile back of Ashwood Ldg., La., store and post-office, which is on the bank of Lake Palmyra, and 170 meters back of the levee. The tree is the oak that is nearest the NW. corner of a large grove of inclosed oak trees, and is about 50 meters E. or toward river or lake, from the house of J. G. O'Kelly. It is 26 meters E. of P. B. M. Somerset.

P. B. M. Somerset.—Near *Ashwood, Tensas Parish, La.*; tile and pipe set on the Somerset plantation on R. B. of Lake Palmyra, 440 meters back of Ashwood Ldg. store and post-office, La., and 190 meters back of levee. It is in the NE. corner of lot surrounding the house of J. G. O'Kelly, and 3 feet from either fence. A large grove of inclosed oak trees lies between lot and levee. (Note 48, p. 130.)

T. B. M. 176.—Near *Ashwood, Tensas Parish, La.*; top of 20d boat spike driven vertically into bench cut on the E. root of a 30-inch gum tree standing in fence line at upper end of gate in front of cabin occupied by Joseph Handy (colored) on Somerset plantation, 20 meters back of inner base of levee, 40 meters above angle in same, and about 1 200 meters above Somerset or Ashwood Ldg. Tree bears a triangle blazed above B. M.

T. B. M. 180.—Near *King, Madison Parish, La.*; top of boat spike driven vertically into bench cut on SE. root of 3-foot pecan tree, standing in field on Leona plantation, owned by H. C. Collins. It is directly back of Collins Ldg., and about 600 meters below New Carthage Ldg., 44 meters back of base of levee, and 9 meters back of fence that surrounds Collins's house. It is 10 meters W. of P. B. M. Leona; a blazed triangle is on tree over B. M.

P. B. M. Leona.—Near *King, Madison Parish, La.*; tile and pipe set on property of H. C. Collins, and known as the Leona plantation, and is directly back of Collins Ldg. and 600 meters below New Carthage Ldg. It is in SW. corner of Collins's yard,  $2\frac{1}{2}$  feet from either fence, and 44 meters back of base of levee. A lone 3-foot pecan tree that bears T. B. M. 180 stands in field 10 meters W. or below B. M. (Note 48, p. 130.)

T. B. M. 183.—Near *King, Madison Parish, La.*; top of a 30d boat spike driven vertically into bench cut on SE. root of a  $3\frac{1}{2}$ -foot pecan tree standing 12 meters back of base of levee, and on bank of Bayou Vidal. It is 70 meters above angle in levee, which is 1 500 meters above the prominent angle in levee opposite King P. O., La. It is 110 meters above cabin, occupied by Joseph Gater (colored), on House plantation owned by Henry House.

P. B. M. Chelula.—Near *King, Madison Parish, La.*; tile and pipe set 45 meters back or N. of center of levee, 5 meters above or E. of center of road which crosses levee on a very large ramp,  $2\frac{1}{2}$  miles above King P. O., La., 2 miles below a point on the levee opposite the foot of Diamond Island. It is on the S. bank of a ditch, 10 meters SE. of a small bridge over this ditch. A 12-inch cottonwood stands SE. 5 meters, with a blazed triangle facing the pipe. It is at the edge of scattering timber, brush, and vines. It is 465 meters above where fence crosses levee at upper or E. side of a long field along SE. bank of Bayou Vidal, 622 meters above angle in levee, where it leaves Bayou Vidal, opposite cabin occupied by Link Courteney (colored). B. M. is on Chelula plantation owned by T. P. Kelly, of King P. O., La. (Note 48, p. 130.)

No. 232 (C. & G. S.).—In *Madison Parish, La.*; between *King* and *Griffin*, center of head of copper bolt leaded horizontally in the E. chimney of dwelling house of O. Christmas, on Crystal Springs plantation, Madison Parish, La. The brick is the second from the SE. edge of the chimney, and is in the twelfth course from the ground. The house is 200 meters back from the base of the levee, and about 1 mile back of the R. B. of river and about 5 miles below Warrenton, Miss., by river, and 3 miles below present Bedford Ldg. by the levee.

T. B. M. 193.—Near *Griffin, Madison Parish, La.*; top of boat spike driven vertically into bench cut on SW. root of a 30-inch pecan tree standing 4 meters N. of P. B. M. Griffin.

P. B. M. Griffin.—Near *Griffin, Madison Parish, La.*, is tile and pipe set in field on property of Muench & Sons,  $\frac{3}{4}$  mile back of L. B. of river, about 1 mile below the present Bedford Ldg. along the levee. It is 755 meters in a S. westerly direction and along levee from a right angle in same. It is 21 meters back or N. of base of levee at another angle in same. It is 4 meters S. of blazed 30-inch pecan tree bearing T. B. M. 193, and 86 meters E. of another 30-inch pecan tree that stands at base of levee. It is near former B. M.  $1\frac{1}{4}$  which could not be found. It is about  $\frac{1}{2}$  mile S. of Griffin P. O. and Bedford store. (Note 48, p. 130.)

T. B. M. 194.—Near *Griffin, Madison Parish, La.*; top of boat spike driven vertically into bench cut on SE. root of a lone 30-inch pecan tree standing in field near right angle in levee on property of Muench & Sons and 320 meters back of L. B. of river,  $\frac{1}{2}$  meter below Bedford Ldg. Tree is 3 meters N. of one levee, and 50 meters SW. of the other. Tree has triangle blazed on it over the B. M. It is  $\frac{1}{2}$  mile SE. of Griffin P. O., La., or Bedford store.

T. B. M. 197.—Near *Griffin, Madison Parish, La.*; top of boat spike driven vertically into top of 3-foot cottonwood stump standing at back edge of barrow pit, 20 meters back of base of levee, at angle at junction with old levee. Spike is near levee edge of stump. It is 2 miles above Bedford Landing and 3 miles below P. B. M. Martin along new levee.

P. B. M. Martin.—Near *Delta, Madison Parish, La.*; tile and pipe set on R. B. on property of Anno Martin, about 3 000 meters below Grants Canal, in Delta, La. It stands  $\frac{3}{4}$  meter S. of cabin occupied by Jack Miller, and 5 meters N. of corner gallery, and about 20 meters N. of new levee (now under construction), and 78 meters W. of old levee, and about 150 meters above house of Ann Martin. It stands between 2 young peach trees, and 14 meters N. of a 12-inch pecan tree. It is about 200 meters above H. W. gauge 75. (Note 48, p. 130.)

Range stone for SW. Base.—At *Delta, Madison Parish, La.*; a stone post 6 inches square and  $3\frac{1}{2}$  feet long. It has  $\frac{1}{4}$ -inch copper bolt with a cross on it in center for B. M. It is 85.12 feet from SW. Base in prolongation of the line NE. Base—SW. Base. It bears the characters U. S. C. S. and 1878 on it.

SW. Base=B. M.  $1\frac{3}{4}$ .—At *Delta, Madison Parish, La.*; a limestone monument 4 feet long, dressed to  $14 \times 14$  inches at top, with a  $\frac{1}{4}$ -inch copper bolt with a cross on it in center of top. It marks the SW. end of the Delta Base line of the C. & G. S. and bears the characters U. S. C. S. and 1878 on it. It is at the SW. end of the town of Delta, La., and just across the V. S. and P. R. R. (and 10 meters from it), and in prolongation of the S. side of Main street. It is on the SE. side of the county road, or Main st. prolonged, and 390 meters below Grants Canal. Stone is 6 inches above ground. (See also App. 8, Report for 1899, p. 636.)

P. B. M. Delta.—At *Delta, Madison Parish, La.*; tile and pipe set in the yard surrounding the section house (No. 7) of the V. S. and P. R. R. in the town of Delta, La. It stands near NE. corner of house in line with front edge of gallery and 2 feet from corner of same. It is 62 meters below nearest corner of round house, 200 meters above Delta Point station, and 50 meters back of base of levee, and 11 meters S. of main track of R. R. A 12-inch mulberry tree stands 4 meters NW. (Note 48, p. 130.)



NE. Base.—Near *Delta, Madison Parish, La.*; a limestone monument 4 feet long, dressed to 14 x 14 inches at top with a  $\frac{1}{4}$ -inch copper bolt with a cross on it in center of top. It marks the NE. end of the Delta Base line of the C. & G. S. and bears the characters U. S. C. S. and 1878 on it. It is on the point above Delta, directly in the line of Main street prolonged, and 80 meters SW. of R. R. incline. It is 6 inches underground. A 3-inch iron pipe 1 foot above ground, stands 5 feet N., an iron switch bar stands 5 feet W., as finders for the stone. The copper bolt has been somewhat battered, and the U. S. Engr. office at Vicksburg cut a small square on stone 0.01 meter N. of the bolt and used it for elevation. It is 0.5 millimeter higher than top of bolt. (See also App. 8, Report for 1899, p. 636.)

P.B. M. B.—Near *Vicksburg, Warren Co., Miss.*; the intersection of a cross in the end of a copper bolt leaded horizontally into N. end of the brick pumping station of the Vicksburg, Miss., water works. The building is on L. B. of river, under the hill, and about 1.6 kilometers S. of the city limits of Vicksburg. The bolt is in the first course above the water table and in the third brick from the NW. corner of the building. (See also App. 8, Report for 1899, p. 636.)

M. R. C. 197.—At *Kleinston, Warren Co., Miss.*; copper bolt in marking stone, standing in open ground at Kleinston, below Vicksburg, Miss. It is 30 meters E. of incline to Delta transfer boat. It is between E. and W. road on N., and an old broken levee on S., extending back to high ground. It is 1 565 meters above Refuge Oil mill, 1 000 meters above Waterworks, and 1 178 meters below compress. It is nearly W. of R. R. bridge where P. B. M. Pelican is situated. It has three pieces of R. R. rail around it for protection. (See also App. 8, Report for 1899, p. 637.)

P. B. M. Pelican.—At *Kleinston, Warren Co., Miss.*; top of copper bolt leaded vertically into top surface of eighth coping stone from the top of the S. wing of the W. abutment of the plate girder bridge of the A. & V. R. R. over street or main road from furniture factory to Kleinston. This bridge is on the curve about midway between the Y. & M. V. R. R. and the Yazoo Canal. It is the main route of all trains from the A. & V. R. R. depot to the incline of the Mississippi and Louisiana transfer to Delta, La. This stone is about on the level with the top surface of the bearing stone which carries the plate girders of this bridge. The bolt is in the middle of the stone E. and W., being 0.34 meter from each edge E. and W., and 0.10 meter N. of its S. edge. Bolt has the letters U. S. P. B. M. cut in stone around it. The B. M. is named for the big transfer boat of the Mississippi and Louisiana Transfer Company, plying between Kleinston, Miss., and Delta, La. (Note 48, p. 130.)

#### DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN AITKIN AND GRAND RAPIDS, MINN., 1902.

[These descriptions are published in the Report of the Chief of Engineers for 1903, Supplement, pages 78 and 79, and are republished here, only those changes being made which are necessary for indexing.]

P. B. M. Court-house.—*Aitkin, Aitkin Co., Minn.* (See App. 8, Report for 1899, p. 785.)

P. B. M.  $\frac{3}{4}$ s.—*Aitkin, Aitkin Co., Minn.* (See App. 8, Report for 1899, p. 785.)

P. B. M. Lower Base.—Near *Aitkin, Aitkin Co., Minn.* (See App. 8, Report for 1899, p. 785.)

B.M.  $\frac{3}{4}$ s.—Near *Aitkin, Aitkin Co., Minn.* Not described.

P. B. M. Cut-off.—Tile and pipe, marked 1898, on right bank on N. side of Rice River Cut-off, 11 meters N. of cut-off, center of narrow strip of bank. Basswood, 22 inches diameter, N. 5 feet, blazed with a triangle. Cut-off is about 5 miles above *Aitkin, Minn.*

U. S. E. B. M. 202.—A flat stone and iron pipe, established by St. Paul office, in center of road, 10 meters N. of gate to river and SW. of corner of house owned by Gasper Vallencourt, opposite to gate in front of house, about  $4\frac{1}{2}$  miles above *Aitkin, Minn.*

P. B. M. Biggar.—Tile and pipe, marked 1898, on E. side of State road, 1 meter from fence; 10 meters S. of junction of private road at N. W. corner of Biggar Brothers' field, midway between two elm trees blazed with a triangle. P. B. M. is 125 meters from R. B. of river and 120 meters W. of Biggar's house, about 7 miles above *Aitkin, Minn.*

P. B. M. Sutton.—Near *Waldeck, Aitkin Co., Minn.*; tile and pipe, marked 1898, 16 meters N. of NW. corner of Sutton's house, 1 meter W. of fence along E. side of State road, 6 meters E. of center of road, 28 meters from R. B. of river, 20 meters below gully on E. side of road, 10 miles above *Aitkin, Minn.*

U. S. E. B. M. 209.—Near *Waldeck, Aitkin Co., Minn.*; flat stone and iron pipe 3 meters from R. B. of river, near middle of first bend below Waldeck post-office, 39 meters W. of Dan Smith's house, a small white frame; 9 meters E. of E. fence along State road near where road turns W. B. M. was established by St. Paul office. It is about 11 miles above *Aitkin, Minn.*

P. B. M. Waldeck.—*Waldeck, Aitkin Co., Minn.*; tile and pipe, marked 1898, 1 meter W. of E. fence along State road, on line with E. and W. fence 4 meters N. of Waldeck's house and post-office, 30 meters NW. of house, 52 meters from R. B. of river, 12 miles above Aitkin, Minn.

P. B. M. Fowlds.—Near *Waldeck, Aitkin Co., Minn.*; tile and pipe, marked 1898, 21 meters from R. B. of river, 66 meters NE. of Mrs. Bertha Fowlds's house, 8 meters SW. of State road,  $\frac{1}{2}$  meter E. of fence in front of Mrs. Fowlds's house, near angle in fence at junction of fences, 15.2 miles above Aitkin, Minn.

P. B. M. Strand.—Near *Waldeck, Aitkin Co., Minn.*; tile and pipe, marked 1898, 1 meter from fence, 3 meters from center State road, 4 meters above angle in fence at end of lane running E. from in front of Strand's house, 14 meters from R. B. of river, 380 meters below James White's house, 700 meters E. of Nelson Strand's house; 30-inch elm SW. 27.7 meters, blazed with a triangle; about 17.5 miles above Aitkin, Minn.

P. B. M. Carlson.—Near *Portage, Aitkin Co., Minn.*; tile and pipe, marked 1898, on E. side of State road, 49 meters from R. B., on high sand point at lower edge of balsam thicket, 125 meters below three log houses on R. B. Carlson Hendricks and Toby Carlson live on opposite side of river; about 20 miles above Aitkin, Minn.

P. B. M. School.—Near *Portage, Aitkin Co., Minn.*; tile and pipe, marked 1898, lower edge of small poplars 400 meters from R. B. of river, 14 meters N. of State road, 40 meters above schoolhouse No. 21, 290 meters N. of Fred Anderson's house; about 23 miles above Aitkin, Minn.

P. B. M. Pat.—Near *Portage, Aitkin Co., Minn.*; tile and pipe, marked 1898, 7 meters from R. B. of river and 5 meters from State road, at log landing belonging to Pat Sanders, 1 mile above Pat Sanders's house, and 26.5 miles above Aitkin, Minn.; 24-inch elm E. 15 feet, 10-inch elm S. 7 feet; both blazed with a triangle facing P. B. M.

P. B. M. Sandy.—Near *Libby, Aitkin Co., Minn.*; tile and pipe, marked 1898, 8 meters from R. B. of river opposite the mouth of Sandy River; 6-inch balm of Gilead 2 meters SE., 15-inch basswood 2.8 meters S., 10-inch basswood 2.4 meters NW., 18-inch basswood 2 meters N., 8-inch box elder 4.5 meters NE.; all blazed with a triangle facing P. B. M.

P. B. M. Big Lagoon.—Near *Libby, Aitkin Co., Minn.*; a triangulation station tile and pipe, marked 1898, 5 meters E. of State road, on top of R. B. of creek draining swamp, 20 meters below center of bridge across creek, 60 meters above junction of State and Doray's roads, 120 meters from R. B. of what is known as Big Lagoon; 8-inch spruce 3 meters NE., blazed with a triangle; about 30.3 miles above Aitkin, Minn.

P. B. M. Midway.—Near *Libby, Aitkin Co., Minn.*; tile and pipe, marked 1898, on top of knoll covered with boulders, 30 meters from R. B. of river, 179.9 meters from State road, 60 meters above mouth of creek, 1 300 meters below what is known as high bank on the river; high country on opposite side of river; 33.8 miles above Aitkin, Minn.

P. B. M. Wells.—Near *Libby, Aitkin Co., Minn.*; tile and pipe, marked 1898, on property of E. B. Wells, 10 meters from R. B. of river, 1 meter N. and 1 meter E. of NE. corner of Mr. Wells's house, which is Verdon post-office; it is  $1\frac{1}{2}$  meters SE. of 20-inch pine stump, 3 feet high, near corner of house; 36.3 miles above Aitkin, Minn.

P. B. M. Stone.—Near *Mississippi, Itasca Co., Minn.*; tile and pipe, marked 1898, 3 meters from R. B. of river, in edge of meadow; 196 meters above Frank Stone's abandoned house, which is 30 meters above mouth of creek; 125 meters E. of State road; 20-inch white oak S. 21 meters blazed with a triangle; 39 miles above Aitkin, Minn. Old abandoned house of Frank Stone torn down and new one erected 30 meters W. since P. B. M. was set.

P. B. M. Le Moon.—Near *Mississippi, Itasca Co., Minn.*; tile and pipe, marked 1898, 2 meters from top of R. B. lagoon, 4 meters E. of fence line around John Le Moon's house; State road is between fence and P. B. M.; 15 meters above Le Moon's house; about 41.5 miles above Aitkin, Minn.

P. B. M. Tiessen.—Near *Mississippi, Itasca Co., Minn.*; a triangulation station tile and pipe, marked 1898, between State road and R. B. of river, 12 meters from former and 20 meters from latter; 402 meters below John Tiessen's house, 100 meters below a cedar-pole bridge across ravine; charred stumps blazed, N. 22 feet, E. 6.8 feet, SE. 8.5 feet, W. 11.5 feet; about 45 miles above Aitkin, Minn.

P. B. M. Vicinity.—Near *Mississippi, Itasca Co., Minn.*; tile and pipe, marked 1898, 4 meters from top of bank of old lagoon, in vicinity of county line between Aitkin and Itasca counties; 5-inch oak NE. 25 feet, 9-inch oak N. 42 feet, 12-inch oak N. 60 feet; all blazed with triangles facing P. B. M.; 47.5 miles above Aitkin, Minn.



P. B. M. Shep.—Near *Mississippi, Itasca Co., Minn.*; a triangulation station tile and pipe, marked 1898,  $1\frac{3}{4}$  miles below Split Hand Creek, 5 meters from R. B. of river, on high bank 24 meters from State road; white pine stumps, 40-inch diameter E. 18 feet, 30-inch diameter N. 18 feet, 24-inch diameter W. 15 feet; all blazed with triangles facing P. B. M.; about 50 miles above Aitkin, Minn.

P. B. M. Split Hand.—Near *Verna, Itasca Co., Minn.*; a triangulation station tile and pipe, marked 1898, about 1 090 meters above Split Hand Creek, 800 meters above John Erwin's house, 6 meters from top of high bank, 105 meters above R. B. of river where high bank ends, 40 meters from road; about 52 miles above Aitkin, Minn.

P. B. M. Hamilton.—Near *Blackberry, Itasca Co., Minn.*; a triangulation station tile and pipe, marked 1898, 28 meters E. from road crossing State road and road from Little Cowhorn Lake and Cowhorn Lagoon and Hamilton's ranch, 4 meters from crossroad; about 54 miles above Aitkin, Minn.

P. B. M. Five Pines.—Near *Blackberry, Itasca Co., Minn.*; a triangulation station tile and pipe, marked 1898, on knoll 45 meters from State road NE. and near cluster of five white pines  $\frac{1}{2}$  mile above junction of State and Pokegama Lake roads, 375 meters above Edward Heinke's house; 13 meters N. of corner of fence; 30-inch white pine W. 21 feet, 30-inch white pine S. 35 feet, blazed with a triangle facing P. B. M.; about 57 miles above Aitkin, Minn.

P. B. M. Strawberry.—Near *Blackberry, Itasca Co., Minn.*; a triangulation station tile and pipe, marked 1898, on knoll 150 meters from R. B. of river,  $\frac{3}{4}$  mile E. of hill that Porcupine Triangulation Station is on, and about the same distance S. of Phil Zwick's house, about opposite B. M. Blackberry.

Porcupine Triangulation Station.—Near *Blackberry, Itasca Co., Minn.*; tile and pipe, marked 1898, 14-foot station over mark which is on high ridge 1 mile from river, R. B.; a large pond lies at foot of hill on upper side and another on lower side; two tall dead snags 60 meters SW.e

Zwick Triangulation Station.—Near *Blackberry, Itasca Co., Minn.*; tile and pipe, marked 1898, near E. end of high ridge about 400 meters from R. B. of river,  $\frac{1}{2}$  mile above B. M. Blackberry, which is one L. B., 400 meters NW. of Phil Zwick's house.e

T. B. M. 229.—*Blackberry, Minn.* (See App. 3, Report for 1903, p. 597.)e

T. B. M. 230.—*Blackberry, Minn.* (See App. 3, Report for 1903, p. 597.)

B. M. Blackberry.—A tile and pipe  $10\frac{1}{2}$  meters N. of center of track of Eastern Railway of Minnesota, 71 meters E. of milepost 105, about 70 meters W. of road crossing, and about 80 meters W. of *Blackberry, Minn.*, schoolhouse. A blazed white pine tree stands 1 meter N. of N. right of way fence about 11 meters E. of the pipe.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN ST. CLOUD, MINN., AND WATERTOWN,  
S. DAK., 1904.

P. B. M. 288.—*St. Cloud, Stearns Co., Minn.* (See App. 8, Report for 1898, p. 779.) In 1904 the pipe was dug up, to reach the mark, and replaced with changed elevation.

P. B. M. 289.—*East St. Cloud, Stearns Co., Minn.* (See App. 8, Report for 1898, p. 779.) In 1904 access to the underground mark was had through the pipe and the cap replaced as before.

P. B. M. St. Cloud.—*St. Cloud, Stearns Co., Minn.* (See App. 8, Report for 1898, p. 780.) In 1904 the face of the bolt was badly injured, but the setting was undisturbed.

Hydrant 1.—*East St. Cloud, Stearns Co., Minn.*, on the NE. corner of Fifteenth street and Seventh avenue, 125 meters from the river and 100 meters above the lower wagon bridge. (Note 6, p. 127.)

Hydrant 2.—*St. Cloud, Stearns Co., Minn.*, on the NE. corner of Fifth avenue and Third street, W. of the river. (Note 6, p. 127.)e

Hydrant 3.—*St. Cloud, Stearns Co., Minn.*, on the NE. corner of Fifth avenue and Fourth street S. e W. of the river. (Note 6, p. 127.)

Hydrant 4.—*St. Cloud, Stearns Co., Minn.*, on the NE. corner of Sixth avenue and Second street S. e W. of the river. (Note 6, p. 127.)e

A.—*St. Cloud, Stearns Co., Minn.*, at the corner of Fifth avenue and the Great Northern Ry., 1 block W. of the river; in the brick wall of the Carter Building, on the side facing Fifth avenue; two bricks S. of the NE. corner, and two bricks above the stone foundation; 1.3 meters above the sidewalk. (Note 1, p. 26.)

B.—*St. Cloud, Stearns Co., Minn.*, about 1 mile W. of the river; in the granite wall of the Great Northern Ry. passenger station; 0.3 meter N. of the SE. corner; 30 meters S. of the main track, and 1 meter above the platform. (Note 4, p. 127.)

C.—4.2 kilometers W. of *St. Cloud, Stearns Co., Minn.*, on the Fergus Falls division of the Great Northern Ry., at the first grade crossing E. of the Sauk River; 15 meters N. of the railway track, at the right-of-way fence; 1 meter E. of a road running N. and S. (Note 2, p. 126.)

D.—4.8 kilometers W. of *St. Cloud, Stearns Co., Minn.*, on the Fergus Falls division of the Great Northern Ry.; on the right or east bank of the Sauk River; 13 meters from the river, and 2 meters above it; 55 meters S. of the railway track, and 2 meters below it; upon the highest point of a mass of red granite. (Note 4, p. 127.)

E.—300 meters W. of *St. Joseph, Stearns Co., Minn.*, on the Great Northern Ry.; 18 meters S. of the railway track, in the NE. corner of the wood lot belonging to Mrs. Loso; 1 meter from the fences, and 2 meters above the track. Trees were blazed, located as follows: 6-inch oak, SSW., 9.1 meters; 7-inch oak, W. by S., 7.3 meters; 8-inch oak, S., 5.2 meters. (Note 3, p. 126, except it was lettered by mistake U. S. S. W.)

F.—*Collegeville, Stearns Co., Minn.*, on a frame building belonging to St. Johns University, and used as express and ticket office; in the E. (granite) foundation wall, 30 meters S. of railway track, 17 meters W. of road to the University; 3 meters from the NE. corner, and  $\frac{1}{2}$  meter above ground. (Note 4, p. 127.)

G.—*Collegeville, Stearns Co., Minn.*, 55 meters E. of house belonging to Henry Broker, and 80 meters NE. of a building used as an express and ticket office; 37 meters E. of road to St. Johns University; 20 meters N. of the Great Northern Ry. track, at the right-of-way fence. (Note 3, p. 126.)

H.—3.3 kilometers E. of *Avon, Stearns Co., Minn.*, on the eastern edge of Kepper Lake, on culvert 17 (red sandstone) on the Great Northern Ry.; on the E. side of the culvert, on the upper face of the second stone from the top; 4.1 meters N. of the center of the railway track, and 0.9 meter below the top of the rail. (Note 5, p. 127.)

I.—*Avon, Stearns Co., Minn.*, upon the foundation (red sandstone) of the Great Northern Ry. water tank, 65 meters E. of Fourth street and 3 meters N. of the main track; upon the top stone of the W. pier, nearest the track; on the SW. corner of the stone, about 0.7 meter above the ballast. (Note 5, p. 127.) There is a similar cut in the SE. corner of the stone, not lettered, which is not the B. M.

J.—*Avon, Stearns Co., Minn.*, on the NE. corner of Fourth street and Pembina avenue, on Great Northern Ry. property; 7 meters E. of center of Fourth street and 10 meters N. of the center of Pembina avenue; 18 meters N. of Avon Hotel, and 42 meters S. of the main railway track. (Note 3, p. 126.)

K.—1.4 kilometers E. of *Albany, Stearns Co., Minn.*, on the Great Northern Ry.; at the cross roads, at the corner of a wood lot belonging to Joseph Lehner; at a grade crossing, 23 meters N. of the railway track,  $\frac{1}{2}$  meter outside the right-of-way fence; 22 meters W. of the center of the road crossing the track, and 10 meters S. of the center of the road parallel to the track, and  $\frac{1}{2}$  meter outside of the wood-lot fence. (Note 2, p. 126.)

L.—*Albany, Stearns Co., Minn.*, in the Kraker Building, on the NW. corner of Fourth and Railroad streets, 64 meters N. of the main railway track; in the dressed upper surface of the granite foundation wall, under the N. side of the show window facing on Fourth street; 4.4 meters N. of the front edge of the sidewalk on Railroad street, 1.9 meters W. of the front edge of the sidewalk on Fourth street, and 8 centimeters above the sidewalk; 6 centimeters S. of a granite pillar, 7 centimeters from the outer edge of the foundation, and 3.2 meters N. of the front corner of the building. (Note 4, p. 127.)

Hydrant 5.—*Albany, Stearns Co., Minn.*, at the corner of Fourth and Railroad streets, in front of the Kraker Building. (Note 6, p. 127.)

M.—*Freeport, Stearns Co., Minn.*, in the school building (of yellow brick) on Micklisch avenue, 200 meters E. of the railway depot; in the E. end of the granite sill at the front door; in the upper surface, 30 centimeters above the foundation wall, 4.5 centimeters from the E. side of the doorway, 3.5 centimeters from the front edge of the sill. (Note 4, p. 127.)

N.—*Freeport, Stearns Co., Minn.*, on Micklisch avenue, 50 meters W. of the railway depot; in the foundation of the town water tank, a tower of steel, about 40 meters high; in the NW. portion of the upper surface of the NW. pier, in red sandstone, 30 centimeters above the ground, and facing the street. (Note 1, p. 126.)

Hydrant 6.—*Freeport, Stearns Co., Minn.*, on the NW. corner of Micklisch avenue and Main street, in front of the Central Hotel; 40 meters N. of the main railway track. (Note 6, p. 127.)

O.—2.9 kilometers E. of *Melrose, Stearns Co., Minn.*, in a sandstone culvert on the Great Northern Ry.; 400 meters W. of Sauk River; 2 meters N. of center of the track, 1 meter below the top of the rail, and 1.3 meters above the ground; 0.09 meter W. of the E. edge of the W. abutment. (Note 5, p. 127.)



P.—*Melrose, Stearns Co., Minn.*, on Second street S., between Fifth and Sixth avenues E., 200 meters E. of the railway depot, 100 meters E. of the Cathedral and opposite a yellow brick house; at the right-of-way fence, 23 meters S. of the railway and 20 meters N. of traveled street. (Note 3, p. 126.)e

City 1.—*Melrose, Stearns Co., Minn.*, at the NE. corner of St. Bonifacius Cathedral, on the SW. corner of Second street S. and Fifth avenue E.; the smooth, rounded, conical top of a granite post at the foot and NE. corner of the stairs leading to the N. entrance, being the most northern of six similar posts, about 1 meter in height, standing in a N. and S. line and forming a part of the masonry steps.

City 2.—*Melrose, Stearns Co., Minn.*, at the NE. corner of the Bank of Melrose building, on the corner of Main street and Fifth avenue E.; the top of the granite sill.

Q.—*Melrose, Stearns Co., Minn.*, on the SE. corner of Riverside avenue and Third avenue W., 70 meters N. of the railway, at the NW. corner of Dederich subdivision, and the land of H. Dederich; on street lines. The N. and S. quarter-section line through sec. 34, T. 126, R. 33, runs through center of the street W. of the B. M. (Note 3, p. 126.)

City 3.—*Melrose, Stearns Co., Minn.*; the center of the front-door sill (stone) of the City Hall.

City 4.—*Melrose, Stearns Co., Minn.*; the top of the rail at Third avenue, at the N. and S. quarter-section line through sec. 34, T. 126, R. 33.

R.—3.7 kilometers W. of *Melrose, Stearns Co., Minn.*, on the Great Northern Ry. bridge over Sauk River; 55 meters W. of the highway, near a large steel highway bridge; 3.3 meters S. of the center of the track, 0.4 meter below the top of the rail, 0.2 meter E. of the W. edge of the E. abutment (red sandstone), 2.7 meters from the ground. (Note 5, p. 127.)

S.—3.5 kilometers E. of *Sauk Center, Stearns Co., Minn.*, on the Great Northern Ry., at a grade crossing, 22 meters N. of the track, 10 meters E. of traveled road; at the corner of the highway line, the right-of-way fence, and scrub-oak land belonging to Nels Anderson and Albert Hatch. (Note 2, p. 126.)

T.—*Sauk Center, Stearns Co., Minn.*, in the E. end of the Great Northern Ry. depot (yellow brick); 4.5 meters N. of the SE. corner of depot, and 10 meters N. of the center of the main track; 0.12 meter S. of the N. end of the red sandstone window sill, 0.075 meter from the upper and the lower edges of the sill, in the center of the face of the sill; 1.3 meters above the level of the rail. (Note 4, p. 127.)e

U.—*Sauk Center, Stearns Co., Minn.*, on the S. side of Railroad avenue, 75 meters S. of the main track, opposite a point 100 meters W. of the Great Northern Ry. depot; in the NE. corner of the lot of Joseph Parker, 20 meters E. of his house, 2 meters S. of an 8-inch box-elder tree. (Note 3, p. 126.)

Hydrant 7.—*Sauk Center, Stearns Co., Minn.*, at the corner of Fifth and Maple streets. (Note 6, p. 127.)e

Hydrant 8.—*Sauk Center, Stearns Co., Minn.*, at the corner of Fifth and Elm streets. (Note 6, p. 127.)e

Hydrant 9.—*Sauk Center, Stearns Co., Minn.*, at the corner of Sixth and Getty streets. (Note 6, p. 127.)

V.—4.2 kilometers E. of *West Union, Todd Co., Minn.*, at a grade crossing, 300 meters W. of Sauk River; 22 meters S. of the railway; in the NW. corner of the pasture belonging to Charles Calkins, at the corner of the right-of-way fence and the highway fence; 12 meters E. of traveled road. (Note 3, p. 126.)

W.—*West Union, Todd Co., Minn.*, 54 meters S. of the railway track and 50 meters W. of the station; at the NE. corner of the pasture belonging to Ed. Craig; 20 meters W. of main street, and 10 meters N. of a frame store. (Note 3, p. 126.)

X.—*West Union, Todd Co., Minn.*, in the most eastern of three brick piers in the grain elevator of Lee and Gingery, 14 meters S. of the railway track, 5 meters W. of the E. end of the building; 1.17 meter from the ground and 0.32 meter W. of the E. side of pier; the center of a diagonal cross on a copper bolt leaded into the N. face of the pier.

Y.—0.6 kilometer W. of *West Union, Todd Co., Minn.*, 35 meters N. of the railway track, 70 meters W. of the grade crossing, at the right-of-way fence, which is the highway line for the E. and W. road. (Note 2, p. 126, the post set in hard clay.)

Z.—3.4 kilometers E. of *Osakis, Douglas Co., Minn.*, at a grade crossing; 20 meters W. of the track of the Great Northern Ry. and 8 meters S. of the traveled road; at the corner of the right-of-way fence, the highway line and the land of K. Bjerkus. (Note 2, p. 126.)

A<sub>1</sub>.—3 miles S. of *Osakis, Douglas Co., Minn.*, in sec. 7, T. 127, R. 35; in the E. (granite) wall of the barn of C. A. Marthaler; 1.8 meters S. of the doorway, 2 meters N. of the S. end of the wall, and 1.1 meters above ground. (Note 4, p. 127.)

Osakis Triangulation Station.—3 miles S. of the town of *Osakis, Douglas Co., Minn.*, near the center of sec. 7, T. 127, R. 35, on the land owned by C. A. Marthaler, nearly  $\frac{1}{2}$  mile E. of his house, on a hill on the N. side of a wheat field. (Note 7, p. 127.)

B<sub>1</sub>.—*Osakis, Douglas Co., Minn.*, 50 meters E. of the station, 3 meters S. of the track, on the E. pier (sandstone) of the two next to the track, under the Great Northern Ry. water tank; 0.05 meter SW. of the NE. corner of the pier, at the level of the ground, being on the second stone from the top. (Note 5, p. 127.)

C<sub>1</sub>.—*Osakis, Douglas Co., Minn.*, 120 meters W. of the station and 70 meters S. of the Great Northern Ry. track; in the top surface of the granite sill at the NW. corner of Metcalf's saloon, on the SE. corner of Main and Second streets; 2.3 meters from the W. edge of the walk, 0.28 meter S. of the brick corner post, 0.1 meter E. of the front edge of the sill, 0.08 meter above the level of the sidewalk. (Note 4, p. 127.)

D<sub>1</sub>.—*Osakis, Douglas Co., Minn.*, in the building of the Osakis Milling Co., on the NW. corner of Second street and the Great Northern Ry.; in the brickwork of the S. wall of the mill, 4.55 meters W. of the E. end of the building, 0.3 meter W. of the street line, which runs through the mill, 3.8 meters E. of the main doorway, 1 meter above the ground. (Note 1, p. 126.)

E<sub>1</sub>.—2.4 kilometers W. of *Osakis, Douglas Co., Minn.*, 3 meters N. of the Great Northern Ry. track, on the E. pier (sandstone) supporting the overhead highway bridge; 6 meters below the highway, 0.6 meter below the level of the rail, 0.07 meter SW. of the NE. corner of the pier, at the level of the ground. (Note 5, p. 127.)

F<sub>1</sub>.—1.8 kilometers E. of *Nelson, Douglas Co., Minn.*, 22 meters S. of the Great Northern Ry. track, at a grade crossing; at the highway line adjoining land owned by A. D. Hanson; 3 meters N. of the right-of-way fence and 10 meters E. of traveled road; 1 meter above the level of the rail. (Note 2, p. 126.)

G<sub>1</sub>.—*Nelson, Douglas Co., Minn.*, 60 meters E. of the railway station, 24 meters N. of the Great Northern Ry. track, 9 meters E. of the center of Nelson street, at the intersection of the street line, the right-of-way fence, and the SW. corner of the land of S. J. Miller, 50 meters SW. of his house. (Note 3, p. 126; set in hard clay.)

H<sub>1</sub>.—1.8 kilometers E. of *Alexandria, Douglas Co., Minn.*, at a grade crossing; 20 meters S. of the Great Northern Ry. track, at the intersection of the W. highway line, the railway fence, and the NE. corner of the land of the Great Northern Ry. leased by Capt. Schaefer, and used as a pasture. (Note 2, p. 126; set in hard clay.)

Alexandria Triangulation Station.—About  $1\frac{3}{4}$  miles E. of *Alexandria, Douglas Co., Minn.*, in the NE.  $\frac{1}{4}$  of SE.  $\frac{1}{4}$  of sec. 20, T. 128 N., R. 37 W., on land owned by A. J. Thompson, on wooded land on a ridge, 133 paces S. of his house, about 1 600 feet S. of Sixth street extended; 30 meters W. of the N. and S. road. (Note 7, p. 127.)

Alexandria Reference Mark.—About 36 meters NE. of Alexandria Triangulation Station, at the highway line, 8 meters W. of N. and S. traveled road; the top of the nail in the top of a terra-cotta pipe filled and surrounded with concrete.

I<sub>1</sub>.—*Alexandria, Douglas Co., Minn.*, 60 meters W. of the station and 70 meters E. of G street; in the E. pier (nearest the track of the Great Northern Ry.) under the water tank; 2.7 meters S. of the rail, 0.35 meter above the ground, 0.05 meter SW. of the NE. corner of the pier. (Note 5, p. 127.)

J<sub>1</sub>.—*Alexandria, Douglas Co., Minn.*, 1 meter W. of the W. line of G street, 35 meters N. of Third avenue, 2 meters inside of the NE. corner of the lot of E. G. Erickson, owner of the Alexandria Boat Works, 165 meters S. of the Great Northern Ry. track; set in fine gravel. (Note 3, p. 126.)

K<sub>1</sub>.—*Alexandria, Douglas Co., Minn.*, in the top surface of the sandstone sill in front of the store of F. E. and Geo. Raiter, on the E. side of G street; 24 meters N. of the N. line of Sixth avenue, 2.3 meters N. of the S. side of the building, which abuts on a yellow brick block; 3 meters S. of the center of the doorway, 0.08 meter from the outer edge of the sill, 0.07 meter above the level of the sidewalk. (Note 1, p. 126.)

Alexandria Magnetic Station.—*Alexandria, Douglas Co., Minn.*, in the school grounds, 20 meters W. of F street, 38 meters S. of Seventh street, 29 meters E. of the E. side of the school building; at shallow square between the letters U. and S. on the top of a marble post, projecting 4 inches above the ground, marked by a cross and the letters U. S. C. & G. S. The surface is fast being chipped away by school children.



L<sub>1</sub>.—*Alexandria, Douglas Co., Minn.*, about 30 meters W. of E street, in the SE. corner of the foundation wall (red sandstone) on the S. side of the county court-house; 0.18 meter W. of the corner, 1.13 meters above the ground, 0.8 meter below the brickwork, in the second course from the top. (Note 4, p. 127.)

City.—*Alexandria, Douglas Co., Minn.*; a deep scratch in the sandstone foundation of the county court-house; 0.38 meter below and 1.7 meters E. of B. M. L<sub>1</sub>. The elevation on the city datum was given as 53.28 feet. In this datum, which is about 25 years old, the level of Lake Agnes, N. of the city, was taken as zero. The several adjoining and connected lakes are at approximately the same level.

M<sub>1</sub>.—4.5 kilometers E. of *Garfield, Douglas Co., Minn.*, 24 meters N. of the Great Northern Ry. track, at a grade crossing; at the intersection of the E. highway line, the right-of-way fence, and the SW. corner of the land of Peter Johnson; 8 meters E. of traveled road, 3.2 meters above the level of the rail; set in fine gravel and sand. (Note 2, p. 126.)

N<sub>1</sub>.—*Garfield, Douglas Co., Minn.*, 45 meters S. of the Great Northern Ry. track, 28 meters W. of the depot, 12 meters W. of Main street prolonged; in the NE. corner of lot of Fred. Bartel, 15 meters N. of his house; set in hard clay. (Note 3, p. 126.)

O<sub>1</sub>.—4.7 kilometers E. of *Brandon, Douglas Co., Minn.*, on the W. pier of the overhead highway bridge, 0.2 meter SE. of the NW. corner of the pier; 2.2 meters S. of the rail, at the level of the ground, 0.4 meter below the rail, and 8 meters below the highway. (Note 5, p. 127.)

P<sub>1</sub>.—3 kilometers E. of *Brandon, Douglas Co., Minn.*, 3 meters N. of the main track of the Great Northern Ry.; 700 meters E. of a grade crossing and 400 meters W. of an embankment through a small lake; upon the highest point of a flinty granite boulder, about 1 meter square and 1.5 meters deep. (Note 5, p. 127.)

Q<sub>1</sub>.—2.5 kilometers E. of *Brandon, Douglas Co., Minn.*, 20 meters N. of the Great Northern Ry. track, at a grade crossing; at the intersection of the W. highway line, the right-of-way fence, and the SE. corner of the land of Gunder Kylo, 1.2 meters above the level of the rail; set in hard clay. (Note 2, p. 126.)

R<sub>1</sub>.—*Brandon, Douglas Co., Minn.*, 10 meters E. of the station, 17 meters S. of the Great Northern Ry. track; at the intersection of the E. line of the main street, right-of-way fence, and the NW. corner of the lot of the Brandon Flouring Mills; 80 meters W. of the mill, at the level of the rail, and adjoining the street; set in clay. (Note 3, p. 126.)

S<sub>1</sub>.—*Evansville, Douglas Co., Minn.*, in the section of the town called Johnson's First Addition, 130 meters SW. of the railway station, in the NE. corner of the public school grounds; at the S. line of Second avenue, 35 meters W. of Railroad street. (Note 3, p. 126.)

T<sub>1</sub>.—*Evansville, Douglas Co., Minn.*, 100 meters S. of the railway station, 15 meters E. of the E. line of Railroad street, in the N. wall (yellow brick) of the town hall; 1.5 meters E. of the NW. corner, 1.8 meters above the ground. (Note 1, p. 126.)

U<sub>1</sub>.—*Erdahl (Cork P. O.), Grant Co., Minn.*, on the land of T. Tobiason, of Ashby, at the E. line of the main street, 58 meters S. of the railway, at a point 70 meters W. of the depot; 7 meters E. of the line of travel, 17 meters NE. of the frame store of A. J. Oxelgren, 24 meters S. of a grain elevator. (Note 2, p. 126.)

V<sub>1</sub>.—*Thorsborg, Grant Co., Minn.*, Sanford Township, on NW.  $\frac{1}{4}$  of sec. 13; 110 meters N. and 60 meters W. of the railway station, at the SW. corner of a pasture belonging to Henry Lajord; at the NE. corner of the crossroads, 10 meters E. and 5 meters N. of the line of travel. (Note 2, p. 126.)

W<sub>1</sub>.—4 kilometers E. of the station at *Elbow Lake, Grant Co., Minn.*, on the Great Northern Ry.; 1.8 kilometers E. of the crossing of the Minneapolis, St. Paul and Sault Ste. Marie Ry., 150 meters W. of a bridge over a slough, 300 meters E. of the NW. corner of a cultivated field belonging to Harold Thorsen, of Elbow Lake; at the right-of-way fence, 20 meters S. of the track; a copper bolt leaded into the center of the top surface of a block of red Kasota sandstone, 0.5 meter square and 0.7 meters long, set flush with the ground, marked U. S. B. M.

X<sub>1</sub>.—*Elbow Lake, Grant Co., Minn.*, in the N. end of the S. doorsill (sandstone) of the First National Bank building, 1.8 meters N. of the S. side of the building; 0.1 meter from the E. or front edge of the sill, 0.08 meter S. of the brickwork, 0.4 meter above the sidewalk, 0.5 meter N. of the center of the doorway. (Note 1, p. 126.)

Y<sub>1</sub>.—*Elbow Lake, Grant Co., Minn.*, at the SE. corner of the Bank of Elbow Lake building, on the back or W. edge of the cornerstone (pink sandstone) under a stone porch pillar; the bottom of a horizontal niche, 13 millimeters square, in a broad sloping bevel, 0.06 meter N. of the SW. corner of the stone; 0.7 meter W. of the W. line of the main street, 0.4 meter above the sidewalk.

Z<sub>1</sub>.—1.3 kilometers S. of *Elbow Lake, Grant Co., Minn.*, and 3.2 kilometers E. of station Elbow Lake on the Great Northern Ry., 22 meters SW. of the crossing of the Great Northern and the Minneapolis, St. Paul and Sault Ste. Marie Rys.; 20 meters S. of the track of the former, and 14 meters W. of that of the latter, 2 meters S. of the corner of the right-of-way fences; in the NE. corner of the pasture belonging to John Warwick. (Note 2, p. 126.)

Elbow Triangulation Station.—2 miles E. and 1½ miles N. of the town of *Elbow Lake, Grant Co., Minn.*, 10 meters W. of the N. and S. traveled road and 3.5 kilometers N. of the Great Northern Ry.; on grassy land on a hill on the E. side of sec. 3, T. 129, R. 42; on land owned by Niels Olson, living ¾ mile N. on the NE. corner of the section. (Note 7, p. 127, the square hole being W. of the station point.)

A<sub>2</sub>.—3 kilometers W. of the town of *Elbow Lake, Grant Co., Minn.*, 45 meters S. of station Elbow Lake on the Great Northern Ry., in the NE. corner of the meadow belonging to Chas. Dahl, at the highway line, 15 meters S. of the traveled road where it turns N. to cross the track. (Note 11, p. 127.)

B<sub>2</sub>.—3.5 kilometers E. of *Hereford, Grant Co., Minn.*, 1.8 kilometers S. of the town of Wendell, 25 meters N. of the Great Northern Ry. track; at the right-of-way fence, W. highway line, and SE. corner of the meadow belonging to Arthur Smith. (Note 2, p. 126.)

C<sub>2</sub>.—4 kilometers W. of *Hereford, Grant Co., Minn.*, 15 meters S. of the Great Northern Ry. track, 780 meters W. of the grade crossing; at the right-of-way line, W. side of the private roadway crossing the track, and NW. corner of the cultivated field belonging to John Watry. (Note 2, p. 126.)

D<sub>2</sub>.—*Tintah, Traverse Co., Minn.*, 65 meters S. and 75 meters E. of the railway station, 70 meters SE. of frame church building, and 75 meters S. of Hotel Tintah; at the E. line of the alley, and the NW. corner of the lot of Peter Putnam. (Note 3, p. 126.)

E<sub>2</sub>.—*Tintah, Traverse Co., Minn.*, 125 meters N. and 40 meters E. of the Great Northern Ry. station, in the S. wall of the engine house of the Imperial Elevator Co.; 2 meters W. of the SE. corner of the building, 2.7 meters E. of the doorway, 1.2 meters above the ground, in yellow brick. (Note 4, p. 127.)

F<sub>2</sub>.—3.2 kilometers N. of *Tintah, Traverse Co., Minn.*, 18 meters E. of the Great Northern Ry. track, 0.5 kilometer S. of the crossing of the "Soo" Line Ry.; at the E. highway line and the NW. corner of the pasture belonging to John Wilkie. (Note 3, p. 126.)

G<sub>2</sub>.—0.8 kilometer W. of *Yarmouth, Wilkin Co., Minn.*, and 4.5 kilometers S. of the town of Campbell; 38 meters S. of the Great Northern Ry. track, at S. highway line and the NW. corner of the lot belonging to N. W. Ware, being 12 meters S. of the line of travel, 8 meters W. of the private road, 22 meters NW. of the house of Mr. Ware; in a row of willow trees, 80 meters E. of a running stream. (Note 3, p. 126.)

H<sub>2</sub>.—2.8 kilometers N. of the town of *Tenney, Wilkin Co., Minn.*, 25 meters N. of the Great Northern Ry. track, at a grade crossing; at W. highway line, right-of-way line, and the SE. corner of the field belonging to F. W. Hungerford; 7 meters W. of the line of travel. (Note 2, p. 126.)

I<sub>2</sub>.—*Childs, Wilkin Co., Minn.*, 1.7 kilometers E. of Bois de Sioux River, which is the State line between Minnesota and North Dakota; 90 meters S. of the Great Northern Ry. track, 10 meters E. of the line of travel; at E. highway line, 3 meters N. of the SW. corner of the lot belonging to D. D. Waite. (Note 3, p. 126.)

A.—1 kilometer N. of *Fairmount, Richland Co., N. Dak.*, 12 meters E. of the Chicago, Milwaukee and St. Paul Ry., 37 meters S. of the Great Northern Ry.; at the right-of-way lines and the NW. corner of the cultivated field belonging to Rebecca E. Bostwick; 8 meters S. of the traveled highway, at the S. line of same. (Note 25, p. 128.)

B.—6 kilometers N. of *Fairmount, Richland Co., N. Dak.*, at the NW. corner of the NE. ¼ of sec. 5, T. 130 N., R. 47 W., being 14 meters E. of the Chicago, Milwaukee and St. Paul Ry. track, and 136 meters S. of the traveled road, on the right-of-way and highway lines. (Note 25, p. 128.)

979 W.—Near *Fairmount, Richland Co., N. Dak.*, a U. S. Geological Survey B. M., described thus: "T. 130 N., R. 48 W., sec. 1, NE. corner of; SW. corner of crossroads; iron post stamped 979." The post was found much disturbed and in an unstable condition. It was reset in cement at its old location.



971 W.—In Minnesota, near *Fairmount, Richland Co., N. Dak.*, a U. S. Geological Survey B. M., described thus: "T. 130 N., R. 47 W., sec. 3, NE. corner of; iron post stamped 971." The post was found as described, at the NW. corner of the crossroads.

969 W.—In Minnesota, near *Fairmount, Richland Co., N. Dak.*, a U. S. Geological Survey B. M., described thus: "T. 131 N., R. 47 W., sec. 10, SE. corner of; NW. corner of crossroads; iron post stamped 969."

Foss Triangulation Station.—2.5 miles N. of *Childs, Wilkin Co., Minn.*, almost at  $\frac{1}{4}$  corner of W. side of sec. 1, T. 130 N., R. 47 W., on land at the W. edge of wheat field rented by M. E. Foss, living  $\frac{3}{4}$  mile ESE. (Note 7, p. 127.)

Foss Reference Mark.—Near *Childs, Minn.*, at the SE. corner of NE.  $\frac{1}{4}$  sec. 2, on land owned by Ed. Joy; 20 meters W. of Foss Triangulation Station, on the opposite side of the highway. (Note 7, p. 127.)

J<sub>2</sub>.—8.5 kilometers N. and 1.6 kilometers W. of *Childs, Wilkin Co., Minn.*, at the NE. corner of sec. 27, T. 131 N., R. 47 W.; at the SW. corner of the crossroads, 2 meters S. of the S. highway line, on the W. highway line. (Note 25, p. 128.)

C.—*Fairmount, Richland Co., N. Dak.*, 100 meters E. of the Chicago, Milwaukee and St. Paul Ry. depot, at the front doorway of the store of R. W. Dougherty, 3.4 meters S. of S. street line; on the doorsill (sandstone), 0.4 meter S. of the front edge, 0.2 meter W. of the framing at the E. side of the doorway, 0.1 meter above the sidewalk. (Note 1, p. 126.)

D.—*Fairmount, Richland Co., N. Dak.*, at the Bank of Fairmount, 120 meters E. of the Chicago, Milwaukee and St. Paul Ry. depot; 3 meters N. of N. street line, 5 meters E. of the front doorway in the E. oblique face of the SE. corner stone (of pink sandstone); the lower surface of a recess, 0.1 meter N. of the SE. corner of the stone, 0.6 meter from the top of the stone, 0.1 meter from the bottom.

E.—1.1 kilometers N. of *Blackmer, Richland Co., N. Dak.*, 20 meters W. of the Chicago, Milwaukee and St. Paul Ry. track, at the right-of-way fence and the NE. corner of the pasture belonging to D. E. Dibble; 400 meters S. of the slough, being near the center of the E. side of the SW.  $\frac{1}{4}$  of sec. 17, T. 129 N., R. 47 W. (Note 25, p. 128.)

F.—2 kilometers S. of *Blackmer, Richland Co., N. Dak.*, 16 meters E. of the Chicago, Milwaukee and St. Paul Ry. track, 4 meters W. of the right-of-way fence, 1.3 kilometers N. of the grade crossing; on a granite boulder, 1.3 meters long, 0.8 meter wide, and 0.4 meter deep, set in the earth half its depth, 4 meters SE. of a large boulder. (Note 5, p. 127.)

G.—3.3 kilometers S. of *Blackmer, Richland Co., N. Dak.*, at a grade crossing, 19 meters E. of the Chicago, Milwaukee and St. Paul Ry. track; at N. highway line, the right-of-way fence, and the SW. corner of the pasture, 400 meters N. of the grade crossing of the N. and S. road. (Note 25, p. 128.)

A.—*White Rock, Roberts Co., S. Dak.*, 75 meters W. of the Chicago, Milwaukee and St. Paul Ry. depot, in the sandstone sill of the Globe building, on the N. side of Main street, 3.1 meters E. of the SW. corner of the building, 0.9 meter W. of the center of the front doorway, 0.15 meter N. of the front edge of the sill, 0.13 meter from the framing, and 0.15 meter above the sidewalk. (Note 5, p. 127.)

B.—*White Rock, Roberts Co., S. Dak.*, 190 meters W. of the Chicago, Milwaukee and St. Paul Ry. depot, at the front doorway of the store of S. E. Oscarson, on the N. side of the main street, 8 meters E. of the SW. corner of the building; in the top surface of the sandstone sill, 1.2 meters W. of the center of the doorway, 0.15 meter N. of the front edge, 0.15 meter from framing, and 0.4 meter above sidewalk. (Note 1, p. 126.)

C.—*White Rock, Roberts Co., S. Dak.*, 80 meters S. of the depot, 1.6 meters W. of the W. rail of the side track, and 10 meters W. of the main track of the Chicago, Milwaukee and St. Paul Ry., in the granite foundation of the grain elevator of the Crown Elevator Co., in the sloping surface of the extreme NE. corner, 0.12 meter above the ground, 1 meter below the framing, 1.1 meters E. of the W. edge of the pier. (Note 5, p. 127.)

K<sub>2</sub>.—In Minnesota, 1.5 kilometers S. of *White Rock, Roberts Co., S. Dak.*, on the S. side of sec. 10, T. 128 N., R. 47 W., near the SE. corner of the section; 19 meters E. of the Chicago, Milwaukee and St. Paul Ry. track, at the right-of-way fence, N. highway line, and the SW. corner of the pasture, 1.1 meters above the level of the rails. (Note 2, p. 126.)

L<sub>2</sub>.—In Minnesota, 2.6 kilometers S. of *White Rock, Roberts Co., S. Dak.*, near the center of the SE.  $\frac{1}{4}$  of sec. 15, T. 128 N., R. 47 W., 14 meters E. of the track of the Chicago, Milwaukee and St. Paul Ry., 1.2 meters below the level of the rail, 1.2 kilometers S. of the grade crossing; in a granite boulder, 0.9 meter square and 0.5 meter deep. (Note 5, p. 127.)

M<sub>2</sub>.—9 kilometers N. of *Wheaton, Traverse Co., Minn.*, near the center of the S. side of the SW.  $\frac{1}{4}$  of sec. 23 T., 128 N., R. 47 W., 20 meters E. of the Chicago, Milwaukee and St. Paul Ry. tracks, 14 meters N. of the traveled road; at the right-of-way fence, the highway line, and the SW. corner of the cultivated field. (Note 25, p. 128.)

Oscarson Triangulation Station.—Near *White Rock, Roberts Co., S. Dak.*, in the NW.  $\frac{1}{4}$ , sec. 24, T. 128 N., R. 47 W., on land owned by S. E. Oscarson; 90 meters NW. of dwelling house, 8 meters N. of the private road, in a grass plot, 25 meters W. of a hedge of trees. (Note 7, p. 127, the B. M. being S. of the center of station.)

Oscarson Reference Mark.—Near *White Rock, Roberts Co., S. Dak.*, in a hedge 25 meters E. of Oscarson Triangulation Station. (Note 7, p. 127.)

N<sub>2</sub>.—*Wheaton, Traverse Co., Minn.*, at the NW. corner of Erickson, Hellekson & Co.'s hardware store, at the corner of Broadway and Minnesota streets; in the sloping bevel of the top edge of the E. face of the corner stone; 0.04 meter S. of the front face of the stone, 0.4 meter above the sidewalk, 0.5 meter E. of the W. side of the building. (Note 5, p. 127.)

City.—*Wheaton, Traverse Co., Minn.*, at the extreme SE. corner of the Bank of Wheaton, on the N. side of Broadway street, 1 block E. from Minnesota street; a square in outline on the top of the lower granite step, 0.02 meter NW. of the SE. corner, 0.15 meter above the sidewalk.

O<sub>2</sub>.—*Wheaton, Traverse Co., Minn.*, on the sandstone doorsill of a store owned by Mr. Christianson, on the NE. corner of Broadway and Minnesota streets; at the E. end of the sill, 0.15 meter from the front edge, 0.4 meter above the sidewalk. (Note 1, p. 126.)

P<sub>2</sub>.—5 kilometers S. of *Wheaton, Traverse Co., Minn.*, in the W. side of the SW.  $\frac{1}{4}$  of sec. 33, T. 127 N., R. 46 W., 25 meters W. of the Chicago, Milwaukee and St. Paul Ry. track; at the grade crossing, 9 meters SE. of the line of travel, at right-of-way fence, highway line, and the NW. corner of the waste lot, 4 meters N. of a large stone heap. (Note 2, p. 126.)

Q<sub>2</sub>.—1.6 kilometers N. of *Dumont, Traverse Co., Minn.*, 15 meters E. of the track of Chicago, Milwaukee and St. Paul Ry., 9 meters N. of the traveled road; at the highway line, the right-of-way fence, and the SW. corner of land of Mr. Haas, near the SE. corner of sec. 10, T. 126 N., R. 47 W. (Note 2, p. 126.)

R<sub>2</sub>.—*Dumont, Traverse Co., Minn.*, on Main street, 66 meters E. of Chicago, Milwaukee and St. Paul Ry. track and 20 meters N. of the station, in the W. wall of the yellow brick store belonging to K. Kwurm; 0.55 meter N. of the SW. corner and 1.3 meters above the ground. (Note 1, p. 126.)

S<sub>2</sub>.—*Dumont, Traverse Co., Minn.*, 24 meters E. of the Chicago, Milwaukee and St. Paul Ry. track, 15 meters S. of the station, 1.8 meters E. of the adjacent rail in the side track; on the upper surface of the foundation (sandstone) at the NW. corner of the National Elevator Co.'s grain elevator, 0.2 meter above the ground, 6 centimeters E. of the W. edge of the stone and 10 centimeters S. of the N. edge of the stone. (Note 5, p. 127.)

T<sub>2</sub>.—4.8 kilometers S. of *Dumont, Traverse Co., Minn.*, 17 meters W. of Chicago, Milwaukee and St. Paul Ry. track, 9 meters S. and 8 meters E. of the lines of travel, at the intersection of the highway lines and right-of-way fence; near the NE. corner of sec. 3, T. 125 N., R. 46 W., adjoining land of John Donahue. (Note 2, p. 126.)

U<sub>2</sub>.—*Collis, Traverse Co., Minn.*, 11 meters E. of Chicago, Milwaukee and St. Paul Ry. track on the granite foundation of a grain elevator of the Miller Elevator Co.; 0.31 meter N. of the extreme SW. corner of the stone, 0.03 meter E. of W. edge of the stone, 0.18 meter above the ground, 0.15 meter N. of the SW. corner of the framing, and 0.10 meter below it. (Note 5, p. 127.) The letters U. S. B. M. were cut on the adjacent wood with a chisel.

V<sub>2</sub>.—2 kilometers S. of *Collis, Traverse Co., Minn.*, near the NW. corner of sec. 23, T. 125 N., R. 46 W., 14 meters E. of Chicago, Milwaukee and St. Paul Ry. track, 8 meters S. of the line of travel, at the intersection of the highway line and the right-of-way fence; upon a block of granite, 0.4 meter by 0.6 meter by 0.7 meter, set flush with the ground; 0.15 meter E. of the W. side of the stone and 0.08 meter S. of the N. side. (Note 8, p. 127.)

W<sub>2</sub>.—5.2 kilometers N. of *Graceville, Bigstone Co., Minn.*, near the NE. corner of sec. 27, T. 125 N., R. 46 W.; 12 meters W. of Chicago, Milwaukee and St. Paul Ry. tracks, 9 meters S. and 8 meters E. of the lines of travel, at the intersection of the highway lines and the right-of-way fence; upon a block of granite, 0.5 meter in size. (Note 8, p. 127.)



X<sub>2</sub>.—3.6 kilometers N. of Graceville, *Bigstone Co., Minn.*, near the NE. corner of sec. 34, T. 125 N., R. 46 W.; 15 meters W. of Chicago, Milwaukee and St. Paul Ry. track, 10 meters S. of the line of travel; at the right-of-way fence and the intersecting highway lines; adjoining land of Wm. Rice. (Note 2, p. 126.)

Y<sub>2</sub>.—Graceville, *Bigstone Co., Minn.*, 12 meters W. of the center of Second street, midway between St. Peter and St. Paul streets; near the center of the E. side of lot 10, in the NE. corner of the public-school grounds, 0.9 meter S. of N. fence and 0.5 meter W. of E. fence. (Note 3, p. 126.)

City.—Graceville, *Bigstone Co., Minn.*, at the SE. corner of Fourth street and Studdart avenue, on the top surface of the sandstone water table of Brennan Brothers' store; 2.4 meters W. of the center of the doorway; a cross in outline 0.6 meter E. of the W. wall, 9 centimeters S. of the front edge of stone, and 0.4 meter above the sidewalk.

Z<sub>2</sub>.—Graceville, *Bigstone Co., Minn.*, at the entrance near the SE. corner of Graceville House, belonging to A. E. Heymann, on the NE. corner of Third street and Studdart avenue; in the center of the sandstone doorsill, 0.2 meter N. of front edge of the sill; 0.1 meter above sidewalk, and 1.7 meters W. of SE. corner of the building. (Note 1, p. 126.)

A<sub>3</sub>.—Graceville, *Bigstone Co., Minn.*, 120 meters S. of the station, 20 meters W. of Chicago, Milwaukee and St. Paul Ry. track, on the grain elevator of the Monarch Elevator Co.; 0.4 meter S. of the extreme NE. corner of the building; on a stone 7 centimeters above the ground, 6 centimeters W. of the E. edge of the stone. The letters U. S. B. M. were chiseled in the adjoining wood. (Note 5, p. 127.)

B<sub>3</sub>.—1.6 kilometers S. of Graceville, *Bigstone Co., Minn.*, near the SE. corner of sec. 9, T. 124 N., R. 46 W.; 8 meters E. of Chicago, Milwaukee and St. Paul Ry. track, at a grade crossing, 10 meters N. of the line of travel, 11 meters W. of the right-of-way fence, at the highway line, 0.2 meters below the level of the rail. (Note 3, p. 126.)

C<sub>3</sub>.—6.2 kilometers S. of Graceville, *Bigstone Co., Minn.*, in the SW.  $\frac{1}{4}$  of sec. 28, T. 124 N., R. 46 W.; 15 meters E. of Chicago, Milwaukee and St. Paul Ry. track, at right-of-way fence, 325 meters W. of the house of F. R. Rothwell, 9 meters N. of a private road leading to it. (Note 2, p. 126.)

D<sub>3</sub>.—8 kilometers S. of Graceville, *Bigstone Co., Minn.*, in the NW.  $\frac{1}{4}$  of sec. 4, T. 123 N., R. 46 W.; 14 meters E. of Chicago, Milwaukee and St. Paul Ry. track, at a grade crossing, 6 meters W. and 13 meters S. of the lines of travel, adjoining the land of L. E. Daly, 345 meters S. of his house. (Note 25, p. 128.)

E<sub>3</sub>.—3 kilometers N. of Clinton, *Bigstone Co., Minn.*, in the SW.  $\frac{1}{4}$  of sec. 4, T. 123 N., R. 46 W.; 18 meters W. of Chicago, Milwaukee and St. Paul Ry. track, at a grade crossing, 11 meters N. of the line of travel; at the highway line, right-of-way fence and SE. corner of the field of Jos. Rothwell. (Note 2, p. 126.)

F<sub>3</sub>.—Clinton, *Bigstone Co., Minn.*, on the S. side of the main street, 50 meters E. of the main railway track; under the city water tank, in the bevel of the upper and western edge of the northern pier of the western pair, 9 centimeters S. of the N. edge of the stone, 2 centimeters E. of the W. edge, 25 centimeters above ground. (Note 5, p. 127.)

G<sub>3</sub>.—Clinton, *Bigstone Co., Minn.*, on the N. side of the main street, 80 meters E. of the main railway track, in the front sandstone doorsill of the Erickson Building; 9 centimeters N. of the front edge of the sill, 0.75 meter E. of the center of the doorway, 0.15 meter above the sidewalk. (Note 1, p. 126.)

H<sub>3</sub>.—2 kilometers S. of Clinton, *Bigstone Co., Minn.*, in the SE.  $\frac{1}{4}$  of sec. 21, T. 123 N., R. 46 W.; 17 meters E. of the Chicago, Milwaukee and St. Paul Ry. track, at a grade crossing, 8 meters N. of the line of travel; at the intersection of the highway line, the right-of-way fence, and the SW. corner of a cultivated field belonging to M. Vigness. (Note 2, p. 126.)

I<sub>3</sub>.—7.5 kilometers N. of Ortonville, *Bigstone Co., Minn.*, in the SE.  $\frac{1}{4}$  of sec. 16, T. 122 N., R. 46 W.; 17 meters W. of Chicago, Milwaukee and St. Paul Ry. track, at a grade crossing, 7 meters N. of the line of travel; at the intersection of the highway line, right-of-way fence, and the SE. corner of a cultivated field belonging to Claus Carlson. (Note 2, p. 126.)

J<sub>3</sub>.—4 kilometers N. of Ortonville, *Bigstone Co., Minn.*, near the center of the N. side of sec. 33, T. 122 N., R. 46 W.; 7.4 meters W. of Chicago, Milwaukee and St. Paul Ry. track, 240 meters S. of a grade crossing; upon the highest point of a granite boulder, 1.3 meters by 1.8 meters by 0.5 meter. (Note 8, p. 127.)

K<sub>3</sub>.—2.6 kilometers N. of the court-house at *Ortonville, Bigstone Co., Minn.*, at the NW. corner of the NE.  $\frac{1}{4}$  of sec. 4, T. 121 N., R. 46 W.; 20 meters E. of Chicago, Milwaukee and St. Paul Ry. tracks, at a grade crossing and the SE. corner of the crossroads, 8 meters E. and 6 meters S. of the lines of travel. (Note 2, p. 126.)

L<sub>3</sub>.—*Ortonville, Bigstone Co., Minn.*, on the granite terrace wall of the county court-house, 64 meters S. of the main entrance; in the top of the SW. corner, 1.1 meters E. of the front edge of the wall, 0.06 meter N. of the S. edge, 1.55 meters above ground. (Note 3, p. 127.)

U. S. E. 1.—*Ortonville, Bigstone Co., Minn.*, established by the Corps of Engineers, U. S. Army, in their survey of Bigstone Lake, and described thus: "A boat spike in a horizontal blaze in the root of an oak tree 55 feet SW. of the SW. corner-stone of block 1."

U. S. E. 2.—Established by the Corps of Engineers, U. S. Army, and described thus: "The center of the top of a square granite cut stone set at the NW. corner of block 1, city of *Ortonville, Bigstone Co., Minn.*; the stone is on the lake beach at the foot of the bank." A copper bolt (note 3, p. 126) was cemented in a drill hole in the center of the post and used as the B. M. in 1904.

U. S. E. 3.—Established by the Corps of Engineers, U. S. Army, and described thus: "The monument is on the fence line along the N. side of Madison avenue, *Ortonville, Bigstone Co., Minn.*, about 200 feet E. from the railway tracks and about 140 feet SW. from the center of the intersection of Madison avenue and Front or First street. It is the extreme high-water lake level." In 1904 it was marked in the same manner as U. S. E. 2.

D.—In South Dakota, 560 meters W. of the railway station of *Bigstone City, Grant Co., S. Dak.*, and 2 kilometers W. of Ortonville Station on the road leading to Bigstone City; at the SW. corner of the crossroads, 5 meters W. and 6 meters S. of the lines of travel, and 200 meters N. of the main line of the Chicago, Milwaukee and St. Paul Ry. (Note 3, p. 126.)

E.—4 kilometers W. of *Bigstone City, Grant Co., S. Dak.*, 15 meters N. of the Chicago, Milwaukee and St. Paul Ry. track, at a grade crossing, 8 meters E. of the line of travel; at the intersection of the highway line, right-of-way line, and the SW. corner of a cultivated field. (Note 3, p. 126.)

F.—5.4 kilometers W. of *Bigstone City, Grant Co., S. Dak.*, near the SE. corner of the NE.  $\frac{1}{4}$  of sec. 23, T. 121 N., R. 47 W.; 9 meters S. of the Chicago, Milwaukee and St. Paul Ry. track, at a grade crossing, 5 meters E. of the line of travel; at the intersection of the highway and right-of-way lines, and the NW. corner of a cultivated field belonging to Aug. Lueck. (Note 2, p. 126.)

G.—9.5 kilometers E. of *Milbank, Grant Co., S. Dak.*, near the NW. corner of the NW.  $\frac{1}{4}$  of sec. 34, T. 121 N., R. 47 W.; 14 meters N. of the Chicago, Milwaukee and St. Paul Ry. track, 36 meters E. of a grade crossing; on the right-of-way line, 8 meters SE. of the line of travel, at the SW. corner of a cultivated field. (Note 2, p. 126.)

H.—0.8 kilometer E. of the railway station at *Milbank, Grant Co., S. Dak.*, 16 meters S. of Chicago, Milwaukee and St. Paul Ry. track, 8 meters W. of the center of Eastman street, at the intersection of the right-of-way and street lines and NE. corner of the lot belonging to W. H. Gaynor. (Note 3, p. 126.)

I.—*Milbank, Grant Co., S. Dak.*, 180 meters S. of the railway station, in the sandstone doorsill at the N. entrance of the Masonic Building; 0.25 meter E. of the front edge of the sill, 1.2 meters S. of the N. wall of the building, 0.25 meter N. of the framing, and 0.05 meter above the sidewalk. (Note 1, p. 126.)

J.—2.2 kilometers W. of *Milbank, Grant Co., S. Dak.*, near the center of the E. side of the NE.  $\frac{1}{4}$  of sec. 11, T. 120 N., R. 49 W.; 15 meters S. of the Chicago, Milwaukee and St. Paul Ry. track, at grade crossing, 5 meters W. of the line of travel; at the intersection of the highway line, right-of-way fence, and NE. corner of a field of C. D. Fairchild. (Note 2, p. 126.)

K.—1.7 kilometers E. of *Twinbrooks, Grant Co., S. Dak.*, 14 meters N. of the Chicago, Milwaukee, and St. Paul Ry. track, 176 meters N. of the SE. corner of sec. 12, T. 120 N., R. 50 W.; 11 meters W. of the E. line of the section, at the intersection of the highway and the right-of-way lines and the SE. corner of a cultivated field belonging to J. Q. Thayer. (Note 2, p. 126.)

L.—*Twinbrooks, Grant Co., S. Dak.*, 140 meters W. of the depot, 15 meters N. of the main railway track, in the granite foundation of the Farmers' Elevator; at the SE. corner of the upper surface, 4 centimeters NW. of the corner, and 1.2 meters above ground; marked by U. S. B. M. in the wood above. (Note 5, p. 127.)



M.—*Stockholm, Grant Co., S. Dak.*, 11 meters SE. of the NW. corner of the SW.  $\frac{1}{4}$  of sec. 23, T. 119 N., R. 50 W.; 134 meters S. and 36 meters E. of the railway station, on land belonging to Aug. Berg, 8 meters E. and 9 meters S. of intersecting roads on highway lines. (Note 2, p. 126.)

N.—*Southshore, Codington Co., S. Dak.*, 43 meters W. of the station, and 5 meters N. from the main railway track; under the railway water tank, on the southern pier (red sandstone) of the eastern pair; 0.1 meter W. of the E. side, 0.25 meter N. of the S. side, and 0.03 meter above ground. (Note 5, p. 127.)

O.—*Southshore, Codington Co., S. Dak.*, in the N. wall (yellow brick) of Johnston and Chervenka's store, 15 meters W. of Main street, 9 meters S. of Railroad street, and 90 meters S. of the main railway track; 1.35 meters above the sidewalk, 0.75 meter W. of the E. edge of the wall. (Note 1, p. 126.)

Mound Triangulation Station.— $2\frac{1}{2}$  miles S. of *Southshore, Codington Co., S. Dak.*, upon the top of a high knoll, called Punished Womans Mound, about the center of sec. 34, T. 119 N., R. 51 W.; on land of John Koehler, on grassy land, 28 meters N. by E. from the NW. corner of a fenced pasture. (Note 7, p. 127, except the station mark is the B. M.)f

Mound Reference Mark.— $2\frac{1}{2}$  miles S. of *Southshore, Codington Co., S. Dak.*, 89.386 meters NW. of Mound Triangulation Station. The center is the mark.

P.—2 kilometers E. of *Forestville, Codington Co., S. Dak.*, 7 kilometers by railroad W. of *Southshore*, 390 meters N. of the SW. corner of sec. 32, T. 119 N., R. 51 W.; 15 meters E. of the traveled road, 22 meters N. of the Great Northern Ry. track. (Note 2, p. 126.)

Q.—8 miles by road N. of *Watertown, Codington Co., S. Dak.*, at the SW. corner of sec. 21, T. 118 N., R. 52 W.; 8 meters E. and N. of intersecting roads, 100 meters W. of the Great Northern Ry. track, in the SW. corner of a lot, 38 meters from a house rented by Rev. R. Polzin. (Note 2, p. 126.)

R.—5.8 kilometers N. of *Watertown, Codington Co., S. Dak.*, 33 meters E. of the SW. corner of sec. 7, T. 117 N., R. 52 W.; 13 meters N. of the traveled road, 16 meters E. of the Great Northern Ry. track, near the right-of-way and highway lines, in the SW. corner of the lot of C. R. Siebert. (Note 2, p. 126.)f

S.—2 kilometers N. of *Watertown, Codington Co., S. Dak.*, near the SE. corner of sec. 24, T. 117 N., R. 53 W.; 44 meters W. of the Great Northern Ry. track, 7 meters N. of a private road to Whistler Brothers abattoir; at the SE. corner of the fenced pasture, 37 meters W. of the roadway, and 108 meters E. from the abattoir. (Note 2, p. 126.)f

T.—*Watertown, Codington Co., S. Dak.*, at the city hall, in the W. end of the front doorsill, 0.4 meter S. of the front edge of the sill, 1 meter W. of the center of the doorway; 0.2 meter E. of the W. pillar, 1 meter above and 1.5 meters S. of the sidewalk on the S. side of Kemp avenue. (Note 1, p. 126.)

City 1.—*Watertown, Codington Co., S. Dak.*, at the SE. corner of the Mellett Block, Kemp avenue and Oak street, on the upper surface of the foundation; square in outline, 0.07 meter N. of the S. edge of the stone, 0.09 meter W. of the E. edge, 0.15 meter above the sidewalk, 3.4 meters S. of a doorway.

City 2.—*Watertown, Codington Co., S. Dak.*, at the county court-house, in the upper bevel at the extreme NE. corner of the water table; a square hole, 0.02 meter SW. of the NE. corner, and 0.03 meter NE. of the brickwork, 0.4 meter above ground.

Watertown Magnetic Station.—*Watertown, Codington Co., S. Dak.*, in the SE. corner of the court-house grounds, 1.5 meters N. of the N. line of Warner avenue, 2 meters W. of the W. line of Maple street; on top of a stone post, lettered U. S. C. & G. S.; a square in outline between the letters U. and S.

U.—*Watertown, Codington Co., S. Dak.*, in the NE. corner of the court-house grounds, 1.5 meters S. of the S. line of Codington avenue, and 1.5 meters W. of the W. line of Maple street; an iron post set in a grass lawn in sandy soil. (Note 2, p. 126.)f

#### DESCRIPTIONS OF PERMANENT BENCH MARKS FROM WATERTOWN, S. DAK., TO SIOUX CITY, IOWA, 1905.

T.—*Watertown, Codington Co., S. Dak.* (See above.)f

City 1.—*Watertown, Codington Co., S. Dak.* (See above.)f

City 2.—*Watertown, Codington Co., S. Dak.* (See above.)f

Magnetic Station.—*Watertown, Codington Co., S. Dak.* (See above.)f

U.—*Watertown, Codington Co., S. Dak.*, in the NE. corner of the court-house grounds, 1.5 meters S. of the S. line of Codington avenue, and 1.5 meters W. of the W. line of Maple street; set in a grass lawn in sandy soil. (Note 2, p. 126.)

V.—*Watertown, Codington Co., S. Dak.*, near the center of the western side of the SW.  $\frac{1}{4}$  sec. 31, T. 117, R. 52; on the northern one of the W. pair of piers under the Great Northern Ry. water tank; 500 meters S. of Kemp avenue, 12 meters W. of the track; 4 centimeters E. of the W. edge of the stone and 5 centimeters S. of the N. edge, 23 centimeters above ground. (Note 5, p. 127.)

W.—2.2 kilometers E. of the town of Grover, *Codington Co., S. Dak.*, near the center of the W. side of lot 3, of the W.  $\frac{1}{2}$  sec. 30, T. 116, R. 53, 17 meters N. of the railway track; 9 meters E. of the roadway, and 1.9 meters below the rails; 1 meter N. and E. of highway and railway lines. (Note 34, p. 128.)

X.—Grover, *Codington Co., S. Dak.*, near the center of the E. side of the NE.  $\frac{1}{4}$  sec. 35, T. 116, R. 54; 366 meters E. of the railway station, 40 meters S. of the track; 15 meters W. and 10 meters S. of the roadways, 5 meters S. of the corner and on the E. line of a pasture belonging to John Zimprecht; 1 meter below the rails. (Note 34, p. 128.)a

Y.—About  $3\frac{1}{2}$  miles E. of Hazel, *Hamlin Co., S. Dak.*, near the center of the SW.  $\frac{1}{4}$  sec. 4, T. 115, R. 54; 3.9 meters N. of the Great Northern Ry. track; and 20 meters S. of a roadway beside the tracks; a square in outline on the highest point of the extreme N. rim of an iron tile set solidly in rough masonry, 0.9 meter below the rails and 0.7 meter above the ground.

Z.—Hazel, *Hamlin Co., S. Dak.*, at the entrance of the First State Bank, at the SW. corner of Main street and the N. and S.  $\frac{1}{4}$  section line through the center of sec. 24, T. 115, R. 55; 0.13 meter E. of the W. brick wall; 1.13 meters W. of the center of the doorway, and 11 meters W. of the NE. corner of the building; a right-angled piece of white tiling, 50 by 35 millimeters, in the extreme NW. corner of the mosaic; 0.42 meter S. of the front edge of the top step and 0.67 meter above the sidewalk.a

A<sub>1</sub>.—Hazel, *Hamlin Co., S. Dak.*, at the SW. corner of the Merchants Hotel, 21 meters W. of the NW. corner of Main street and the N. and S.  $\frac{1}{4}$  section line through the center of sec. 24, T. 115, R. 55; in the bevel on the front upper edge of the pink sandstone water table, 3.74 meters W. of the center of the doorway, and 0.08 meter E. of the W. side of the building; at the N. edge of and 0.34 meter above the sidewalk. (Note 5, p. 127.)a

B<sub>1</sub>.—Hazel, *Hamlin Co., S. Dak.*, 200 meters W. of the railway station, near the center of the E. side of the NW.  $\frac{1}{4}$  sec. 24, T. 115, R. 55, 75 meters S. of the main track, on the E. line of and 5 meters S. of the NE. corner of a pasture belonging to Samuel Conway; 8 meters W. of the roadway and 1.6 meters below the rails. (Note 34, p. 128.)a

C<sub>1</sub>.—3 kilometers W. of Hazel, *Hamlin Co., S. Dak.*, 10 meters WSW. of the NE. corner of sec. 27, T. 115, R. 55; 65 meters S. of the track, 2 meters W. of the corner and on the N. line of a cultivated field.a (Note 2, p. 126.)a

D<sub>1</sub>.—5.7 kilometers W. of Hazel, *Hamlin Co., S. Dak.*, near the center of the S. side of the SW.  $\frac{1}{4}$  sec. 28, T. 115, R. 55; 27 meters E. of the grade crossing; 20 meters S. of the railway tracks, 32 meters N. of the roadway on the S. section line, 10 meters N. of a roadway along the tracks, 1.8 meters below the rails. (Note 2, p. 126.)

E<sub>1</sub>.—In *Hamlin Co., S. Dak.*, 3 kilometers W. of Vienna, *Clark Co.*, near the center of the SE.  $\frac{1}{4}$  sec. 31, T. 115, R. 55; on the western one of the S. pair of piers under the Great Northern Ry. water tank; 3.3 meters S. of the track, 4 centimeters N. of the S. edge, and 4 centimeters W. of the E. edge; on pink sandstone, 0.4 meter below the rails. (Note 5, p. 127.)

F<sub>1</sub>.—1 kilometer E. of Vienna, *Clark Co., S. Dak.*, on the E. line of the SE.  $\frac{1}{4}$  sec. 1, T. 114, R. 56; 35 meters N. of the Great Northern Ry. track; 6 meters W. of the roadway; 5 meters N. of the corner, and on the E. line of a pasture, 1 meter above the rails. (Note 34, p. 128.)

G<sub>1</sub>.—Vienna, *Clark Co., S. Dak.*, 38 meters S. of the Chicago, Milwaukee and St. Paul Ry. station, 9 meters W. of the main track; 60 meters S. of the N. line of sec. 12, T. 114, R. 56; on the sandstone foundation under the NE. corner of a grain elevator belonging to S. Y. Hyde; 0.45 meter S. of the NE. corner of the stone, 2 centimeters W. of the eastern edge, 0.15 meter above ground, 0.15 meter below the rails. (Note 5, p. 127.)

H<sub>1</sub>.—In *Hamlin Co., S. Dak.*, 3.6 kilometers S. of Vienna, *Clark Co.*, on the N. line of sec. 19, T. 114, R. 55, near the NW. corner of the NE. quarter section; 21 meters W. of the Chicago, Milwaukee and St. Paul Ry., 4 meters S. of the highway, 1 meter N. of the N. line of and 3 meters W. of the NE. corner of a cultivated field belonging to William Dede; 0.5 meter above the rails. (Note 2, p. 126.)

I<sub>1</sub>.—1.9 kilometers N. of Bryant, *Hamlin Co., S. Dak.*, 16 meters ENE. of the quarter section post on the W. line of sec. 8, T. 113, R. 55, 6 meters N. and 15 meters E. of the quarter section lines; 23 meters E. of the Chicago, Milwaukee and St. Paul Ry., 1 meter NE. of the SW. corner of a pasture belonging to F. H. Guse; 0.4 meter above the rails. (Note 2, p. 126.)a

J<sub>1</sub>.—1.7 kilometers N. of Bryant, *Hamlin Co., S. Dak.*, 240 meters S. of the NE. corner of the SE.  $\frac{1}{4}$  sec. 7, T. 113, R. 55; 13 meters W. of the Chicago, Milwaukee and St. Paul Ry., on the northern one of the western pair of piers under a water tank; 0.07 meter S. of the northern edge, 0.10 meter W. of the eastern edge, 0.12 meter above ground at the level of the rails, in pink sandstone. (Note 5, p. 127.)



Section Corner 1.—1.3 kilometers N. of *Bryant, Hamlin Co., S. Dak.*, between secs. 7, 8, 17, and 18, T. 113, R. 55; a raised smooth square in the center of a pink jasper post at the level of the ground and the center of the crossroads.

$K_1$ .—*Bryant, Hamlin Co., S. Dak.*, at the NE. corner of Main street and the railway property, 142 meters S. of the station and 16.5 meters E. of the Chicago, Milwaukee and St. Paul Ry., on the sandstone foundation at the SW. corner of an apartment house belonging to S. Y. Hyde; 14 meters N. of the street on the E. and W. line through the center of the SW.  $\frac{1}{4}$  sec. 17, T. 113, R. 55; 4 centimeters E. of the W. edge of the stone, 10 centimeters N. of the S. edge, 9 centimeters above ground. (Note 5, p. 127.)

$L_1$ .—*Bryant, Hamlin Co., S. Dak.*, in the tiling at the SE. side of the entrance to the First State Bank, in the extreme eastern corner of the pattern, 0.85 meter W. of the E. side of the building, 0.70 meter above the sidewalk, and 1.12 meters SE. of the center of the doorway; the center of a triangular piece of maroon tiling, 4 centimeters on each edge, the only piece of that size and shape; 0.12 meter SW. of and 0.11 meter N. of the stonework; 1.62 meters SW. from the front edge of the top step.

$M_1$ .—1 kilometer S. of *Bryant, Hamlin Co., S. Dak.*, 75 meters E. of the quarter section corner which is on the W. line of sec. 20, T. 113, R. 55; 11 meters W. of the Chicago, Milwaukee and St. Paul Ry., 14 meters N. of the highway, on the right-of-way line; 0.5 meter below the rails. (Note 34, p. 128.)

Section Corner 2.—3.7 kilometers S. of *Bryant, Hamlin Co., S. Dak.*, between secs. 29, 30, 31, and 32; T. 113, R. 55; in the center of the crossroads; in the center of the top of a pink jasper post, at the level of the ground. (Note 5, p. 127.)

$N_1$ .—*Erwin, Kingsbury Co., S. Dak.*, 230 meters S. of the railway station, 130 meters N. of the S. R. line of sec. 21, T. 112, R. 55, 16 meters W. of the Chicago, Milwaukee and St. Paul Ry., on the SE. corner of the pink sandstone foundation under the Stone Elevator Co.'s grain elevator; 4 centimeters N. of the S. edge, 6 centimeters W. of the E. edge, 0.58 meter above ground. (Note 5, p. 127.)

$O_1$ .—1.8 kilometers S. of *Erwin, Kingsbury Co., S. Dak.*, 113 meters W. of the SE. corner of sec. 28, T. 112, R. 55; 16 meters E. of the Chicago, Milwaukee and St. Paul Ry., 5 meters N. of the highway, on the highway line, 2.5 meters E. of the right-of-way line, 0.3 meter above the rails. (Note 34, p. 128.)

$P_1$ .—3.5 kilometers S. of *Erwin, Kingsbury Co., S. Dak.*, near the NE. corner of lot 4, of the NW.  $\frac{1}{4}$  sec. 3, T. 111, R. 55; 12 meters W. of the Chicago, Milwaukee and St. Paul Ry., 10 meters S. of the highway on the N. line of the section at the level of the rails. (Note 2, p. 126.)

$Q_1$ .—2 kilometers N. of *Lake Preston, Kingsbury Co., S. Dak.*, near the center of lot 2, of the E.  $\frac{1}{2}$  sec. 35, T. 111, R. 55, 600 meters S. of the road on the N. line of the section, 13 meters W. of the Chicago, Milwaukee and St. Paul Ry., 150 meters W. of the lake bank, 10 meters SW. of a highway, 0.5 meter above the rails. (Note 34, p. 128.)

$R_1$ .—*Lake Preston, Kingsbury Co., S. Dak.*, at the SW. corner of the Temple Block, owned by L. R. Olston and O. D. Thorsnes, on the E. side of Main street; in the top bevel of the smooth, cubical (pink sandstone) corner stone, on the NW. corner of the stone, next the brick work, 6 centimeters insider the sidewalk line, 0.45 meter above the sidewalk, and 0.60 meter N. of the SW. corner of the building. (Note 5, p. 127.)

$S_1$ .—*Lake Preston, Kingsbury Co., S. Dak.*, in the doorsill (sandstone) at the SW. entrance to the city hall; 0.1 meter E. of the brickwork at the W. side of the doorway; 4 centimeters above and 5 centimeters N. of the sidewalk. (Note 1, p. 126.)

Preston.—*Lake Preston, Kingsbury Co., S. Dak.*, on the E. side of Main street, one block S. of the Chicago and Northwestern Ry., in the SW. corner of the city park, 1 meter E. and 2 meters N. of sidewalk lines; a native granite rock, 4 inches square, at the level of the ground, marked with a cross, 18 millimeters NE. of the center.

$T_1$ .—1 kilometer S. of *Lake Preston, Kingsbury Co., S. Dak.*, on the N. line of the NE.  $\frac{1}{4}$  sec. 12, T. 110, R. 55; 12 meters E. of the Chicago, Milwaukee and St. Paul Ry., 10 meters S. of the highway, on the right-of-way line, 2.5 meters S. of the highway line, 0.3 meter above the rails. (Note 2, p. 126.)

$U_1$ .—6 kilometers S. of *Lake Preston, Kingsbury Co., S. Dak.*, near the center of the N. side of lot 6, of the N.  $\frac{1}{2}$  sec. 30, T. 110, R. 54; 12 meters W. of the Chicago, Milwaukee and St. Paul Ry., 10 meters N. of the highway, on the right-of-way line, 2 meters N. of the highway line, 0.5 meter below the rails. (Note 2, p. 126.)

Hansen Triangulation Station. 4.4 miles S. of *Lake Preston, Kingsbury Co., S. Dak.*, in the center of sec. 26, T. 110, R. 55; in the SE. corner of the schoolhouse yard, dist. No. 4, just W. of the land of H. H. Hansen; 3.04 meters N. and 3.40 meters W. of the S. and E. school yard fences. (Note 9, p. 127.)

Hansen Reference Mark.—4.4 miles S. of *Lake Preston, Kingsbury Co., S. Dak.*, 133.4 meters from Hansen Triangulation Station, and 68 meters W. of the center of the section, at the S. road fence running E. and W. through the center of the section, at the corner formed by partition fence running S. (Note 9, p. 127.)

Section Corner 3.—5 kilometers S. of *Lake Preston, Kingsbury Co., S. Dak.*, between secs. 24 and 25, T. 110, R. 55; and secs. 19 and 30, T. 110, R. 54, in the center of the crossroads; the center of the top of a granite boulder, flush with the ground.

V<sub>1</sub>.—*Oldham, Kingsbury Co., S. Dak.*, 165 meters N. of the railway station, 18 meters W. of the Chicago, Milwaukee and St. Paul Ry.; a square cut on a gray quartz boulder forming the foundation under the NE. corner of the Farmers' Elevator; 0.04 meter W. of the E. edge, 0.35 meter S. of the corner, and 0.2 meter above ground.

W<sub>1</sub>.—*Oldham, Kingsbury Co., S. Dak.*, upon the E. end of the S. window sill (red sandstone) of the First State Bank; 1 centimeter W. and 2 centimeters S. of the brickwork at the E. side of the window; at the N. sidewalk line, and 0.7 meter above it. (Note 13, p. 127.)

X<sub>1</sub>.—2 kilometers S. of *Oldham, Kingsbury Co., S. Dak.*, on the S. line of sec. 27, T. 109, R. 54; 12 meters E. of the Chicago, Milwaukee and St. Paul Ry., 11 meters N. of the highway, on the right-of-way line, 3 meters N. of the highway line, 0.2 meter below the rails. (Note 34, p. 128.)

Y<sub>1</sub>.—In *Lake Co.*, 5 kilometers S. of *Oldham, Kingsbury Co., S. Dak.*, on the E. line of sec. 3, T. 108, R. 54; 12 meters S. of the Chicago, Milwaukee and St. Paul Ry., 10 meters W. of the highway, on the right-of-way line, 2 meters W. of the highway line, at the level of the rails. (Note 2, p. 126.)

Z<sub>1</sub>.—*Ramona, Lake Co., S. Dak.*, on the sandstone foundation of the S. Y. Hyde elevator, 85 meters S. of the railway station; on the fourth course above ground, at the SE. corner. (Note 5, p. 127.)

A<sub>2</sub>.—*Ramona, Lake Co., S. Dak.*, 260 meters S. of the railway station, 15 meters N. of the quarter section road through sec. 32, T. 108, R. 53; 14 meters E. of the main track; on a granite rock in situ, exposed 0.2 by 0.5 meter, 0.1 meter above ground. (Note 5, p. 127.)

B<sub>2</sub>.—1.2 kilometers S. of *Ramona, Lake Co., S. Dak.*, 14 meters E. of the railway, 192 meters E. of the SW. corner of sec. 33, T. 108, R. 53; 8 meters N. of the S. line of that section, 2 meters N. and 1 meter E. of the adjacent fences. (Note 34, p. 128.)

C<sub>2</sub>.—4.1 kilometers S. of *Ramona, Lake Co., S. Dak.*, 1 047 meters S. of the N. line of sec. 9, T. 107, R. 53; 8 meters E. of the railway, 7 meters N. of a private road, and 0.4 meter below the rail. (Note 2, p. 126.)

D<sub>2</sub>.—8 kilometers S. of *Ramona, Lake Co., S. Dak.*, 270 meters, 15° N. of W. of the SE. corner of sec. 22, T. 107, R. 53; 101 meters N. of the S. line of the section, 14 meters W. of the railway; on small boulder, 0.6 by 0.4 by 0.3 meter, set flush with the ground, 1 meter E. of the fence and 1.1 meters below the rail. (Note 5, p. 127.)

Section Corner 4.—8 kilometers S. of *Ramona, Lake Co., S. Dak.*, between secs. 21, 22, 27, 28, T. 107, R. 53; on a small boulder. (Note 5, p. 127.)

Section Corner 5.—8 kilometers S. of *Ramona, Lake Co., S. Dak.*, between secs. 20, 21, 28, 29, T. 107, R. 53; on a small boulder. (Note 5, p. 127.)

Section Corner 6.—8 kilometers S. of *Ramona, Lake Co., S. Dak.*, between secs. 19, 20, 29, 30, T. 107, R. 53; on a small boulder. (Note 5, p. 127.)

E<sub>2</sub>.—8 kilometers S. of *Ramona, Lake Co., S. Dak.*, 14 meters, 30° W. of S. of the NE. corner of sec. 25, T. 107, R. 54; 11 meters S. and 9 meters W. of road, 1.5 meter W. of the fence; a square in relief on a rock in situ, 0.3 by 0.1 by 0.2 meter above ground.

Section Corner 7.—8 kilometers S. of *Ramona, Lake Co., S. Dak.*, between secs. 23, 24, 25, 26, T. 107, R. 54; on a small boulder. (Note 5, p. 127.)

Crane Reference Mark.—8 kilometers S. of *Ramona, Lake Co., S. Dak.*, in the SE. corner of sec. 21, T. 107, R. 54; at the fence corner, 7 meters N. and W. of roads. (Note 9, p. 127.)

Crane Triangulation Station.—8 kilometers S. of *Ramona, Lake Co., S. Dak.*, near the center of the SE.  $\frac{1}{4}$  sec. 21, T. 107, R. 54, on the land of Geo. V. Crane; on the N. edge of a dense growth of trees and bushes, 50 meters W. of the NE. corner of the wood lot. (Note 9, p. 127.)

F<sub>2</sub>.—3.3 kilometers NW. of *Madison, Lake Co., S. Dak.*, 13 meters E. of the railway, 8 meters E. of the road, on the W. line of the SW.  $\frac{1}{4}$  sec. 1, T. 106, R. 53; 1 meter W. of the fence and 0.7 meter below the rails. (Note 2, p. 126.)



G<sub>2</sub>.—*Madison, Lake Co., S. Dak.*, 1.3 kilometers W. of the railway station, 17 meters N. of the N. railway track, 8 meters W. of the street on the E. line of sec. 12, T. 106, R. 53; in the E. fence line, 6 meters N. of the SE. corner of a young grove owned by W. R. Walker. (Note 34, p. 128.)

H<sub>2</sub>.—*Madison, Lake Co., S. Dak.*, at the NW. entrance to the building occupied by the Bank of South Dakota; on the N. end of the fourth step, 0.07 meter E. of the front edge, 0.6 meter above the sidewalk at the N. edge of the stone. (Note 13, p. 127.)

City 2.—*Madison, Lake Co., S. Dak.*, at the SW. entrance to the building occupied by the Bank of South Dakota; on the N. end of the first step, 0.1 meter above and W. of the sidewalk. (Note 13, p. 127.)

City 3.—*Madison, Lake Co., S. Dak.*, on the jasper foundation of the Lake Park Hotel, at the SE. corner, at the level of the sidewalk; on the SW. line of the basement window, 0.4 meter SE. of the stonework. (Note 13, p. 127.)

I<sub>2</sub>.—*Madison, Lake Co., S. Dak.*, on the NW. corner of the Hundemer Block, Egan avenue and Fourth street, a triangular shelf in the upper bevel of the sandstone cornerstone, next the brickwork, at the extreme corner, 0.6 meter above the sidewalk.

J<sub>2</sub>.—3.5 kilometers E. of *Madison, Lake Co., S. Dak.*, 244 meters S. of the NW. corner of sec. 10, T. 106, R. 52; 11 meters E. of the W. line of the section, 14 meters N. of the railway; in the fence line, 4 meters E. of the corner. (Note 2, p. 126.)

K<sub>2</sub>.—5.5 kilometers E. of *Madison, Lake Co., S. Dak.*, 11 meters N. of the railway, 339 meters E. of the road on the W. line of the NW  $\frac{1}{4}$ , sec. 11, T. 106, R. 52; in a red quartz rock, 0.4 by 0.4 meter; set at the level of the ground, 0.5 meter below the rail. (Note 5, p. 127.)

L<sub>2</sub>.—*Wentworth, Lake Co., S. Dak.*, 440 meters W. of the railway station, 15 meters S. of the railway, 4 meters W. of the E. line of sec. 8, T. 106, R. 51; a copper bolt in a boulder, 1.1 by 0.5 by 0.2 meter, set 2 meters S. of the NE. corner and on the E. line of a cultivated field, 0.3 meter below the rail.

M<sub>2</sub>.—*Wentworth, Lake Co., S. Dak.*, on the jasper foundations of the Abraham and Shultz elevator, 178 meters E. of the railway station, 13 meters W. of the street, on the quarter section line, 24 meters S. of the main track; at the NE. corner of the foundation at the level of the ground. (Note 13, p. 127.)

N<sub>2</sub>.—1.8 kilometers E. of *Wentworth, Lake Co., S. Dak.*, 500 meters E. of the SW. corner of sec. 10, T. 106, R. 51; 8 meters N. of the S. line of the section, 13 meters N. of the railway; in a pasture, 1 meter N. of the fence at the level of the rails. (Note 2, p. 126.)

O<sub>2</sub>.—*Colman, Moody Co., S. Dak.*, on the NW. corner of the jasper foundation of Snyder's elevator, 100 meters W. of the railway station, 14 meters S. of the main track; on a rough shelf, 0.7 meter above ground, 0.3 meter E. of the NW. corner, 0.2 meter below the woodwork. (Note 5, p. 127.)

P<sub>2</sub>.—3 kilometers E. of *Colman, Moody Co., S. Dak.*, 14 meters S. of the railway, 17 meters N. of the road on the S. line of the SE.  $\frac{1}{4}$ , sec. 12, T. 106, R. 50; 0.8 meter above the rails. (Note 2, p. 126.)

Q<sub>2</sub>.—4 kilometers E. of *Colman, Moody Co., S. Dak.*, 17 meters S. of the railway, 4 meters W. of the road on the E. line of the SE.  $\frac{1}{4}$ , sec. 12, T. 106, R. 50; 0.5 meter W. and 1.5 meters S. of the NE. corner of a cultivated field; in a flint boulder, 1.0 by 0.4 by 0.2 meter, 0.6 meter above the rails. (Note 5, p. 127.)

R<sub>2</sub>.—5 kilometers E. of *Colman, Moody Co., S. Dak.*, 14 meters W. of the railway, 38 meters S. of the road on the N. line of the NE.  $\frac{1}{4}$ , sec. 18, T. 106, R. 49; 27 meters S. of the crossing and 0.4 meter below the rails. (Note 2, p. 126.)

S<sub>2</sub>.—6 kilometers E. of *Colman, Moody Co., S. Dak.*, 29 meters N. of the railway, 6 meters E. of the road on the W. line of the NW.  $\frac{1}{4}$ , sec. 17, T. 106, R. 49; 0.5 meter S. of the fence, 0.5 meter E. of the corner adjacent to a cultivated field owned by Geo. M. Smith; in a boulder, 0.8 by 0.4 by 0.4 meter. (Note 5, p. 127.)

T<sub>2</sub>.—5 kilometers SW. of *Egan, Moody Co., S. Dak.*, 348 meters N. of the road on the S. line of the SW.  $\frac{1}{4}$ , sec. 23, T. 106, R. 49; 6 meters E. of the railway; on a sandstone boulder in situ, 1.5 by 1.2 by 0.8 meter above ground. (Note 5, p. 127.)

U<sub>2</sub>.—7 kilometers SW. of *Egan, Moody Co., S. Dak.*, 14 meters E. of the railway, 12 meters S. of the road on the N. line of the NE.  $\frac{1}{4}$ , sec. 2, T. 105, R. 49; on the N. line, 1 meter E. of the corner of a cultivated field owned by S. J. Hively. (Note 2, p. 126.)

Section Corner 8.—2.2 kilometers N. of *Trent, Moody Co., S. Dak.*, between secs. 1, 2, 11, 12, T. 105, R. 49; on a jasper post. (Note 5, p. 127.)

V<sub>2</sub>.—*Trent, Moody Co., S. Dak.*, in the sandstone foundation of the W. & W. Cargill elevator, 120 meters S. of the railroad station, 18 meters W. of the main track; at the SE. corner, 0.4 meter above ground. (Note 5, p. 127.)

W<sub>2</sub>.—3.8 kilometers S. of *Trent, Moody Co., S. Dak.*, 12 meters E. of the track, 9 meters S. of the road on the N. line of the SE.  $\frac{1}{4}$ , sec. 25, T. 105, R. 49; 610 meters S. of the railway bridge over the Big Sioux River, at the level of the rails. (Note 2, p. 126.)

X<sub>2</sub>.—*Dell Rapids, Minnehaha Co., S. Dak.*, in the jasper foundation of the First National Bank, at the SW. side of the entrance; a square in relief, 0.06 meter above the sidewalk, 0.22 meter W. of the stonework, 0.03 meter NE. of the SW. edge of the stone, 0.05 meter SE. of the NW. edge, 2 meters SW. and 1 meter below the center of the main doorway.

City 1.—*Dell Rapids, Minnehaha Co., S. Dak.*, the center of the lower bar of the letter L in the word National, cast in the front doorsill of the First National Bank.

Y<sub>2</sub>.—*Dell Rapids, Minnehaha Co., S. Dak.*, at the W. side of the main doorway to the M. A. Dieson Building, 1.35 meters W. of the center of the doorway; an orange square mosaic, 0.03 by 0.03 meter, 0.5 meter S. of and 0.08 meter above the sidewalk, being the most northwesterly piece of that size and color in the pattern.

City 2.—*Dell Rapids, Minnehaha Co., S. Dak.*, the center of the stem of the letter R in the word Foundry, cast in the iron sill of the W. doorway to the Union Block.

Z<sub>2</sub>.—*Dell Rapids, Minnehaha Co., S. Dak.*, on the SE. corner of the jasper foundation of the McCaull-Webster elevator; 7 meters N. of the main railway track, 11 meters W. of the street, 0.8 meter above ground. (Note 13, p. 127.)

A<sub>3</sub>.—1.5 kilometers W. of *Dell Rapids, Minnehaha Co., S. Dak.*, on the S. pier (sandstone) of the R. R. bridge over the Big Sioux River, 0.47 meter S. of the N. face of the pier, 0.12 meter E. of the W. face; 1.9 meters W. of the track, 1.1 meters below the rails. (Note 5, p. 127.)

B<sub>3</sub>.—3 kilometers SW. of *Dell Rapids, Minnehaha Co., S. Dak.*, 15 meters W. of the railway, 7 meters N. of the road on the S. line of sec. 17, T. 104, R. 49; 1 meter N. and 0.5 meter E. of the fences, 0.7 meter below the rail. (Note 2, p. 126.)

Section Corner 9.—4.5 kilometers S. of *Dell Rapids, Minnehaha Co., S. Dak.*, between secs. 20, 21, 28, and 29, T. 104, R. 49; in a small boulder. (Note 5, p. 127.)

C<sub>3</sub>.—*Baltic, Minnehaha Co., S. Dak.*, 500 meters S. of the railway station on the NW. corner of the jasper foundations of the most southerly elevator, 6 meters E. of the main track, on the second course below the woodwork, 0.7 meter S. of the N. edge, 0.45 meter above ground. (Note 5, p. 127.)

D<sub>3</sub>.—1.5 kilometers S. of *Baltic, Minnehaha Co., S. Dak.*, 12 meters N. of the road on the S. line of sec. 5, T. 103, R. 49; 14 meters E. of the railway, 2 meters N. of the corner in the W. line of a cultivated field owned by John Langness; 0.6 meter below the rails. (Note 2, p. 126.)

E<sub>3</sub>.—3 kilometers S. of *Baltic, Minnehaha Co., S. Dak.*, on the lines of secs. 8 and 17, T. 103, R. 49; 33 meters W. of the railway, 7 meters S. of the road, on the N. line of a cultivated field, owned by John Vollan; 2 meters W. of the corner, 0.7 meter below the rails. (Note 2, p. 126.)

F<sub>3</sub>.—4 kilometers south of *Baltic, Minnehaha Co., S. Dak.*, 31 meters SW. of the railway; on a jasper rock set in the center of the crossroads, 0.9 meter below the rails. (Note 5, p. 127.)

G<sub>3</sub>.—*Renner, Minnehaha Co., S. Dak.*, in the jasper foundations at the SW. corner of the Petersen elevator, 6 centimeters N. and 3 centimeters E. of the corner, 9 centimeters above ground. (Note 5, p. 127.)

H<sub>3</sub>.—*Renner, Minnehaha Co., S. Dak.*, on the S. line of sec. 9, T. 102, R. 49; 21 meters E. of the railway, 14 meters N. of the road; on a jasper rock, set 3 meters E. and 4 meters N. of the SW. corner of a lot owned by L. Renner; 0.7 meter below the rails. (Note 5, p. 127.)

I<sub>3</sub>.—4 kilometers S. of *Sioux Falls, Minnehaha Co., S. Dak.*, 5 meters S. of the road on the N. line of sec. 4, T. 101, R. 49; 23 meters E. of the railway, on the N. line of a cultivated field, 8 meters E. of the corner, 0.5 meter below the rails. (Note 2, p. 126.)

J<sub>3</sub>.—2.3 kilometers N. of *Sioux Falls, Minnehaha Co., S. Dak.*, 6 meters N. of the road on the S. line of sec. 5, T. 101, R. 49; 13 meters W. of the railway, at the southeast corner of a cultivated field; 0.4 meter below the rails. (Note 2, p. 126.)

City 1.—*Sioux Falls, Minnehaha Co., S. Dak.*, on the SE. corner of the jail; a triangular shelf on the upper bevel of the sandstone cornerstone, at the extreme corner.

City 2.—*Sioux Falls, Minnehaha Co., S. Dak.*, on the cross of the letter X in the word Sioux, cast in the sill of the NW. doorway of the Van Eps (1892) building.

City 3.—*Sioux Falls, Minnehaha Co., S. Dak.*, the center of the first letter N in the word Union, cast in the sill of the NE. doorway of the Masonic Temple.



City 4. —*Sioux Falls, Minnehaha Co., S. Dak.*, a point on the iron sill of the NW. doorway of the Van Eps (1882) building, 0.75 meter S. of the N. end of the sill, and 0.05 meter E. of the front edge; unmarked.

U. S. G. S. Astronomic Station.—*Sioux Falls, Minnehaha Co., S. Dak.*, in the E. lawn of the Federal Building, on a brick pier, 18 by 18 by 36 inches, with a sandstone cap, lettered Astronomical Pier  $\times$  U. S. Geol. Survey; a point 25 millimeters NE. of the center of the cross.

L<sub>3</sub>.—*Sioux Falls, Minnehaha Co., S. Dak.*, in the eastern entrance of the Cataract Hotel; the center of the most southeasterly of the 3-inch round deadlights, 0.95 meter N. of the brick wall, 0.5 meter W. of the front edge of the top step, 1.2 meters above the sidewalk.

K<sub>5</sub>.—*Sioux Falls, Minnehaha Co., S. Dak.*, on the N. pier (granite) of the Chicago, St. Paul, Minneapolis and Omaha Ry. bridge over the Big Sioux River; 12 centimeters E. of the W. edge of the capstone, 9 centimeters S. of the N. edge; 1.2 meters below the rails, 4.3 meters above the water. (Note 5, p. 127.)

M<sub>3</sub>.—6.5 kilometers N. of *Harrisburg, Lincoln Co., S. Dak.*, 33 meters S. of the road on the N. line of sec. 13, T. 100, R. 50; 15 meters E. of the railway, 1 meter below the rail. (Note 34, p. 128.)

1484 YNKTN.—7.5 kilometers N. of *Harrisburg, Lincoln Co., S. Dak.*, NW. corner sec. 7, T. 100 N., R. 49 W. (Note 18, p. 127.)

1419 YNKTN.—0.8 kilometer E. of *Harrisburg, Lincoln Co., S. Dak.*, NW. corner sec. 6, T. 99 N., R. 49 W. (Note 18, p. 127.)

N<sub>3</sub>.—5 kilometers N. of *Harrisburg, Lincoln Co., S. Dak.*, 11 meters N. of the road on the S. line of sec. 13, T. 100, R. 50, 19 meters W. of the railway, 1 meter below the rails. (Note 34, p. 128.)

O<sub>3</sub>.—*Harrisburg, Lincoln Co., S. Dak.*, 30 meters E. of the railway, 8 meters N. of the road on the S. line of T. 100 N., on the S. line of a cultivated field, owned by Ole Sorensen, 15 meters E. of the corner, 0.2 meter above the rails. (Note 34, p. 128.)

P<sub>3</sub>.—1.6 kilometers S. of *Harrisburg, Lincoln Co., S. Dak.*, 11 meters S. of the road on the N. line of sec. 12, T. 99, R. 50, 16 meters W. of the railway, in the NE. corner of a pasture owned by W. W. Wasem. (Note 2, p. 126.)

Q<sub>3</sub>.—5 kilometers SE. of *Harrisburg, Lincoln Co., S. Dak.*, 17 meters NE. of the track, 12 meters W. of the road on the E. line of sec. 18, T. 99, R. 49; in the SE. corner of a pasture owned by F. P. Robinson, 0.6 meter below the rails. (Note 34, p. 128.)

R<sub>3</sub>.—4 kilometers N. of *Canton, Lincoln Co., S. Dak.*, 9 meters S. of the road on the N. line of sec. 11, T. 98, R. 49; 13 meters W. of the railway, 3 meters S. and 1 meter E. of adjacent fences; 0.6 meter below the rails. (Note 2, p. 126.)

S<sub>3</sub>.—*Canton, Lincoln Co., S. Dak.*, at the S. entrance to the county court-house, on the W. wall of the steps, at the W. edge of a red sandstone block, and 0.4 meter N. of the S. edge, 1 meter above ground, and 0.26 meter above the third step. (Note 13, p. 127.)

T<sub>3</sub>.—*Canton, Lincoln Co., S. Dak.*, on the jasper sill in the NW. doorway of the building occupied by the Bank of Lincoln County, 0.17 meter S. of the N. side of the archway, 0.26 meter E. of the front edge, 0.17 meter above the sidewalk. (Note 5, p. 127.)

A.—*Beloit, Lyon Co., Iowa*, 420 meters N. of the railway station, 13 meters W. of the track, 4 meters S. of a private road to the Orphans' Asylum; 1 meter E. and 2 meters S. of the NE. corner of a garden plot owned by J. Widdy, 1 meter below the rails. (Note 34, p. 128.)

B.—*Beloit, Lyon Co., Iowa*, 170 meters S. of the railway station, 31 meters E. of the track, 14 meters S. of the roadway, on a jasper rock, set in a garden plot, 2 meters S. and 1 meter E. of the NW. corner, 0.4 meter below the rails. (Note 5, p. 127.)

C.—3 kilometers S. of *Beloit, Lyon Co., Iowa*, 13 meters W. of the railway track, 4 meters N. of a private road, 110 meters N. of a trestle over a ravine, 1 meter E. of the fence, and 0.3 meter below the rails. (Note 34, p. 128.)

D.—5 kilometers NW. of *Elm Springs, Sioux Co., Iowa*, 13 meters W. of the railway, 8 meters N. of the road; on the S. line of sec. 5, T. 97, R. 48, 2 meters N. and 1 meter E. of the fences, 0.2 meter below the rails. (Note 2, p. 126.)

U<sub>3</sub>.—*Fairview, Lincoln Co., S. Dak.*, on the jasper foundations at the SE. corner of the most southerly grain elevator, 14 meters SW. of the SW. corner of the railway station, 8 centimeters above ground, 4 centimeters W. and N. of the corner of the stone. (Note 5, p. 127.)

V<sub>3</sub>.—0.8 kilometer S. of *Fairview, Lincoln Co., S. Dak.*, 14 meters E. of the railway, 4 meters N. of the road, 1.4 meters below the rails, and 1 meter W. of the fence. (Note 2, p. 126.)

W<sub>3</sub>.—1.5 kilometers S. of *Fairview, Lincoln Co., S. Dak.*, 12 meters W. of the main railway track and 33 meters E. of the siding, 3 meters N. of the road, 45 meters E. of the road along the track, at the level of the rails. (Note 34, p. 128.)

X<sub>3</sub>.—2.3 kilometers S. of *Fairview, Lincoln Co., S. Dak.*, 15 meters E. of the railway and 14 meters S. of the road; 1.5 meters below the rails, 1 meter E. and 8 meters S. of the NW. corner of a cultivated field. (Note 34, p. 128.)

E.—1.2 kilometers S. of *Austin, Sioux Co., Iowa*, and 1.6 kilometers S. of the railway bridge over the Big Sioux River; 13 meters W. of the railway, 6 meters N. of the road, 1 meter W. of the fence, and 0.8 meter below the rails. (Note 34, p. 128.)

Y<sub>3</sub>.—*Hudson, Lincoln Co., S. Dak.*, in the W. side of the entrance to Johnson & Torkelson's store, 1.3 meters W. of the center of the doorway, 0.3 meter above the sidewalk; 0.4 meter S. of the front edge of the sill; a square piece of yellow tiling, 75 millimeters on a side, set square with the pattern, the most northwesterly piece of that size and color in the pattern.

Z<sub>9</sub>.—*Hudson, Lincoln Co., S. Dak.*, 70 meters S. of the railway station, 17 meters W. of the track; on the SE. corner of the jasper foundations of the N. elevator; 7 centimeters N. and 2 centimeters W. of the edges of the stone, and 0.45 meter above ground. (Note 5, p. 127.)

A<sub>4</sub>.—1 kilometer S. of *Hudson, Lincoln Co., S. Dak.*, 14 meters E. of the railway, 11 meters W. of the road; 15 meters S. of the crossing, 1 meter W. of the fence, 2 meters S. of the corner of a pasture, and 0.4 meter below the rails. (Note 34, p. 128.)

B<sub>4</sub>.—5 kilometers S. of *Hudson, Lincoln Co., S. Dak.*, 15 meters W. of the railway, 234 meters N. of the crossroads, 200 meters N. of the schoolhouse; 11 meters E. of the road, 2 meters N. and 1 meter E. of the SW. corner of a pasture owned by M. Allen. (Note 2, p. 126.)

F.—5 kilometers N. of *Hawarden, Sioux Co., Iowa*, on the S. (sandstone) pier of the railway bridge over the Big Sioux River; 0.44 meter N. of the S. edge and 2 meters W. of the E. end of the capstone, 2 meters E. of the center of the track, and 1.7 meters below the rails. (Note 5, p. 127.)

G.—3 kilometers N. of *Hawarden, Sioux Co., Iowa*, 13 meters W. of the railway, 9 meters W. of the road, opposite the crossing; 3 meters S. and 1 meter E. of the NE. corner of a field owned by M. Austin. (Note 34, p. 128.)

H.—*Calliope, Sioux Co., Iowa*, 5.9 meters S. of the NE. corner of the McCaull-Webster elevator, 18 meters W. of the railway and 55 meters S. of the station; 0.4 meter above ground, 0.25 meter N. of the S. end of the foundation wall (pink jasper), at the E. edge. (Note 5, p. 127.)

I.—*Hawarden, Sioux Co., Iowa*, in a doorway of the Wood & Fleshman (1902) Block, 1.8 meters S. of the center and 2.2 meters E. of the front edge of the front step; a yellow circle in a blue square of tiling, 5 centimeters on each edge, the most southeasterly blue square in the design.

City.—*Hawarden, Sioux Co., Iowa*, on the N. side of Dakota street, 20 meters W. of the W. line of Kansas street, at the SW. corner of lot 14, block 5; on the S. sidewalk line; the center of the cap upon the upper end of a piece of heavily galvanized 3-inch iron pipe, 8 feet long, resting on a rock 6 feet underground.

J.—1 kilometer S. of *Hawarden, Sioux Co., Iowa*, 13 meters E. of the railway, 10 meters N. of the road; 1 meter W. and 2 meters N. of the SW. corner of a field owned by John Abbey, at the level of the rails. (Note 34, p. 128.)

K.—3 kilometers S. of *Hawarden, Sioux Co., Iowa*, 14 meters W. of the railway, 6 meters W. of the road, opposite the crossing; 1 meter E. of the W. road fence, at the level of the rails. (Note 2, p. 126.)

L.—4.5 kilometers S. of *Hawarden, Sioux Co., Iowa*, 500 meters N. of a railway cut, and 240 meters by rail S. of a section line; 13 meters NW. of the railway and 5 meters S. of the road; 0.4 meter below the rails; marked by a boulder. (Note 2, p. 126.)

M.—In *Sioux County*, 1.0 kilometer N. of *Chatsworth, Plymouth Co., Iowa*, 20 meters E. of the railway, 13 meters N. of the road, 2 meters E. and 1 meter N. of the SW. corner of a pasture, and 1.7 meters below the rails. (Note 34, p. 128.)

N.—*Chatsworth, Plymouth Co., Iowa*, 25 meters N. of the station, 29 meters E. of the railway, and 12 meters S. of the road; on a jasper rock set 1 meter S. and 0.5 meter W. of the NW. corner of a meadow. (Note 5, p. 127.)

O.—*Chatsworth, Plymouth Co., Iowa*, on the E. pier of the N. pair, under the railway water tank; 36 meters S. of the station, and 5.5 meters W. of the track; in the top bevel, 0.19 meter above ground, at the E. edge and 0.24 meter S. of the N. edge. (Note 5, p. 127.)



P.—2.3 kilometers S. of *Chatsworth, Plymouth Co., Iowa*, and 330 meters N. of a railway bridge; 3 meters N. of a road, 13 meters W. of the railway, 1 meter E. of the fence, and 0.5 meter below the rails. (Note 34, p. 128.)

Q.—1.4 kilometers N. of *Akron, Plymouth Co., Iowa*, and 13 meters S. of a railway bridge; 6 meter S. of the road, 15 meters W. of the railway, 0.5 meter E. of a pasture fence, 1.6 meter below the rails. (Note 34, p. 128.)

R.—*Akron, Plymouth Co., Iowa*, in the front doorsill (jasper) of the Akron Savings Bank, 0.47 meter NW. of the SE. side of the doorway, 0.12 meter SW. of the front edge, 0.45 meter above the sidewalks (Note 5, p. 127.)

City.—*Akron, Plymouth Co., Iowa*, at the NE. corner of Reed and Second streets, at the N. sidewalk line; 0.13 meter W. of the SW. corner of the building; the N. side of the top edge of a 1-inch galvanized iron pipe set solidly in cement flush with the sidewalk.

S.—1.5 kilometers S. of *Akron, Plymouth Co., Iowa*, 15 meters W. of the railway, and 40 meters W. of the road along the track; 6 meters N. of the road and 2 meters N. and 0.5 meter E. of the SE. corner of a cultivated field; 0.4 meter below the rails. (Note 3, p. 126.)

T.—4.0 kilometers S. of *Akron, Plymouth Co., Iowa*, 13 meters W. of the railway, 7 meters N. of the road, 1 meter E. of the fence, and 0.3 meter above the rails. (Note 2, p. 126.)

V.—*Westfield, Plymouth Co., Iowa*, 15 meters W. of the railway, 21 meters N. of the road; 6.55 meters S. of the NE. corner of the Hopkins elevator, 0.3 meter above ground, 0.1 meter N. of the S. edge of the jasper rock, at the E. edge. (Note 5, p. 127.)

U.—1.0 kilometer N. of *Westfield, Plymouth Co., Iowa*, 13 meters W. of the railway, 12 meters S. of the road, 1 meter W. of the fence, and 0.3 meter below the rails. (Note 34, p. 128.)

W.—1.6 kilometer S. of *Westfield, Plymouth Co., Iowa*, 14 meters E. of the railway, and 15 meters W. of the road along the track; 5 meters N. of the road, 1 meter S. and W. of fences, 0.6 meter below the rails. (Note 3, p. 126.)

X.—3.2 kilometers S. of *Westfield, Plymouth Co., Iowa*, 14 meters E. of the railway, and 12 meters W. of the road along the track; 6 meters N. of the road, 0.8 meter below the rails. (Note 2, p. 126.)

Y.—4.2 kilometers S. of *Westfield, Plymouth Co., Iowa*, and 1 017 meters E. of the bridge over the Big Sioux River; 4 meters E. of a private road, and 14 meters S. of the track; on a jasper rock, of quartzite, roughly squared for building purposes, about 1.0 by 0.5 by 3 meters, set 1 meter N. of the fence and 0.2 meter above the rails. (Note 5, p. 127.)

Z.—5.2 kilometers S. of *Westfield, Plymouth Co., Iowa*, at the E. end of the railway bridge over the Big Sioux River, on the NE. pier of the central four under the old railway water tank; on the extreme NW. corner of the stone, at the upper bevel, 0.4 meter above ground. (Note 5, p. 127.)

C<sub>4</sub>.—1.0 kilometer NE. of *Elk Point, Union Co., S. Dak.*, 1 041 meters by rail from the main line of railway at the junction; 13 meters NW. of the railway, 17 meters W. of the section line, 1 meter SE. of the fence, and 0.6 meter below the rails. (Note 34, p. 128.)

P. B. M.  $3\frac{2}{3}$ .—*Elk Point, Union Co., S. Dak.*, in the SE. corner of the court-house yard. (Note 10, p. 127.)

D<sub>4</sub>.—1 kilometer S. of *Elk Point, Union Co., S. Dak.*, 105 meters W. of the railway, at the N. corner of the roads, 1 meter W. and 1 meter N. of the fences, 0.2 meter below the rails. (Note 34, p. 128.)

E<sub>4</sub>.—3.2 kilometers S. of *Elk Point, Union Co., S. Dak.*, 18 meters NE. of the railway, at the NE. corner of the crossroads, 1 meter N. and E. of the SW. corner of a cultivated field, 0.6 meter below the rails. (Note 2, p. 126.)

F<sub>4</sub>.—7.5 kilometers S. of *Elk Point, Union Co., S. Dak.*, 15 meters SW. of the railway, 8 meters N. of the road; 1 meter N. and W. of the SE. corner of a cultivated field, 0.4 meter below the rails. (Note 2, p. 126.)

G<sub>4</sub>.—*Jefferson, Union Co., S. Dak.*, 800 meters N. of the station; 15 meters SW. of the railway, 5 meters N. of the road, 1 meter W. and 0.5 meter S. of the SE. corner of a garden, 0.7 meter below the rails. (Note 34, p. 128.)

P. B. M.  $3\frac{1}{3}$ .—*Jefferson, Union Co., S. Dak.*, in the NW. corner of the schoolhouse yard, at the NE. sidewalk line. (Note 10, p. 127.)

H<sub>4</sub>.—*Jefferson, Union Co., S. Dak.*, at the front entrance to the Fontaine Block; 0.45 meter NE. of the front edge of the sill, 0.75 meter SE. of the center of the doorway, 0.14 meter W. of the S. wood framing, 0.10 meter above the sidewalk; a blue triangle of tiling, 5 by 3.5 centimeters, the most southerly such piece in the design.

I<sub>4</sub>.—*Jefferson, Union Co., S. Dak.*, 400 meters S. of the station; 13 meters N. of the railway, 5 meters W. of the private road, 1 meter S. of the S. fence of a meadow, and 0.8 meter below the rails. (Note 34, p. 128.)e

J<sub>4</sub>.—1.6 kilometers SE. of *Jefferson, Union Co., S. Dak.*, 13 meters SW. of the railway, 11 meters S. of the road, 1 meter SE. and 0.5 meter NE. of the NE. corner of a cultivated field, at the level of the rails. (Note 2, p. 126.)

K<sub>4</sub>.—3.6 kilometers SE. of *Jefferson, Union Co., S. Dak.*, 13 meters SW. of the railway, 12 meters E. of the road, 18 meters SE. of the crossing; 2 meters SE. and 0.5 meter NE. of the NW. corner of a cultivated field, at the level of the rails. (Note 2, p. 126.)e

L<sub>4</sub>.—*McCook, Union Co., S. Dak.*, 450 meters N. of the station; 15 meters NE. of the railway, 11 meters E. of the road, opposite the crossing; 1 meter S. and 0.5 meter E. of the NW. corner of a cultivated field, 0.3 meter below the rails. (Note 34, p. 128.)

M<sub>4</sub>.—0.7 kilometer S. of *McCook, Union Co., S. Dak.*, 30 meters SW. of the railway, 12 meters SW. of the road along the track; 5 meters SE. of a private road, 1 meter NE. of the fence, 0.4 meter below the rails. (Note 34, p. 128.)

N<sub>4</sub>.—2.7 kilometers S. of *McCook, Union Co., S. Dak.*, on the W. bank of the Big Sioux River, 16 meters from the edge; 15 meters S. of the railway, in a wood lot, 1 meter S. of the fence, 1.2 meters below the rails. (Note 2, p. 126.)

P. B. M. 392.—*McCook, Union Co., S. Dak.*, 400 feet S. of the station, 130 feet SW. of the school-house, in the south road fence. (Note 10, p. 127.)

P. B. M. 399.—About 6 miles above *Sioux City, Iowa*, (See App. 8, Report for 1899, p. 842.) The B. M. is on Chicago, Milwaukee and St. Paul Ry. land, 14 meters W. of the track, 3 feet E. of the W. right-of-way fence, and 3 meters below the rails. In 1905 the cap had been stolen.

P. B. M. 398.—6 miles above *Sioux City, Woodbury Co., Iowa*. (See App. 8, Report for 1899, p. 841.) In 1905 the cap had been stolen.

P. B. M. 397.—3½ miles above *Sioux City, Woodbury Co., Iowa*. (See App. 8, Report for 1899, p. 841.) The B. M. is at the overhead crossing, 331 meters N. of the grade crossing at Brughier Bridge, 2 meters E. of the fence and at the level of the rails.

#### DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN EVANSVILLE AND STEPHEN, MINN., 1905.

Q<sub>1</sub>.—Near *Brandon, Douglas Co., Minn.* (See p. 152.)

R<sub>1</sub>.—*Brandon, Douglas Co., Minn.* (See p. 152.)

S<sub>1</sub>.—*Evansville, Douglas Co., Minn.* (See p. 152.)

T<sub>1</sub>.—*Evansville, Douglas Co., Minn.* (See p. 152.)

M<sub>3</sub>.—About 2 miles NW. of *Evansville, Douglas Co., Minn.*, 5 telegraph poles W. of milepost 161, and 1 meter N. of the Great Northern Ry. right-of-way fence, on the side of a rocky hill. (Note 2, p. 126.)e

N<sub>3</sub>.—*Melby, Douglas Co., Minn.*, about 100 meters W. of station platform, 35 meters W. of a road crossing; on the public highway, 8 meters S. of the Great Northern Ry. track. (Note 2, p. 126.)

O<sub>3</sub>.—About 1.6 miles NW. of *Melby, Douglas Co., Minn.*, on the Great Northern right of way, 4½ telegraph poles NW. of the road crossing; in the coping N. of the track of stone arch bridge 68, which is over a stream connecting Lake Christiana and Pelican Lake. (Note 16, p. 127.)

P<sub>3</sub>.—*Ashby, Grant Co., Minn.*, at the SW. corner of Melby street and the street one block south of Main street; in the NE. corner of the property owned by John Madland, 3 meters from the property line. (Note 3, p. 126.)

Q<sub>3</sub>.—*Ashby, Grant Co., Minn.*, at the SE. corner of Main and Larsen streets; in the NW. corner and on the N. face of a yellow brick building owned by J. H. Bemis, 1 meter above the sidewalk. (Note 1, p. 126.)

R<sub>3</sub>.—1.5 miles NW. of *Ashby, Grant Co., Minn.*, 17 telegraph poles W. of milepost 169; ¾ meter NE. of the Great Northern Ry. right-of-way fence, on the property line of F. Caldwell's and L. O. Bratvold's farms. (Note 2, p. 126.)

S<sub>3</sub>.—*Dalton, Ottertail Co., Minn.*, about 475 meters N. of the Great Northern Ry. track; in the NW. corner of the public school grounds, ¾ meter from the property line. (Note 3, p. 126.)

Dalton Astronomic Station.—*Dalton, Ottertail Co., Minn.*, about 175 feet S. of the building occupied by the Bank of Dalton; on a prominent little knoll in the vacant lot owned by M. T. McMahon, who lives in Fergus Falls and is the owner of the Dalton Lumber Co. (Note 7, p. 127.)



T<sub>3</sub>.—Dalton, Ottertail Co., Minn., on the Great Northern Ry. right of way, 50 meters E. and 50 meters N. of the Great Northern Ry. station; on property leased by the Minneapolis and Northern Elevator Co., 1 meter N. of the NW. corner of the engine house. (Note 2, p. 126.)

Dalton Triangulation Station.—1 mile W. of Dalton, Ottertail Co., Minn., on the Great Northern Ry.; on a knoll in a pasture in the NE.  $\frac{1}{4}$ , SE.  $\frac{1}{4}$  sec. 10, T. 131 N., R. 42 W.; about 90 meters S. of the NE. corner of the quarter section of land owned by Ivir Vik, who lives about  $\frac{3}{8}$  mile W. of S. and across a small lake from the station; 2.42 meters W. of the fence at the eastern side of this section. (Note 7, p. 127.)

U<sub>3</sub>.—About 2.2 miles NW. of Dalton, Ottertail Co., Minn.,  $\frac{1}{2}$  mile W. of milepost 178, on the N. right of way; on the NE. corner of the coping of a stone arch bridge, 3 meters below the level of the rails. (Note 1, p. 126.)

V<sub>3</sub>.—Parkdale, Ottertail Co., Minn., 15 $\frac{1}{3}$  telegraph poles W. of milepost 181; on the public road  $\frac{3}{8}$  meter S. of the right-of-way fence. (Note 3, p. 126.)

W<sub>3</sub>.—About 2.3 miles SE. of Fergus Falls, Ottertail Co., Minn., on the right of way, 3 telegraph poles E. of milepost 184; on the S. coping of a stone arch culvert which is over a small stream flowing into the lake; in the center of the top surface. (Note 4, p. 127.)

X<sub>3</sub>.—Fergus Falls, Ottertail Co., Minn., S. of tracks; on the SE. foundation of the Great Northern Ry. water tank, in the SE. corner of the stone. (Note 16, p. 127.)

Y<sub>3</sub>.—Fergus Falls, Ottertail Co., Minn., at the SE. corner of Lincoln avenue and Mill street, on the doorstep of the northern entrance of the Pickett Block, in the middle of the building; 10 centimeters from the N. edge and 15 centimeters from the E. edge of the step. (Note 13, p. 127.)

City.—Fergus Falls, Ottertail Co., Minn., at the SE. corner of Bismark avenue and Court street; the highest point of the check valve of a fire plug.

Z<sub>3</sub>.—Fergus Falls, Ottertail Co., Minn., on the brick building of the Fergus Falls National Bank; on the Court street side, about 12 meters from Lincoln avenue; in the water table. (Note 1, p. 126.)

A<sub>4</sub>.—About 3.25 miles W. of Fergus Falls, Ottertail Co., Minn., opposite the third telegraph pole W. of milepost 190; at the W. end of a cut and  $\frac{1}{2}$  meter inside of the northern right-of-way fence. (Note 2, p. 126.)

B<sub>4</sub>.—About 4 miles W. of Fergus Falls, Ottertail Co., Minn., 6 telegraph poles E. of milepost 191; in the S. side of the W. abutment of a bridge over Ottertail River, in the SE. corner of the horizontal surface of the beveled capstone. (Note 4, p. 127.)

C<sub>4</sub>.—Carlisle, Ottertail Co., Minn., 4 $\frac{1}{2}$  telegraph poles W. of the station; at a road crossing, in the NW. corner of the crossing and at the corner of the fence. (Note 2, p. 126.)

D<sub>4</sub>.—About 3 miles W. of Carlisle, Ottertail Co., Minn., 2 $\frac{1}{2}$  telegraph poles W. of milepost 198; in the center of the N. coping of the stone arch cattle passage 84, about 5 centimeters from N. fence. (Note 15, p. 127.)

E<sub>4</sub>.—In Ottertail Co., Minn., about 4 $\frac{1}{2}$  miles SE. of Rothsay, Wilkin Co., Minn., on the eastern side of the public road, in the corner of the fence; on land of Peter Wilson, due W. of his house; about 500 meters SE. of Indian Triangulation Station, which is on a prominent bald knoll known as Indian Mound in the SE.  $\frac{1}{4}$  NE.  $\frac{1}{4}$ , sec. 4, T. 134, R. 44. (Note 2, p. 126.)

F<sub>4</sub>.—Rothsay, Wilkin Co., Minn., about 100 meters S. of the railroad station, on the E. side of the track, in the SE. corner of the SE. foundation stone of the Great Northern Ry. water tank. (Note 13, p. 127.)

G<sub>4</sub>.—Rothsay, Wilkin Co., Minn., at the NW. corner of Second and Main streets; in the door sill of the S. entrance of the yellow brick building owned by the Independent Order of Odd Fellows lodge and used as a bank; at the W. end of the sill. (Note 16, p. 127.)

H<sub>4</sub>.—Rothsay, Wilkin Co., Minn., about 200 meters E. of the Great Northern Ry. tracks; on the public school building, erected in 1903; in the concrete water table at the S. side of the entrance, about 0.2 meter above the ground. (Note 1, p. 126.)

I<sub>4</sub>.—About 3 miles NW. of Rothsay, Wilkin Co., Minn., 7 telegraph poles S. of milepost 207; at the public road crossing and in the NE. corner formed by intersection of the public highway and the Great Northern Ry. right of way; on property owned by John Nymoan. (Note 2, p. 126.)

J<sub>4</sub>.—Lawndale, Wilkin Co., Minn., 25 meters N. of the signboard; 50 meters E. of the main track of the Great Northern Ry., on the eastern side of the public road as mapped out, but on the W. side of the road now in use; about 1 $\frac{1}{2}$  meters from the telephone pole where the line changes direction. (Note 3, p. 126.)

K<sub>4</sub>.—About  $1\frac{1}{2}$  miles N. of *Lawndale, Wilkin Co., Minn.*, at the road crossing, 5 telegraph poles S. of milepost 212; on the right of way 11 meters W. of the track. (Note 2, p. 126.)

L<sub>4</sub>.—About 2 miles S. of *Barnesville, Clay Co., Minn.*, 7 meters N. of the second telegraph pole S. of milepost 215, and 10 meters W. of the center of the tracks; in the center of the top surface of a large granite boulder on the right of way, almost level with the ground. (Note 5, p. 127.)

M<sub>4</sub>.—About  $\frac{1}{3}$  mile S. of the railway station at *Barnesville, Clay Co., Minn.*, at a crossing; about 50 meters E. of the Great Northern Ry. tracks, at the corner of the public road, on the E. side, in a corner of the fence. (Note 3, p. 126.)

N<sub>4</sub>.—*Barnesville, Clay Co., Minn.*, at the W. entrance of the public school building, on Madison avenue, at the N. end of the horizontal surface of the top step. (Note 16, p. 127.)

O<sub>4</sub>.—*Barnesville, Clay Co., Minn.*, on the W. side of Front street, between Second and Third streets, 1 meter N. of the central entrance to a large red brick building, known as the Oliver Block; in the sandstone sill. (Note 1, p. 126.)

P<sub>4</sub>.—About 2 miles N. of *Barnesville, Clay Co., Minn.*, 1 mile N. of the junction; 2 telegraph poles N. of milepost 3, opposite wooden culvert 3; on the right of way, in range with the telegraph poles. (Note 2, p. 126.)

Q<sub>4</sub>.—About  $4\frac{1}{2}$  miles NW. of *Barnesville, Clay Co., Minn.*, 5 telegraph poles E. of milepost 4 on the line running to Fargo, N. Dak., in range with the telephone poles on the N. side of the track. (Note 2, p. 126.)

R<sub>4</sub>.—*Downer, Clay Co., Minn.*, 175 meters S. of the depot, on an elevator of the Hennepin Elevator Co.; on the horizontal surface of the foundation, on the N. side, 2 meters E. of the NW. corner of the building. (Note 36, p. 128.)

S<sub>4</sub>.—*Downer, Clay Co., Minn.*, 175 meters N. of the depot, at the NW. corner of a grade crossing on the right of way, 8 meters N. of a telegraph pole and in range with the telegraph poles. (Note 35, p. 128.)

T<sub>4</sub>.—About  $1\frac{1}{2}$  miles N. of *Downer, Clay Co., Minn.*, 14 telegraph poles N. of milepost 10; at the NE. corner of a grade crossing, in a corner of a pasture fence; in soft clay. (Note 2, p. 126.)

U<sub>4</sub>.—About 1 mile N. of *Crawford, Clay Co., Minn.*, 16 telegraph poles S. of milepost 15; at the NW. corner of a grade crossing, on the right of way, 2 meters N. of a telegraph pole and in range with the poles. (Note 2, p. 126.)

V<sub>4</sub>.—About 1 mile S. of *Glyndon, Clay Co., Minn.*, 11 telegraph poles S. of milepost 18; at the SW. corner of a grade crossing; on the right of way, 4 meters S. of a telegraph pole and in range with the poles. (Note 35, p. 128.)

W<sub>4</sub>.—*Glyndon, Clay Co., Minn.*, on the Northern Pacific right of way, 11 telegraph poles W. of the railroad crossing; on the W. abutment of a steel girder bridge; on the N. side, in the center of the beveled concrete surface. (Note 36, p. 128.)

X<sub>4</sub>.— $1\frac{1}{2}$  miles S. of *Averill, Clay Co., Minn.*, on the Great Northern Ry. right of way, 16 telegraph poles S. of milepost 24, opposite whistling post marked  $\begin{smallmatrix} W. \\ X \end{smallmatrix}$ ; in range with telegraph poles, set in soft clay. (Note 2, p. 126.)

Y<sub>4</sub>.—*Averill, Clay Co., Minn.*, 6 rails N. of the N. switch, 3 meters N. of the first telegraph pole N. of the grade crossing; 13 meters W. of the Great Northern Ry. track, in range with telegraph poles. (Note 35, p. 128.)

Z<sub>4</sub>.—About 3 miles S. of *Felton, Clay Co., Minn.*, 3 meters N. of milepost 30; on the right of way in range with the telegraph poles. (Note 35, p. 128.)

A<sub>5</sub>.—*Felton, Clay Co., Minn.*, 2 telegraph poles S. of milepost 33; 35 meters W. of the station, 5 meters S. of S. line of station; in corner of a fence on the property of J. J. Hynes. (Note 35, p. 128.)

B<sub>5</sub>.—*Felton, Clay Co., Minn.*, 1 telegraph pole N. of milepost 33; at the SW. corner of the elevator owned by Jenkins Elevator Co.; in the horizontal surface of the foundation stone, 3 inches from the S. edge and 4 inches from the W. edge. (Note 4, p. 127.)

C<sub>5</sub>.—In *Clay Co., Minn.*, 3 miles S. of *Borup, Norman Co., Minn.*, 3 telegraph poles N. of milepost 37; in a corner of the fence at the NE. corner of the grade crossing and 25 meters E. of the center of the track on land belonging to A. E. Fox; set in clay. (Note 2, p. 126.)

D<sub>5</sub>.—*Borup, Norman Co., Minn.*,  $2\frac{1}{2}$  telegraph poles N. of the station, 20 meters E. of the tracks; on the W. wall of the yellow brick engine house of the Cargill Elevator Co.; in the center of the wall, 6 courses of brick below the window sill, set in cement. (Note 4, p. 127.)



E<sub>5</sub>.—*Borup, Norman Co., Minn.*, about 400 meters E. of the Great Northern Ry. tracks, in the NE. corner of the public school grounds; 7 meters from the eastern edge of the property and 3 meters from the N. edge; about 420 meters S. of Borup Triangulation Station. (Note 12, p. 127.)

F<sub>5</sub>.—*Wheatville, Norman Co., Minn.*, 2½ telegraph poles N. of milepost 43; at the SE. corner of a grade crossing, and in a corner of the fence, on land owned by Bore Hoven. (Note 12, p. 127.)

G<sub>5</sub>.—*Ada, Norman Co., Minn.*, at the NE. corner of the county court-house; on the N. side of the building, 1 foot above the ground. (Note 1, p. 126.)

Geological Survey Meridian Mark.—*Ada, Norman Co., Minn.*, at the NE. corner of Park and Garfield avenues; about 15 meters E. of the corner, in the parking; on the southernmost of the two meridian marks, a stone post about 5 inches square and having a metallic disk set in the top face, marked "U. S. Geological Survey Meridian Mark." The center of the disk is the bench mark.

H<sub>5</sub>.—*Ada, Norman Co., Minn.*, at the NE. corner of Washington and Atlantic avenues; in a red brick building, called the Keller, Sprague and Lofgren Block; in the horizontal surface of the first step, 6 inches from the N. edge. (Note 14, p. 127.)

I<sub>5</sub>.—*Ada, Norman Co., Minn.*, on the eastern side of Pacific avenue, 60 meters N. of Shields avenue; on the city water tanks; on the NE. corner of the steel foot of the NE. support to the tank; 2 feet above ground, on the horizontal surface of the steel plate; a square cut in outline.

J<sub>5</sub>.—*Hadler, Norman Co., Minn.*, 4 telegraph poles S. of the signboard, 3 meters S. of milepost 53; in range with the telegraph poles, 12 meters W. of the track. (Note 12, p. 127.)

K<sub>5</sub>.—1.2 miles E. and ½ mile N. of *Hadler, Norman Co., Minn.*, in Pleasant View Township, near the NE. corner of the SW.¼ of sec. 15; in the corner of a pasture fence about 5 meters S. of the quarter section road, and about 500 meters SW. of Wicklow Triangulation Station; set in sandy clay. (Note 2, p. 126.)

L<sub>5</sub>.—*Lockhart, Norman Co., Minn.*, 3 telegraph poles N. of milepost 58; at the SE. corner of the grade crossing, 50 meters E. of the main Great Northern Ry. track; in a corner of a fence, on the Lockhart farm. (Note 2, p. 126.)

M<sub>5</sub>.—*Beltrami, Polk Co., Minn.*, 50 meters N. of the station, on the W. side of the track, at the SW. corner of the railroad water tank; in the SW. corner of the horizontal surface of stone. (Note 16, p. 127.)

N<sub>5</sub>.—*Beltrami, Polk Co., Minn.*, about 200 meters N. of station; on the building of the Imperial Elevator Co., in the rough granite foundation stone of the elevator; on the N. side, 1 meter from the W. side and 0.3 meter above ground, in the vertical surface. (Note 4, p. 127.)

O<sub>5</sub>.—1 mile N. of *Beltrami, Polk Co., Minn.*, 4 telegraph poles N. of milepost 66, 20 meters S. of the grade crossing; on the right of way E. of the tracks, 2 meters N. of a telegraph pole, and in range with the telegraph poles. (Note 2, p. 126.)

P<sub>5</sub>.—*Russia, Polk Co., Minn.*, 30 meters N. of the signboard, 55 meters E. of the Great Northern Ry. track; at the NW. corner of the road crossing, on Russia farm. (Note 12, p. 127.)

Q<sub>5</sub>.—1 mile N. of *Russia, Polk Co., Minn.*, 7 telegraph poles N. of milepost 72; 30 meters east of the track, on the right of way, in a fence corner. (Note 2, p. 126.)

R<sub>5</sub>.—*Kittson, Polk Co., Minn.*, 110 meters N. of the signboard, on the right of way W. of the track, in range with the telegraph poles. (Note 12, p. 127.)

S<sub>5</sub>.—1¼ miles N. of *Kittson, Polk Co., Minn.*, 8 telegraph poles S. of milepost 77; at the NW. corner of the grade crossing, in a corner of the fence. (Note 2, p. 126.)

T<sub>5</sub>.—2¼ miles N. of *Kittson, Polk Co., Minn.*, about 200 meters W. of Andover Triangulation Station, at the NW. corner of a grade crossing and 5 meters N. of the highway limit. (Note 2, p. 126.)

U<sub>5</sub>.—*Crookston, Polk Co., Minn.*, on the E. side of the S. abutment of the steel railway bridge over Red Lake River; in the NE. corner of the horizontal surface of the coping stone. (Note 36, p. 128.)

V<sub>5</sub>.—*Crookston, Polk Co., Minn.*, at the side entrance of the store at the NW. corner of Main and Roberts streets, 35 meters W. of the E. line of building; at the W. end of the horizontal surface of the top step. (Note 16, p. 127.)

City.—*Crookston, Polk Co., Minn.*, at the entrance to the Merchants' National Bank building, on the NW. corner of Second and Main streets; a square in outline, on the N. side of the top of the first step.

W<sub>5</sub>.—*Crookston, Polk Co., Minn.*, at the NE. corner of the county court-house; on the N. side, 2 feet from the E. side, 3 feet above ground, in the second course of stone. (Note 1, p. 126.)

X<sub>3</sub>.—About 3 miles N. of *Crookston, Polk Co., Minn.*, on the Great Northern Ry. right of way, 65 meters S. of the Northern Pacific R. R. crossing; on W. side of the Great Northern Ry. tracks, in range with the telegraph poles; set in clay. (Note 2, p. 126.)

Y<sub>5</sub>.—*Shirley, Polk Co., Minn.*, 120 meters S. of signboard, in range with the telegraph poles and in the right of way; set in clay. (Note 12, p. 127.)

Z<sub>5</sub>.—1 mile N. of *Shirley, Polk Co., Minn.*, on the Great Northern Ry. right of way, directly opposite signboard "Shirley 1 mile"; 13 telegraph poles N. of milepost 6, 12 meters S. of the telegraph pole with the section numbers, 52, 53; on the right of way, in range with the telegraph poles; set in clay. (Note 2, p. 126.)

A<sub>6</sub>.—About  $\frac{1}{2}$  mile S. of *Euclid, Polk Co., Minn.*,  $5\frac{1}{2}$  telegraph poles N. of mile post 12; on the eastern side of the track, at the SE. corner of the surveyed highway crossing, in range with telephone poles. (Note 12, p. 127.)

B<sub>6</sub>.—*Euclid, Polk Co., Minn.*, 200 meters W. of the Great Northern Ry. depot, in the SE. corner of the public school grounds; 5 feet from the S. property line, and 1 foot from the E. property line; set in clay. (Note 2, p. 126.)

C<sub>6</sub>.—About 2 miles N. of *Euclid, Polk Co., Minn.*, 10 telegraph poles S. of milepost 15; 17 paces W. of the Great Northern Ry. track, in the NE. corner of the cemetery fence; set in clay. (Note 2, p. 126.)

D<sub>6</sub>.—Near *Angus, Polk Co., Minn.*, about 200 meters SW. of Sherack Triangulation Station, in the NE. corner of NE.  $\frac{1}{4}$  of sec. 1, Keystone township; 25 paces W. of a road crossing; 1 foot S. of a pasture fence; set in cement. (Note 2, p. 126.)

E<sub>6</sub>.—*Angus, Polk Co., Minn.*, 400 meters S. of the depot, 200 meters W. of the track; in the SE. corner of the public school grounds; set in clay. (Note 12, p. 127.)

F<sub>6</sub>.—About  $2\frac{1}{2}$  miles N. of *Angus, Polk Co., Minn.*, 5 meters S. of milepost 23; in the right of way, and in range with the telegraph poles; set in clay. (Note 2, p. 126.)

G<sub>6</sub>.—*Warren, Marshall Co., Minn.*,  $\frac{1}{4}$  mile S. of the station,  $3\frac{1}{2}$  telegraph poles S. of milepost 29; on the E. side of the tracks, in a corner of the right-of-way fence, set in clay. (Note 12, p. 127.)

H<sub>6</sub>.—*Warren, Marshall Co., Minn.*, 300 meters SE. of the depot, at the W. entrance of the county court-house; at the N. end of the horizontal surface of the second step. (Note 16, p. 127.)

I<sub>6</sub>.—*Warren, Marshall Co., Minn.*, at the S. entrance to Warren State Bank, on the NW. corner of Johnson avenue and Main street; at the W. end of the horizontal surface of the stone step. (Note 1, p. 126.)

J<sub>6</sub>.—*Warren, Marshall Co., Minn.*, 400 meters N. of the depot; on the city water tank, at the NE. corner of the structure, on the NE. corner of the steel foot; a square cut in outline, 1 foot above ground.

K<sub>6</sub>.— $2\frac{1}{2}$  miles N. of *Warren, Marshall Co., Minn.*,  $7\frac{1}{2}$  telegraph poles S. of milepost 32; on the right of way W. of the track, in a corner of the right-of-way and cattle-guard fences; set in cement. (Note 2, p. 126.)

L<sub>6</sub>.—About 2 miles S. of *Argyle, Marshall Co., Minn.*,  $10\frac{1}{2}$  telegraph poles N. of milepost 37; at the NW. corner of a grade crossing, in a corner of the right-of-way and cattle guard fences; set in clay. (Note 2, p. 126.)

M<sub>6</sub>.—*Argyle, Marshall Co., Minn.*, 500 meters W. of the depot, in the NW. corner of the public school grounds; set in clay. (Note 12, p. 127.)

N<sub>6</sub>.—*Argyle, Marshall Co., Minn.*, at the E. entrance of the yellow brick building occupied by the Farmers and Merchants' Bank, on the SW. corner of Third street and Pacific avenue; on the N. end of the horizontal surface of the third stone step; a square cut in outline, lettered U. S.

O<sub>6</sub>.—Near *Argyle, Marshall Co., Minn.*, in *Tamarac Township*, in sec. 35, T. 157, R. 48, about 420 meters N. of Argyle Triangulation Station; on the W. side of the road leading to a farmhouse, in a corner of the fence; on property of Mr. Josc; set in clay. (Note 2, p. 126.)

P<sub>6</sub>.—1 mile S. of *Stephen, Marshall Co., Minn.*, 3 telegraph poles N. of milepost 46; on the right of way, at the NW. corner of the grade crossing, 2 meters N. of a telegraph pole and in range with the poles; set in clay. (Note 2, p. 126.)

Q<sub>6</sub>.—*Stephen, Marshall Co., Minn.*, at the E. entrance to the red brick building owned by the Bank of Stephen, on the NW. corner of Pacific avenue and Fifth street; at the N. end of the top of the second step. (Note 1, p. 126.)

R<sub>6</sub>.—*Stephen, Marshall Co., Minn.*, 600 meters W. of the depot; on the E. side of the public school building, 2 feet from the S. side, in the eighth course of brick above the water table. (Note 4, p. 127.)



S<sub>6</sub>.—*Stephen, Marshall Co., Minn.*, 225 meters E. of the depot; at the NE. corner of the road crossing, in a corner of the fence; set in clay. (Note 12, p. 127.)

T<sub>6</sub>.—Near *Stephen, Marshall Co., Minn.*, in the NW. corner of the NE.  $\frac{1}{4}$  sec. 4, T. 157, R. 48; 37 meters SW. of the Stephen West Base, 11 meters S. of the road and 5 meters E. of the drainage ditch; set in clay. (Note 2, p. 126.)

Stephen West Base.—About  $\frac{1}{2}$  mile N. and  $\frac{3}{4}$  mile E. of *Stephen, Marshall Co., Minn.*, in *Sinnot Township*, in the SW. corner of the SE.  $\frac{1}{4}$  sec. 33, T. 158, R. 48, on cultivated land belonging to Mr. J. Gillespie of Stephen; 31.0 meters E. of half section line and 15.0 meters N. of the center of the E. and W. section road; an outlined square cut on the top of a granite block, about 3 inches to the southward of the copper bolt marking the station.

DESCRIPTIONS OF PERMANENT BENCH MARKS FROM SMITHVILLE TO GALVESTON, TEX., 1905-1906.

W<sub>5</sub>.—*Smithville, Bastrop Co., Tex.* (See App. 7, Report for 1904, p. 446.)

X<sub>5</sub>.—*Smithville, Bastrop Co., Tex.* (See App. 7, Report for 1904, p. 446.)

Y<sub>5</sub>.—*Smithville, Bastrop Co., Tex.* (See App. 7, Report for 1904, p. 446.)

316 Primms Spur.—*Kirtley, Fayette Co., Tex.*; an iron post set near the right-of-way fence and back of the second telegraph pole E. of mile board 974; marked 316. (Note 18, p. 127.)

U<sub>6</sub>.—2 miles SE. of *Kirtley, Fayette Co., Tex.*, on the right of way of the Missouri, Kansas and Texas Ry., near mile board 976; on the E. concrete abutment of bridge 2064, in the top surface, 1 meter from the N. edge. (Note 36, p. 128.)

292 West Point.—*West Point, Fayette Co., Tex.*, 90 feet W. and 40 feet N. of the junction, at the crossing of the San Antonio and Aransas Pass Ry. and Missouri, Kansas and Texas Ry.; in a corner of the right-of-way fence; an iron post, marked 295. (Note 18, p. 127.)

V<sub>6</sub>.—*West Point, Fayette Co., Tex.*, 60 meters E. of the Missouri, Kansas and Texas Ry. station; in the NE. corner of a grade crossing,  $\frac{1}{3}$  meter from the right-of-way fence; on land owned by J. L. House. (Note 11, p. 127.)

W<sub>6</sub>.—*Plum, Fayette Co., Tex.*, 4 telegraph poles W. of the station, in the NW. corner of a grade crossing;  $\frac{1}{3}$  meter from the right-of-way fence, on the land owned by J. C. Brown of La Grange; set in clay. (Note 2, p. 126.)

X<sub>6</sub>.—*Plum, Fayette Co., Tex.*, 175 meters SE. of the station and 45 meters SW. of the Missouri, Kansas and Texas Ry. tracks, in the corner of a fence, about 15 meters NW. of the store and on the land owned by Anton Legler. (Note 11, p. 127.)

Y<sub>6</sub>.—2 miles NW. of *La Grange, Fayette Co., Tex.*, 14 telegraph poles W. of mile board 987; 70 meters W. of a grade crossing and  $\frac{1}{2}$  meter N. of the right of way of the Missouri, Kansas and Texas Ry.; in the corner of a fence, on land owned by Christian Diers; set in clay. (Note 2, p. 126.)

Z<sub>6</sub>.—*La Grange, Fayette Co., Tex.*, in the county court-house; on the stone step of the Washington Street entrance, in the horizontal surface of the first step from the top,  $\frac{2}{3}$  foot from the S. end. (Note 16, p. 127.)

A<sub>7</sub>.—*La Grange, Fayette Co., Tex.*, on Colorado street, in the NE. corner of the First National Bank building; in the vertical surface of the water table, 0.2 meter from the E. face. (Note 1, p. 126.)

B<sub>7</sub>.—*La Grange, Fayette Co., Tex.*, 275 meters NE. of the Missouri, Kansas and Texas Ry. station and  $\frac{1}{2}$  meter NW. of the right of way; in the NE. corner of a grade street crossing; on the property of John Speckels. (Note 11, p. 127.)

C<sub>7</sub>.— $1\frac{1}{4}$  miles W. of *Halsted, Fayette Co., Tex.*, 30 meters W. of mile board 993;  $\frac{2}{3}$  meter S. of the right of way of the Missouri, Kansas and Texas Ry., in the SE. corner of a private grade crossing; on land owned by Ernest Nitschke; set in clay. (Note 2, p. 126.)

D<sub>7</sub>.—450 meters W. of *Halsted, Fayette Co., Tex.*, on the right of way,  $\frac{2}{3}$  meter from the S. fence, in the SE. corner of a grade crossing. (Note 11, p. 127.)

E<sub>7</sub>.—*Fayetteville, Fayette Co., Tex.*, in the brick store owned by H. Zapp's Sons; in the concrete water table on the S. side of the E. entrance. (Note 1, p. 126.)

F<sub>7</sub>.—*Fayetteville, Fayette Co., Tex.*, 18 meters E. of the station; on the right of way 6 meters N. of the tracks, in range with a row of trees in the parking. (Note 11, p. 127.)

G<sub>7</sub>.—*Boggy Tank, Fayette Co., Tex.*, 9 telegraph poles W. of mile board 1006, near the S. end of the W. abutment of bridge 2104, in the horizontal surface, 0.2 meter from the S. edge of the capstone. (Note 4, p. 127.)

H<sub>7</sub>.—3½ miles W. of *New Ulm, Austin Co., Tex.*, 6 meters E. of mile board 1010; in the corner of the right-of-way and cattle-guard fences. (Note 11, p. 127.)

I<sub>7</sub>.—*New Ulm, Austin Co., Tex.*, 100 meters NE. of the Missouri, Kansas and Texas Ry. station; in the brick store owned by L. R. Fink, on the E. side of the building, 1 meter from the N. side, 1½ meters above ground. (Note 4, p. 127.)

J<sub>7</sub>.—*New Ulm, Austin Co., Tex.*, 225 meters W. of mile board 1014; on the N. right of way, in the corner of the right-of-way and cattle-guard fences. (Note 11, p. 127.)

K<sub>7</sub>.—4½ miles E. of *New Ulm, Austin Co., Tex.*, 9 telegraph poles E. of mile board 1018, on the right of way of the Missouri, Kansas and Texas Ry., 11 paces N. of the tracks, set in sand. (Note 2, p. 126.)

L<sub>7</sub>.—*Cal Spring, Austin Co., Tex.*, 125 meters W. of mile board 1024; ⅓ meter S. of the right of way, at the SW. corner of a grade crossing. (Note 11, p. 127.)

M<sub>7</sub>.—6 miles W. of *Seely, Austin Co., Tex.*, 10 telegraph poles E. of mile board 1029; on the right of way of the Missouri, Kansas and Texas Ry., in the NE. corner of a grade crossing, ⅓ meter from the right-of-way fence. (Note 2, p. 126.)

N<sub>7</sub>.—3¾ miles W. of *Seely, Austin Co., Tex.*, 13 telegraph poles E. of mile board 1031; in the NE. corner of a grade crossing, 0.2 meter N. of the right of way of the Missouri, Kansas and Texas Ry. (Note 11, p. 127.)

O<sub>7</sub>.—*Seely, Austin Co., Tex.*, on the right of way of the Missouri, Kansas and Texas Ry., 35 meters E. of the station; on the water tank on the top of the second concrete mudsill from the tracks, 0.1 meter from the W. end of the sill. (Note 16, p. 127.)

P<sub>7</sub>.—*Seely, Austin Co., Tex.*, on Foulken street, in the center of the E. face of the brick store owned by A. Preibisch, about 1.3 meters above the walk. (Note 4, p. 127.)

Q<sub>7</sub>.—*Seely, Austin Co., Tex.*, on Foulken street, in the cement walk in front of the brick store owned by Mistroit Bros. & Co., 0.15 meter from the NW. corner of the building. (Note 13, p. 127.)

R<sub>7</sub>.—1½ miles E. of *San Felipe, Austin Co., Tex.*, 4½ telegraph poles W. of mile board 1040; in the NW. corner of a grade crossing, ½ meter from the right of way of the Missouri, Kansas and Texas Ry., on land owned by John Hluchan; set in clay. (Note 2, p. 126.)

S<sub>7</sub>.—½ mile E. of *McDowell, Austin Co., Tex.*, on the Missouri, Kansas and Texas Ry.; on bridge 2156 over the Brazos River, at the S. end of the first pier W. of the Austin-Waller county line; on the top surface of the southernmost short section of rail, resting on the cement pier; a 2.5 centimeters square, chiseled in outline between two transverse girders.

T<sub>7</sub>.—3 miles W. of *Brookshire, Waller Co., Tex.*, 5 telegraph poles W. of mile board 1045; on the right of way of the Missouri, Kansas and Texas Ry., in the NE. corner of a grade crossing, ⅔ meter from the right-of-way fence; set in clay. (Note 2, p. 126.)

U<sub>7</sub>.—*Brookshire, Waller Co., Tex.*, 300 meters W. of the station; on the right of way of the Missouri, Kansas and Texas Ry., in the SW. corner of a grade crossing, ⅓ meter from the right-of-way fence. (Note 11, p. 127.)

V<sub>7</sub>.—3 miles E. of *Brookshire, Waller Co., Tex.*, 4 rails W. of mile board 1051; on the right of way of the Missouri, Kansas and Texas Ry., in the NW. corner of a grade crossing, ⅓ meter from the right-of-way fence; set in clay. (Note 2, p. 126.)

W<sub>7</sub>.—In *Waller Co.*, 1¼ miles W. of *Katy, Harris Co., Tex.*, 12½ telegraph poles E. of mile board 1054; on the right of way of the Missouri, Kansas and Texas Ry., in the NW. corner of a grade crossing, 15 paces N. of the tracks. (Note 11, p. 127.)

X<sub>7</sub>.—*Katy, Harris Co., Tex.*, 175 meters W. and 100 meters S. of the Missouri, Kansas and Texas Ry. station; in the water tank owned by the Katy-Rice Milling Co., in the horizontal surface of the SW. foundation. (Note 4, p. 127.)

Y<sub>7</sub>.—*Katy, Harris Co., Tex.*, on the right of way of the Missouri, Kansas and Texas Ry., 65 meters E. of the station, on the water tank; at the E. end of the fourth concrete mudsill from the tracks, in the vertical surface. (Note 1, p. 126.)

Z<sub>7</sub>.—2¾ miles E. of *Katy, Harris Co., Tex.*, on the right of way of the Missouri, Kansas and Texas Ry., 15 telegraph poles E. of mile board 1058, in the SE. corner of a grade crossing, 15 meters S. of the tracks. (Note 11, p. 127.)

A<sub>8</sub>.—*Burnap, Harris Co., Tex.*, 20 meters W. of the signboard; 35 meters S. of the Missouri, Kansas and Texas Ry. tracks, on the S. side of a public highway, ⅓ meter from the property line. (Note 11, p. 127.)



B<sub>8</sub>.—*Barker, Harris Co., Tex.*, 20 meters W. of the signboard; 35 meters S. of the Missouri, Kansas and Texas Ry. tracks, in the corner of a fence, on land owned by G. T. Miller; set in cement. (Note 2, p. 126.)

C<sub>8</sub>.—*Letitia, Harris Co., Tex.*, on the right of way of the Missouri, Kansas and Texas Ry.; 65 meters E. of the station and 30 meters S. of the tracks, in the corner of a fence; set in clay. (Note 2, p. 126.)

D<sub>8</sub>.—2½ miles W. of *Hillendahl, Harris Co., Tex.*, 8½ telegraph poles W. of mile board 1071; in the SE. corner of a grade crossing, 15 meters S. of the Missouri, Kansas and Texas Ry. tracks; set in clay. (Note 2, p. 126.)

E<sub>8</sub>.—¾ mile W. of *Hillendahl, Harris Co., Tex.*, on the right of way of the Missouri, Kansas and Texas Ry., 11 telegraph poles W. of mile board 1073; on a concrete culvert, in the center of the horizontal surface, 0.15 meter from the N. edge. (Note 36, p. 128.)

F<sub>8</sub>.—1 mile E. of *Hillendahl, Harris Co., Tex.*, 7½ telegraph poles E. of mile board 1074; at the NE. corner of a grade crossing, on the public highway, 15 meters N. of the Missouri, Kansas and Texas Ry. tracks, on range with the right-of-way fence; set in clay. (Note 2, p. 126.)

G<sub>8</sub>.—3 miles E. of *Hillendahl, Harris Co., Tex.*, 10½ telegraph poles E. of mile board 1076; 35 meters S. of the Missouri, Kansas and Texas Ry. tracks, in the SE. corner of a highway junction; on land owned by Gustav Peachman. (Note 11, p. 127, except the post was 5 by 8 inches.)

H<sub>8</sub>.—*Eureka, Harris Co., Tex.*, on the right of way of the Missouri, Kansas and Texas Ry., 150 meters E. of the Houston and Texas Central R. R. crossing; in the concrete foundation of a block signal. (Note 16, p. 127.)

I<sub>8</sub>.—*Houston Heights, Harris Co., Tex.*, 7½ telegraph poles E. of mile board 1081, and 25 meters S. of the Missouri, Kansas and Texas Ry. tracks; in the parking and midway between two electric car lines; set in clay. (Note 2, p. 126.)

J<sub>8</sub>.—*Houston, Harris Co., Tex.*, at the NE. corner of Willow and Baker streets, in the center of the W. face of the supporting pillar at the SW. corner of the building of the Peden Iron and Steel Co.; in the concrete water table, about 1 meter above the cement walk. (Note 1, p. 126.)

K<sub>8</sub>.—*Houston, Harris Co., Tex.*, at the SE. corner of Franklin and Fannin streets, in the stone step of the N. entrance to the post-office; on the horizontal surface, 0.1 meter from the E. end of the lower step. (Note 13, p. 127.)

L<sub>8</sub>.—*Houston, Harris Co., Tex.*, on Gable street, 90 meters N. of the Galveston, Houston and Henderson R. R. tracks; on the S. abutment of the steel highway bridge over Buffalo Bayou; in the horizontal surface, 25 centimeters from W. edge. (Note 1, p. 126.)

City. —*Houston, Harris Co., Tex.*, at the SE. corner of Milby street and Harrisburg road, 10 inches N. of a telegraph pole; a bolt driven into the ground, the top level with the curb.

M<sub>8</sub>.—3 miles E. of *Houston, Harris Co., Tex.*, on the right of way of the Galveston, Houston and Henderson R. R., 8½ telegraph poles E. of mile board 3, and 3 meters N. of the track; in the center of the top surface of a concrete culvert. (Note 15, p. 127.)

N<sub>8</sub>.—¾ mile N. of *Harrisburg, Harris Co., Tex.*, on right of way of the Galveston, Houston and Henderson R. R., 5½ telegraph poles S. of mile board 5; 8 meters E. of the tracks, and about 2 meters below the level of the rail; in the center of the top surface of a concrete culvert. (Note 4, p. 127, the bolt being set in lead and lettered U. S. B. M.)

R. M. —*Harrisburg, Harris Co., Tex.*, on the right of way of the Galveston, Houston and Henderson R. R.; 25 meters S. of the Galveston, Harrisburg and San Antonio R. R. crossing, 13 meters W. of the tracks. (Note 20, p. 127.)

O<sub>8</sub>.—1 mile S. of *Harrisburg, Harris Co., Tex.*, 13¾ telegraph poles N. of mile board 7; in the SE. corner of a grade crossing; 18 meters S. of the Galveston, Houston and Henderson R. R. tracks, and 5 meters S. of the corner of the right-of-way fence; on range with the telegraph poles outside the right of way; set in clay. (Note 2, p. 126.)

M. M. 9.—3¼ miles SE. of *Harrisburg, Harris Co., Tex.*, on the right of way of the Galveston, Houston and Henderson R. R.; 15 meters SE. of mile board 9, and 15 meters SW. of the track. (Note 20, p. 127.)

P<sub>8</sub>.—1¼ miles SE. of *Harrisburg, Harris Co., Tex.*, on the right of way of the Galveston, Houston and Henderson R. R., 35 meters NW. of mile board 10; on a steel and concrete bridge, 2 meters NE. of the tracks; in the center of the horizontal surface of the N. abutment. (Note 4, p. 127.)

Q<sub>8</sub>.— $3\frac{1}{4}$  miles NW. of *Genoa, Harris Co., Tex.*, 8 meters SW. of mile board 11; on range with the telegraph poles outside of the right-of-way fence. (Note 11, p. 127.)

M. M. 12.— $2\frac{1}{4}$  miles NW. of *Genoa, Harris Co., Tex.*, on the right of way of the Galveston, Houston and Henderson R. R.; 20 meters SE. of mile board 12 and 15 meters SW. of the tracks. (Note 20, p. 127.)

R<sub>8</sub>.—*Genoa, Harris Co., Tex.*, about 55 meters NW. of the station, on the right of way of the Galveston, Houston and Henderson R. R.; 8 meters SW. of the tracks, in the foundation of the water tank, on the SE. side, in the horizontal surface. (Note 1, p. 126.)

S<sub>8</sub>.—*Genoa, Harris Co., Tex.*, about 75 meters SE. of the Galveston, Houston and Henderson R. R. station and about 55 meters NE. of the tracks, in the corner of a fence. (Note 11, p. 127.)

M. M. 16.— $1\frac{3}{4}$  miles SE. of *Genoa, Harris Co., Tex.*, on the right of way of the Galveston, Houston and Henderson R. R.; 20 meters NW. of mile board 16, and 15 meters SW. of the tracks. (Note 20, p. 127.)

M. M. 18.— $3\frac{3}{4}$  miles SE. of *Genoa, Harris Co., Tex.*, on the right of way of the Galveston, Houston and Henderson R. R.; 20 meters SE. of mile board 18, and 15 meters SW. of the tracks. (Note 20, p. 127.)

T<sub>8</sub>.—1 mile NW. of *Webster, Harris Co., Tex.*, 12 $\frac{3}{4}$  telegraph poles NW. of mile board 21; 35 meters NE. of the Galveston, Houston and Henderson tracks, 15 meters SW. of an artesian well, on land owned by Harvey T. D. Wilson; set in clay. (Note 2, p. 126.)

U<sub>3</sub>.—*Webster, Harris Co., Tex.*, 100 meters SW. of the Galveston, Houston and Henderson R. R. station, in the corner of a fence at the E. corner of a street crossing; on land owned by Harvey T. D. Wilson. (Note 11, p. 127.)

M. M. 22.— $1\frac{1}{2}$  mile SE. of *Webster, Harris Co., Tex.*, on the right of way of the Galveston, Houston and Henderson R. R.; 12 meters SE. of mile board 22, 15 meters SW. of the tracks. (Note 20, p. 127.)

V<sub>8</sub>.—*League City, Galveston Co., Tex.*, on the right of way of the Galveston, Houston and Henderson R. R.; 7 meters SE. of the station and 10 meters NE. of the tracks; on the top surface of a 7 by 8 inch stone post set in the parking. (Note 1, p. 126.)

W<sub>8</sub>.—2 miles southeast of *League City, Galveston Co., Tex.*, on the public highway, 11 $\frac{1}{2}$  telegraph poles southeast of mile board 26, in the east corner of a grade crossing,  $2\frac{1}{2}$  meter from the corner of the right-of-way fences; set in clay. (Note 2, p. 126.)

X<sub>8</sub>.— $\frac{1}{3}$  mile NW. of *Dickinson, Galveston Co., Tex.*, on the right of way of the Galveston, Houston and Henderson R. R.; 9 $\frac{1}{2}$  telegraph poles SE. of mile board 28; in the center of the top surface of a concrete culvert, 6 $\frac{1}{2}$  meters SW. of the tracks. (Note 1, p. 126.)

Y<sub>8</sub>.—*Dickinson, Galveston Co., Tex.*, in the park owned by the Galveston, Houston and Henderson R. R. Co.; 5 telegraph poles SE. of the station, 35 meters NE. of the Galveston, Houston and Henderson R. R. tracks, in the corner of a fence. (Note 11, p. 127.)

Z<sub>8</sub>.— $\frac{1}{2}$  mile SE. of *Dickinson, Galveston Co., Tex.*, 11 telegraph poles SE. of mile board 29; in the SW. corner of a grade crossing, 13 meters SW. of the Galveston, Houston and Henderson tracks; on land owned by C. Nolan; set in clay. (Note 2, p. 126.)

M. M. 32.—4 miles NW. of *Lamarque, Galveston Co., Tex.*, on the right of way of the Galveston, Houston and Henderson R. R.; about 10 meters from mile board 32, 15 meters SW. of the tracks. (Note 20, p. 127.)

M. M. 34.—2 miles NW. of *Lamarque, Galveston Co., Tex.*, on the right of way of the Galveston, Houston and Henderson R. R.; 25 meters SE. of mile board 34, and 15 meters SW. of the tracks. (Note 20, p. 127.)

A<sub>9</sub>.—*Lamarque, Galveston Co., Tex.*, on the right of way of the Galveston, Houston and Henderson R. R.; 40 meters NW. of the station and 7 $\frac{1}{2}$  meters SW. of the tracks; in the concrete foundation of the water tank, in the center of the E. face, about 1 meter above ground. (Note 1, p. 126.)

B<sub>9</sub>.— $\frac{1}{3}$  mile SE. of *Lamarque, Galveston Co., Tex.*, 12 $\frac{1}{2}$  telegraph poles SE. of mile board 36, 35 meters NE. of the Galveston, Houston and Henderson tracks; in the N. corner of a highway crossing, on land belonging to the Tarpey estate. (Note 2, p. 126.)

C<sub>9</sub>.—*Texas City Junction, Galveston Co., Tex.*, 2 $\frac{1}{4}$  miles SE. of Lamarque, 10 telegraph poles NW. of mile board 39, 35 meters SW. of the Galveston, Houston and Henderson R. R. tracks; in the corner of a fence; set in clay. (Note 2, p. 126.)

M. M. 41.—Near *Texas City Junction, Tex.*, on the right of way of the Galveston, Houston and Henderson R. R.; 25 meters SE. of mile board 41, 15 meters SW. of the tracks. (Note 20, p. 127.)



D<sub>11</sub>.—*Virginia Point, Galveston Co., Tex.*, on the right of way of the Santa Fe R. R.; 30 meters NW. of the trestle, 8 meters SW. of the tracks, on range with the telegraph poles; set in sand. (Note 2, p. 126.)

E<sub>11</sub>.— $2\frac{1}{2}$  miles W. of *Galveston, Galveston Co., Tex.*, 100 meters S. of the Galveston, Houston and Henderson R. R. tracks; at the SW. corner of the first grade crossing to the eastward of the stock pens. (Note 11, p. 127.)

F<sub>11</sub>.—*Galveston, Galveston Co., Tex.*,  $1\frac{1}{4}$  miles W. of the Union Depot, in the concrete foundation of the Galveston, Houston and Henderson R. R. shops; on the N. side, back of a telegraph pole; 9 meters from the E. end, in a beveled surface. (Note 1, p. 126.)

G<sub>11</sub>.—*Galveston, Galveston Co., Tex.*, a Santa Fe R. R. B. M., at the NE. corner of Band Twenty-fifth streets; in a steel window sill on the W. side of the Sealy Building,  $1\frac{1}{2}$  meters from the S. side of the building,  $2\frac{1}{2}$  decimeters from the south edge of the sill. (Note 13, p. 127.)

City.—*Galveston, Galveston Co., Tex.*, on Eighth street, between Mechanic and Strand streets; at the SE. corner of an alley and the street; the top of an arrowhead on a hydrant.

Tidal 1.—*Galveston, Galveston Co., Tex.*, at the SW. corner of the U. S. coal wharf at Fort Point; the 10-foot mark of the fixed tide staff, nailed to a pile.

Tidal 2.—*Galveston, Galveston Co., Tex.*, in the pile alongside of the fixed tide staff; a horizontal mark made through the center of the head of the one of two spikes nearer the tide staff.

Tidal 3.—U. S. E. B. M. A.—*Galveston, Galveston Co., Tex.*; in the western face of the concrete foundation wall of the cable tank, near the steps leading into the shed house; the top of a brass bolt, the projecting portion of which has been filed flat for the foot of the leveling rod.

Tidal 4.—*Galveston, Galveston Co., Tex.*; a horizontal line cut in the head of a brass bolt set with its head flush with the concrete wall of the cable tank, about 6 inches above Tidal 3.

Tidal 5.—*Galveston, Galveston Co., Tex.*, established by the Corps of Engineers, U. S. Army, in 1890; the top of the NE. bolt of the NW. bearing pile of the Fort Point Light-House.

Tidal 6.—*Galveston, Galveston Co., Tex.*, about 6 feet E. of the trestle bent marked 100. (Note 19, p. 127, the iron rail reaching nearly to the surface of the tracks.)

Tidal 7.—*Galveston, Galveston Co., Tex.*, about 14 feet N. from trestle bent marked 90. (Note 19, p. 127.)

Tidal 8.—*Galveston, Galveston Co., Tex.*, about 28 feet N. from trestle bent marked 80. (Note 19, p. 127.)

Tidal 9.—U. S. E. B. M. Fence Line.—*Galveston, Galveston Co., Tex.*; between 400 and 500 feet southward from the office building at Fort Point, Tex.; in the center of the S. jetty, immediately below the railroad trestle; the top of a brass bolt set in a box of concrete, the head of the bolt projecting about an inch. A stringer of the railroad track was directly above the bolt in 1906.

Tidal 10.—*Galveston, Galveston Co., Tex.*, at a point near trestle bent marked 60. (Note 19, p. 127.)

Tidal 11.—*Galveston, Galveston Co., Tex.*, about 14 feet S. from the trestle bent marked 50. (Note 19, p. 127.)

Tidal 12.—*Galveston, Galveston Co., Tex.*, about 29 feet N. from trestle bent marked 40. (Note 19, p. 127.)

Tidal 13.—*Galveston, Galveston Co., Tex.*, near the trestle bent marked 30. (Note 19, p. 127; covered by a railroad tie, a portion of which was cut away to reach the B. M.)

Tidal 14.—*Galveston, Galveston Co., Tex.*, about 12 feet S. from trestle bent marked 20. (Note 19, p. 127; the top of the rail being almost covered by a railroad tie.)

Tidal 15.—*Galveston, Galveston Co., Tex.*, about 10 feet S. from trestle bent marked 10. (Note 19, p. 127.)

Tidal 16.—*Galveston, Galveston Co., Tex.*, in the concrete walk at the NW. corner of the hospital grounds on Ninth street, about 28 inches from a telegraph pole and about 4 inches from the NW. corner of the walk; the top of a wire nail.

Tidal 17.—*Galveston, Galveston Co., Tex.*, the highest point of the diagonal line forming the intersection of the S. and W. concrete walls about the hospital grounds, corner of Ninth and Strand streets.

Tidal 18.—*Galveston, Galveston Co., Tex.*, at the NE. corner of the Hendley Building, corner of Twentieth and Strand streets; on the top of the stone water table, at the edge where the corner has been chipped off. This B. M. is the city datum.

Tidal 19.—*Galveston, Galveston Co., Tex.*, on the N. side of the Hendley Building, corner of Twentieth and Strand streets, about a foot from the NE. corner of the building, and 4 feet above Tidal 18; a small hole in the center of the face of the head of a copper bolt set flush with the wall.

## DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN GRAFTON AND CHICAGO, ILL., 1902-4.

[These descriptions are published in House Document No. 263, Fifty-ninth Congress, first session, and are republished here. Slight changes are made for the purpose of indexing and for condensation by means of general notes.]

P. B. M. 4.—*Grafton, Jersey Co., Ill.* (See App. 8, Report for 1899, p. 719.)

P. B. M. 3.—*Grafton, Jersey Co., Ill.* (See App. 8, Report for 1899, p. 719.) In building the tower to the church in 1901, the stone doorstep was moved from its position in 1880, at the front of the church, some 6 feet E. to the front of the tower.

P. B. M. 2.—Near *Grafton, Jersey Co., Ill.* (See App. 8, Report for 1899, p. 719.) The B. M. is in the top of a dressed stone post.

T. B. M. 2.—In the natural rock, on the northerly side of highway running along the foot of the bluffs on the L. B. of the Illinois River to the W. of *Grafton, Ill.*, the bench being 7.5 feet from center of wagon track and about 3.75 feet above it. In the 100 feet from and easterly of the bench the highway makes a bend of about 90° around the foot of the rocky ledge at this point. William Bennett's house stands on the hillside, about 166 feet northwesterly from the bench, as measured along the wagon track, to a point opposite the center of his house. Southerly of the bench, between the highway and the river, is a cleared field with a stone fence along the highway and from the highway to the river on the E. side of the field. The bench is 1 024 feet westerly of, or above, Deer Plain Ferry, as measured along the wagon track of highway, from a point opposite the ferry landing. (Note 42, p. 129.)

P. B. M. 1.—Stone, pipe, and cap (see note 41, p. 129), set in the southwesterly corner of the Hartford Church cemetery, back of Carsons Ldg. on the river, and about 5.3 miles W. of the Catholic Church in *Grafton, Ill.* The bench is 117.8 feet westerly from the NW. corner of Hartford Church and 88 feet northeasterly from the center of the highway following the foot of the bluffs. A white-oak tree, 1.5 feet in diameter, stands 21.5 feet (center) northeasterly, and a black-oak tree, 2.5 feet in diameter, stands 67.8 feet (center) northeasterly of the bench but less to the E. than the white oak, both trees being in the cemetery. In the NE.  $\frac{1}{4}$  sec. 16, T. 6 N., R. 13 W., *Jersey County, Ill.*

T. B. M. 8.—Near *Rosedale, Jersey Co., Ill.*; highest point in a square cut on the top of the southwesterly part of a limestone boulder projecting from the ground on the easterly side of the northerly and southerly highway following the foot of the bluffs. There is a small rise in the highway just to the N. of the boulder. The bench is about 375 feet northerly from the southerly end of an osage orange hedge fence on westerly side of highway, about 285 feet northerly from the southerly end of a stone fence in the hedge row, 60.5 feet easterly from said stone fence, and 27 feet easterly from center of present wagon track. In sec. 33, T. 7 N., R. 13 W., *Jersey Co., Ill.*, about 3 000 feet N. from the E. and W. line between Quarry and Rosedale townships. The bench is marked U. S. The U is on the northwesterly slope of the boulder and the S on the southeasterly slope, the boulder coming to an edge at the top, which edge extends in a northeasterly and southwesterly direction.

T. B. M. 9.—Near *Rosedale, Jersey Co., Ill.*, on a limestone boulder measuring about 4.5 feet in its E. and W. dimension and about 5 feet in its N. and S. dimensions, and having an approximately flat upper surface. The boulder is in the highway running northerly and southerly along the foot of the bluffs, the bench being 8 feet E. from center of wagon track and 2 feet W. from easterly highway fence line. There is another good-sized boulder 37 feet (center) southerly from B. M. on E. side of wagon track, to which it presents a sloping face. The highway here passes over a small rise in the ground and by a number of trees in its vicinity to the westward. Of these, a 16-inch elm stands 24.5 feet (center) southwesterly, a 14-inch elm 53.5 feet (center) northwesterly, and a 12-inch honey locust, standing just E. of easterly highway fence, 59.5 feet (center) northerly from bench. The house and barn of Mr. A. Ridenour are about 650 feet southerly from bench. In sec. 28, T. 7 N., R. 13 W., *Jersey Co., Ill.* (Note 42, p. 129.)

P. B. M. 2.—Top of copper bolt leaded vertically into a large rock on the E. side of the highway running along the foot of the bluffs. The rock projects into the highway about 3 feet beyond the fence line. In general dimensions this rock is 7 feet N. and S., 23 feet E. and W. and 5.5 feet above ground. The bolt is near the NW. corner of the rock, being 8 inches from its northerly and 10 inches from its westerly side, and about 3.25 feet above ground. It is 404 feet northerly from the NE. corner of William Harris's log house. In sec. 21, T. 7 N., R. 13 W., *Jersey Co., Ill.*, about 0.7 of a mile S. of *Rosedale* post-office. The bench is marked U. S., the bolt being in the center of a square between the letters.



T. B. M. 16.—On a rock on the E. side of the highway running along the foot of the bluffs, at a point about opposite midway between James Wedding's house and barn, which are about a quarter of a mile above *Rosedale* post-office. This rock is near the foot of the bluffs and presents a sloping face downward to the W. The bench is about a third of the way up the sloping face. It is 85.7 feet northeasterly from the NE. corner of Mr. Wedding's house and 112.8 feet southeasterly from the SE. corner of his barn. In sec. 17, T. 7 N., R. 13 W., *Jersey Co., Ill.* (Note 42, p. 129.)

P. B. M. 3.—Stone, pipe, and cap (see note 41, p. 129), set in a field, 5.3 feet S. from the center of the rail fence on the S. side of the road leading from the N. and S. highway running along the foot of the bluffs to Jones Ldg. at the foot of Twelvemile Island in the Illinois River. The pipe is 177.8 feet southwesterly from the SE. corner of James Wedding's house and about 220 feet westerly from the intersection of the wagon track of the bluff highway with the road to the river. In the SE.  $\frac{1}{4}$  SE.  $\frac{1}{4}$  sec. 17, T. 7 N., R. 13 W., *Jersey Co., Ill.*, and about  $\frac{1}{4}$  mile above *Rosedale* post-office. It is also a triangulation station.

P. B. M. 4.—In the top of the W. end of the S. stone abutment of the iron highway bridge over Otter Creek, about  $\frac{1}{4}$  mile N. of Otter Creek schoolhouse and about  $\frac{3}{4}$  mile S. of *Nutwood* post-office, *Jersey Co., Ill.* (Note 43, p. 129.)

P. B. M. 5.—Stone, pipe, and cap (see note 41, p. 129), set in the SE. corner of the front door yard of A. O. Auten's farmhouse, now occupied by William Lawler, at *Nutwood* post-office, *Jersey Co., Ill.* It is 50 feet southeasterly from the SE. corner of the front part of the house and about 362 feet westerly from the center of front door of the post-office.

P. B. M. 6.—Near *Spankey*, *Jersey Co., Ill.*; stone, pipe, and cap (see note 41, p. 129), set near the N. fence line of a road leading westward, through sec. 17, T. 8 N., R. 13 W., *Jersey Co., Ill.*, from the N. and S. highway along the foot of the bluffs. The bench is about 1 675 feet westward from the intersection of these roads, in relatively low ground. It is also a triangulation station.

P. B. M. 7.—Stone, pipe, and cap (see note 41, p. 129), set in the dooryard of Joseph A. Clark's farmhouse, *Green Co., Ill.*, on the northerly bank of Macoupin Creek, in the NW. angle of intersecting roads at *Spankey*. The pipe is 10.3 feet E. of the range of the front or E. side of Mr. Clark's house, 14.5 feet S. of the range of its S. end, and 17.6 feet southeasterly from its SE. corner.

T. B. M. 27.—On the top of a fragment of rock lying at the foot of the bluffs, where they make nearly a right angle in their general direction, about  $\frac{1}{4}$  mile W. of Charles Keeley's stone farmhouse, and about 1.5 miles N. of *Spankey* post-office. The bench rock is 16 feet easterly from the E. fence line of highway, on the concave side thereof, where it bends around the angle in the bluff line. This rock is about 6 feet in average length, 3 feet in average width, and about 3 feet in height. The bench is near its southerly end. In sec. 21, T. 27 N., R. 13 W., *Greene Co., Ill.* (Note 42, p. 129.)

P. B. M. 8.—Near *Spankey*, *Jersey Co., Ill.*; stone, pipe, and cap (see note 41, p. 129), set 3 feet E. of the E. fence and 9 feet N. of the S. front fence of the front dooryard of Mrs. J. Sheuten's farmhouse, from the SE. corner of which the pipe is distant 156.5 feet southeasterly. In the NE.  $\frac{1}{4}$  sec. 17, T. 9 N., R. 13 W., *Greene Co., Ill.*

P. B. M. 9.—Stone, pipe, and cap (see note 41, p. 129), set in the NE. corner of the schoolhouse yard in *Eldred, Ill.* The pipe is 98.7 feet northeasterly from the NE. corner and 32.6 feet E. of the range of the E. or front side of schoolhouse. It is 3 feet S. of the N. fence and 3 feet W. of the E. fence of schoolyard, and 13 feet W. of the center of a sycamore tree. In sec. 28, T. 10 N., R. 13 W., *Greene Co., Ill.*

P. B. M. 10.—Near *Eldred, Greene Co., Ill.*; stone, pipe, and cap (see note 41, p. 129), set near the NW. corner of Ed. V. Robley's front dooryard on the E. side of the N. and S. highway along the foot of the bluffs. The pipe is 87.65 feet northwesterly from the NW. corner, 108.5 feet northwesterly from the SW. corner, 31.5 feet N. of the range of the N. end, and 81.4 feet W. of the range of the W., or front, side of his house. It is 7 feet E. of the stone retaining wall along the front of the dooryard. In sec. 9, T. 10 N., R. 13 W., *Greene Co., Ill.*

P. B. M. 11.—About 1 mile S. of *Bridgewater, Greene Co., Ill.*; stone, pipe, and cap (see note 41, p. 129), set 28.6 feet W. from the range of the W. or front side of W. Alex. Boirum's farmhouse, 13 feet N. from the range of the N. end and 31.6 feet northwesterly from the NW. corner of said house. The pipe stands near the NW. corner of his front dooryard, but outside of it, in an angle in the easterly fence line of the highway along the foot of the bluffs, being 2.7 feet W. of the front fence and 4.2 feet S. of the prolongation of the N. fence of dooryard. In the NE.  $\frac{1}{4}$  sec. 28, T. 11 N., R. 13 W., *Greene Co., Ill.*, about  $\frac{1}{2}$  mile N. from Apple Creek bridge.

P. B. M. 12.—Stone, pipe, and cap (see note 41, p. 129) set in the front dooryard of the headquarters house of the Hartwell Ranch management, 0.7 foot N. from the range of the S. side, and 35 feet E. from the E. or front side of house, being 2.25 feet W. from the front dooryard fence. In sec. 9, T. 11 N., R. 13 W., *Greene Co., Ill.*, about 2.5 miles S. of *Pegram (Hillview)* and 1.5 miles N. of *Bridgewater*.

P. B. M. 13.—Stone, pipe, and cap (see note 41, p. 129), set 50 feet square out, southerly, from a point on the center line of the Chicago and Alton Railroad track, 1 650 feet westerly along the track from the range of the W. end of the passenger depot at *Pegram (Hillview), Greene Co., Ill.* It is also about 150 feet northerly from the wagon ford of Hurricane Creek just westerly of Pegram, and about in line with the general direction of the bluffs to the N. and S. of the hollow in which Pegram is situated.

P. B. M. 14.—Stone, pipe, and cap (see note 41, p. 129), set in the front yard of a tenant house owned by George Burg and occupied by O. B. Walls, on the W. side of the highway along the foot of the bluffs. The bench is 27 feet S. of the range of the S. side of tenant house (double log house), 30 feet E. of the range of its E. end, and 41.4 feet southeasterly from its SE. corner, in sec. 11, T. 12 N., R. 13 W., about 1.7 miles S. of *Greene-Scott county line* and about 3.5 miles above *Pegram (Hillview), Greene Co., Ill.*

P. B. M. 15.—Near *Hillview, Greene Co., Ill.*; stone, pipe, and cap (see note 41, p. 129), set in the NW. corner of the front dooryard of the farm residence of E. C. Adams on the E. side of the highway just S. of where it passes well up on the side of the hills instead of along the foot of the bluffs as usual. The bench is 2 feet E. of front fence and 1.1 feet S. of N. fence of dooryard; it is 149 feet W. of the range of the W. or front side of house and about 9.5 feet N. of the range of its N. end; it is 161 feet northwesterly from the SW. corner of his house and 119 feet southerly from an elm tree, 3.2 feet in diameter, standing in the front dooryard of the "old house" just to the NW. of the farm residence of E. C. Adams. In sec. 26, T. 13 N., R. 13 W., *Scott Co., Ill.*, and about 1.5 miles S. of *Big Sandy Creek*.

P. B. M. 16.—Near *Glasgow, Scott Co., Ill.*; stone, pipe, and cap (see note 41, p. 129) set in the front yard of a house owned by Charles H. Condit and occupied by John W. Davis, 197 feet N. from the NE. corner of the house, and on the range of its N. end. The pipe is 105 feet southwesterly from a black-oak tree, about 2 feet in diameter, in field W. of highway. It is 2.5 feet S. of S. fence line of the E. and W. highway between secs. 10 and 15, T. 13 N., R. 13 W., *Scott County, Ill.*, or 10.5 feet S. of center of wagon track.

P. B. M. 17.—Near *Bloomfield, Scott Co., Ill.*; stone, pipe, and cap (see note 41, p. 129) set in the front dooryard of J. T. Wilson's farm residence, 2.25 feet E. of front fence and 17.65 feet S. of NW. corner post of yard fence. The pipe is 21.2 feet N. of the range of N. side, 50.7 feet W. of the range of W. or front side, and 54.6 feet northwesterly from the NW. corner of his residence. In sec. 34, T. 14 N., R. 13 W., *Scott Co., Ill.*

P. B. M. 18.—Near *Bloomfield, Scott Co., Ill.*; stone, pipe, and cap (see note 41, p. 129) set 2.75 feet E. of E. fence of N. and S. highway, 151 feet N. of center line of E. and W. jog in highway, 137.5 feet N. of the range of a fence said to be on line between secs. 8 and 17 and 284 feet northwesterly from the SW. corner of William H. Price's new house. The pipe is in the NW. corner of a small orchard field to the S. of a timber lot. In the SE.  $\frac{1}{4}$  sec. 8, T. 14 N., R. 13 W., *Scott Co., Ill.*

P. B. M. 19.—Stone, pipe, and cap (see note 41, p. 129) set near the SW. corner of the front dooryard of Harvey Green's farm residence about  $\frac{1}{2}$  mile northerly from *Orrille, Ill.*, and about  $\frac{1}{8}$  mile E. from the covered wooden bridge over Mauvestere Creek on the highway along the bluffs. The pipe is 53.3 feet W. of the range of the S. part of W. side, 74.7 feet S. of the range of the S. (front) side, and 92 feet southwesterly from the SW. corner of his house. It is 2.25 feet N. of front fence of dooryard, 14.8 feet easterly from SW. corner post of dooryard, and 9.6 feet southeasterly from a soft maple tree in yard. In sec. 29, T. 15 N., R. 13 W., *Scott Co., Ill.*

P. B. M. 20.—Stone, pipe, and cap (see note 41, p. 129) set on the NW. corner of the Methodist Protestant Churchyard situated on the NW. corner of Bluffs and Charles streets, in *Bluffs, Scott Co., Ill.* The pipe is in range with the W. side of church, 82.1 feet N. from its NW. corner and 87.9 feet northwesterly from its NE. corner. It is 44.5 feet W. of W. fence line of Bluff street and 2 feet S. of N. churchyard fence.

P. B. M. 21.—Stone, pipe, and cap (see note 41, p. 129) set in the NW. corner of the cemetery adjoining the New Salem Baptist Church, about 4 miles N. from the village of *Bluffs*, on the E. side of the bluff highway. The pipe is 63.7 feet N. from the NW. corner of church, 67.8 feet northwesterly from its NE. corner, 2.6 feet E. of the range of its W. side and from W. fence of cemetery, 2.1 feet S. of N. fence of cemetery, 27 feet SE. from white oak tree, and 30 feet northerly from a black oak tree, both trees being outside the cemetery. In sec. 25, T. 16 N., R. 13 W., *Morgan Co., Ill.*



P. B. M. 22.—Near *Meredosia, Morgan Co., Ill.*; stone, pipe, and cap (see note 41, p. 129) set in the northerly corner of the front dooryard of H. A. Brockhause's farmhouse on the SE. side of the highway along the bluffs, about 1.2 miles southwesterly from McKendree Chapel. The pipe is 75.5 feet northerly from the N. corner of house, being 65 feet NW. of the range of the NW. or front side, and 37.7 feet NE. of the NE. end of house. It is 4.4 feet SW. from NE. fence, and 2.8 feet SE. from NW. or front fence of yard. T. B. M. 105 is 135.3 feet southwesterly from it in the same yard. In sec. 8, T. 16 N., R. 12 W., Morgan Co., Ill.

P. B. M. 23.—Near *Lydda, Cass Co., Ill.*; stone, pipe, and cap (see note 41, p. 129) set in the NW. corner of front dooryard of the large square house on the Corcoran estate, about  $\frac{1}{4}$  mile SE. from Waggoner's bridge over Indian Creek. The pipe is 45.8 feet from the NW. corner of house, 22.1 feet N. of the range of the N. side, and 40.2 feet W. of the range of the W. side of house. It is 341 feet E. of the E. hedge fence of highway and 178.8 feet southerly from a cottonwood tree, 2.4 feet in diameter, standing in field, 207.75 feet northwesterly from the NW. corner of the above-mentioned house. In sec. 29, T. 17 N., R. 12 W., Cass Co., Ill.

P. B. M. 24.—Near *Beardstown, Cass Co., Ill.*; stone, pipe, and cap (see note 41, p. 129) set in the NE. corner of the cemetery near the NE. corner of the SW.  $\frac{1}{4}$  sec. 9, T. 17 N., R. 12 W., Cass Co., Ill., and which adjoins the Union Baptist Church (Black Oak Grove Church). The pipe is 2.4 feet S. of the N. and 2.7 feet W. of the E. iron fence surrounding the cemetery. It is 98.5 feet N. of the N. side of church and 2.8 feet W. of the range of its E. or front end. It is 37.4 feet southeasterly from the SE. corner of schoolhouse and 17.3 feet E. of the range of its front end.

P. B. M. 25.—Stone, pipe, and cap (see note 41, p. 129) set in the front dooryard of S. H. Gust's farmhouse, 3.15 feet N. of S. fence of yard, 33.8 feet W. of W. fence of N. and S. highway, 97 feet from the SE. corner of his house, being 41.8 feet S. of the range of the S. side, and 89.4 feet E. of the range of the E. (front) side of house, and 110.6 feet southerly from a black oak tree 2 feet in diameter standing in a grove of oaks, 95.7 feet from the NE. corner of Gust's house and 14 feet W. from the W. fence of the N. and S. highway. In the SE.  $\frac{1}{4}$  SW.  $\frac{1}{4}$  sec. 22, T. 18 N., R. 12 W., Cass Co., Ill., about 2 miles below *Beardstown*.

B. M. (wy level).—*Beardstown, Cass Co., Ill.*, "on top of south side of parapet bridge approach at E. end of wagon bridge." Marked U. S. B. M.

P. B. M. 26.—In top of stone step of main entrance to the Odd Fellows' brick building, on the E. corner of Main and Washington streets, in *Beardstown, Ill.* The bolt is 0.5 foot back from the front face and 0.4 foot S. from the N. end of stone step. (Note 43, p. 129.)

P. B. M. 27.—In top of stone step of main entrance to First State Bank building, on the W. corner of Main and State streets, in *Beardstown, Ill.* The bolt is 0.4 foot back from front edge and 1.4 feet N. from S. end of stone step. (Note 43, p. 129.)

P. B. M. 28.—Stone, pipe, and cap (see note 41, p. 129) set near the SE. corner of the Lutheran cemetery, on the N. side of the highway running E. from *Beardstown, Ill.* The pipe is 2.2 feet N. of the S. (front) fence and 5.5 feet W. of the E. fence of cemetery. It is 17.6 feet E. from a black oak tree, 1.96 feet in diameter, 27.1 feet N. about 80° E. from a black oak of equal diameter, and 155.6 feet NE. from another black oak tree, 1.85 feet in diameter, on the S. side of the highway. In sec. 12, T. 18 N., R. 12 W., Cass Co., Ill., about  $\frac{1}{2}$  mile W. of township line.

P. B. M. 29.—Near *Beardstown, Cass Co., Ill.*; stone, pipe, and cap (see note 41, p. 129) set in the SE. corner of the front dooryard of A. H. Krohe's farmhouse, on the N. side of the highway following the S. foothills of the Sangamon Valley. The pipe is 57.8 feet SE. from the SE. corner of the house, being 34.7 feet E. of the range of the E. side and 46.3 feet S. of the range of the front side of house. It is 2.6 feet N. of front fence, 2.8 feet W. of the E. fence of dooryard, and 30 feet SE. from a double cottonwood tree, 5 feet in diameter. In sec. 12, T. 18 N., R. 11 W., Cass Co., Ill.

P. B. M. 30.—Stone, pipe, and cap (see note 41, p. 129) set in the NE. corner of the front dooryard of Robert Fielden's farm residence on the southeasterly side of the highway following the S. foothills of the Sangamon Valley, 97 feet N. from the NE. corner of the house, being 95 feet northerly from the range of the northerly, or front, side and 18.5 feet easterly from the range of the easterly end of house. It is 3 feet inside the front fence and 2.7 feet from the easterly fence of yard. In sec. 10, T. 18 N., R. 10 W., Cass Co., Ill., about 3.25 miles SW from *Chandlerville*.

P. B. M. 31.—Stone, pipe, and cap (see note 41, p. 129) set in the back yard of Mrs. S. L. B. Chandler's residence, on the N. side of River street, in *Chandlerville, Ill.*, adjoining on the E. the Chicago,

\* Peoria and St. Louis R. R. right of way. The pipe is 26.75 feet E. of center of track, 2.2 feet E. of E. right-of-way fence, 149 feet N. of N. fence of River street, and 95 feet from the NW. corner of the square upright part of Mrs. Chandler's residence, being 79 feet N. and 52.2 feet W. from the corner.

P. B. M. 32.—Stone, pipe, and cap (see note 41, p. 129) set near the NW. corner of the front doorway of a farmhouse, owned by George Bell, situated near the SW. corner of sec. 8, T. 19 N., R. 9 W., *Mason Co., Ill.*, just to the NE. of the Chicago, Peoria and St. Louis R. R. depot building at *Saidora*. The bench is 352 feet NE. of the NE. corner of depot building and 71.1 feet northwesterly from the NW. corner of house, being 44.8 feet N. of the range of the N. side of house and 48.25 feet W. of the range of W. line of front piazza. The position of surrounding trees relative to bench is as follows: An 18-inch elm stands 18.35 feet southwesterly, a 15-inch elm stands 20.75 feet northwesterly, a 10-inch elm stands 14 feet northerly, a 20-inch elm stands 31.5 feet northeasterly, and an 18-inch pine stands 61.2 feet southeasterly of bench.

P. B. M. 33.—Stone, pipe, and cap (see note 41, p. 129) set in the public square at *Bath, Ill.*, 26.5 feet SE. from the NW. fence line of square, 66.3 feet SW. from the NE. fence line of square, 164.3 feet southward from the S. corner of Moses Morris's brick store, 39.35 feet NE. from the range of the NE. side, 121.9 feet NW. from the range of the NW. end, and 127.3 feet northwesterly from the N. corner of town hall. The position of three consecutive trees in the row of shade trees along the NW. side of the square relative to the bench is as follows: A 24-inch soft maple stands 39.25 feet southerly, a 24-inch elm stands 23.4 feet northwesterly, and an 18-inch elm stands 29.7 feet northerly of bench.

P. B. M. 34.—Center of cross cut on cast-iron water table along the front of Moses Morris's brick store on the N. corner of Oak and Main streets in *Bath, Ill.* The cross is 7.6 feet NE. from the S. corner of the store, 0.16 foot SW. from the first iron column NE. from said corner, and 0.08 foot back from front edge of water table. Marked P B M U S+.

P. B. M. 35.—Stone, pipe, and cap (see note 41, p. 129), set in the E. and W. highway between secs. 27 and 28, T. 21 N., R. 9 W., *Mason Co., Ill.*, where this highway crosses the Chicago, Peoria and St. Louis R. R. at *Matanzas* elevator. The bench is 4.7 feet N. of S. hedge fence of highway, and about on the range of the NW. railway right-of-way fence line, being 49.55 feet, square out, from center of track.

P. B. M. 36.—Near *Havana, Mason Co., Ill.*; stone, pipe, and cap (see note 41, p. 129), set 48.7 feet E., square out, from center of Chicago, Peoria and St. Louis R. R. track and 1 189 feet northward along the track from its intersection with center of highway between secs. 12 and 13, T. 21 N., R. 9 W., *Mason Co., Ill.* It is on land of Henry Neteler, 269 feet W. of the range of the W. fence and 23 feet N. of the range of the N. fence of his dooryard, 196.6 feet northward along E. right-of-way fence line from center of gateway of his private drive, and 112 feet southeastward from the SW. one of a group of three black walnut trees, this one 0.8 foot in diameter, standing at the extreme S. end of woods. An 18-inch black oak stands 26.2 feet northeasterly, a 14-inch black oak stands 13.6 feet southerly, a 14-inch black oak stands 22.4 feet easterly of bench.

P. B. M. 37.—In top of S. end of E. pier of iron highway bridge over Illinois River at *Havana, Ill.* The bolt is 1.9 feet N. from S. end and 2.98 feet E. from W. side of pier. (Note 43, p. 129.)

P. B. M. 38.—Center of cross cut on top of cast-iron water table of brick post-office building, at SE. corner of Plum and Main streets, in *Havana, Ill.* The cross is 1.55 feet S. of the NW. corner of base of cast-iron corner column and 0.15 foot back or E. from front edge of water table. Not marked.

P. B. M. 39.—In top of stone doorstep of main S. entrance to county office building situated on the public square and facing Main street, in *Havana, Ill.* The bolt is 0.35 foot N. from S. edge of step and 0.6 foot E. of brick jamb on W. side of doorway. (Note 43, p. 129.)

P. B. M. 40.—Top of copper bolt leaded vertically into top of stone water table in front of Mason County Bank building on N. side of Main street in *Havana, Ill.* The bolt is 187 feet W. from the W. side of Plum street, 0.77 foot W. of W. face of iron column first W. of bank door and 0.18 foot back from front edge of water table. It is marked U S P B M, with the bolt below the B and the U and S on either side of the bolt.

P. B. M. 41.—Near *Havana, Mason Co., Ill.*; stone, pipe, and cap (see note 41, p. 129), set in the SW. corner of A. H. Jones's farm, 2.1 feet N. of the N. fence line of E. and W. highway through the center of sec. 21, T. 22 N., R. 8 W., *Mason County, Ill.*, and 7.8 feet E. of N. and S. hedge fence on W. line of said section. A 25-inch black oak (in highway) stands 17.15 feet eastward, a 19-inch black oak stands 8.85 feet northeasterly, and a 22-inch black oak stands 16.25 feet northward of bench. It is also 207 feet westward from an elm tree, 2.9 feet in diameter, standing in the E. and W. highway.



T. B. M. 186.—Near *Havana, Mason Co., Ill.*, on the W. end of S. stone abutment of iron highway bridge over Quiver Creek in sec. 22, T. 22 N., R. 8 W., Mason Co., Ill., about  $\frac{1}{4}$  mile NNE. from Quiver schoolhouse. (Note 42, p. 129.)

P. B. M. 42.—Near *Liverpool, Fulton Co., Ill.*; stone, pipe, and cap (see note 41, p. 129), set in the highway running along the brow of the hills on the SE. side of bottom lands and slough, to the NE. of the head of Quiver Lake in a general NE. direction, but N. and S. for about 150 feet in the immediate vicinity of the bench. It is in the NW.  $\frac{1}{4}$  sec. 11, T. 22 N., R. 8 W., *Mason County, Ill.*, on lands of O. A. Graham. The pipe is 15 feet E. of center of wagon track, 15 feet N. of N. side of a large field, having woods on its N. and W. sides, and 5.4 feet W. from a long N. and S. osage orange hedge on the W. side of said field. Mr. Graham's private road branches from the highway about 50 feet S. of the bench and continues S. along W. side of hedge.

P. B. M. 43.—Stone, pipe, and cap (see note 41, p. 129), set in the NW. corner of the front dooryard of Joseph Brown's log house on the NE. corner of sec. 6, T. 22 N., R. 7 W., *Mason County, Ill.*, about 4.5 miles N. of *Topeka*. The bench is 37.5 feet N. of the range of N. side of house, 34.5 feet W. of the range of its W. end, 46 feet northwesterly from a 24-inch black-oak tree in yard W. of house, 36.7 feet southerly from a double black-oak tree standing about in center of E. and W. town-line road, and 47 feet from a black-oak tree, 0.75 foot in diameter, standing near the SW. corner of sec. 32, T. 23 N., R. 7 W.

P. B. M. 44.—Near *Manito, Mason Co., Ill.*; stone, pipe, and cap (see note 41, p. 129), set in front dooryard of J. A. Schulte's cottage, occupied by Peter Schutz, situated at the SE. angle in the highway where, in coming from the S., it turns E. along the Mason-Tazewell County line. Here the road runs close to the brow of the bluffs to the E. of the head of Clear Lake. The bench is 21.8 feet WNW. from the NW. corner of cottage, being 10.8 feet N. of the range of N. end and 19.5 feet W. of the range of W. or front side of cottage. It is 60 feet ESE. of a 6-inch black-oak tree on opposite side of highway and 154 feet southerly from a black-oak tree 1.4 feet in diameter, standing in field at brow of bluffs.

P. B. M. 45.—Near *Marshalls Landing, Tazewell Co., Ill.*; stone, pipe, and cap (see note 41, p. 129), set in the SW. corner of the front dooryard of Benjamin F. Gorman's farmhouse, situated in the NW.  $\frac{1}{4}$  sec. 11, T. 23 N., R. 7 W., Tazewell County, Ill., on the N. side of E. and W. highway, and a short distance below the eastward end of Copperas Creek dike. The bench is 62.3 feet from the SW. corner of house, being 13 feet W. of the range of the W. side, and 61.2 feet S. of the range of the S. or front side of house. A 17-inch black oak stands 8.6 feet W., a 13-inch black oak 13.3 feet about 100° E. of N., a 12-inch black oak 23.2 feet about 75° E. of N., and a 13-inch black oak 13.65 feet WNW. from the bench.

P. B. M. 46.—Stone, pipe, and cap (see note 41, p. 129), set in the SW. corner of the large front dooryard of the country residence of Edward S. Haas, which is NE. of *Marshalls Landing*, 2.85 feet E. of E. fence and 2.7 feet N. of S. or front fence of yard; 637.7 feet southwestward from the SW. corner of his residence, and 327 feet E. from the SE. corner of the old Eli Haas farmhouse; an 8-inch elm stands 91.1 feet N., a 6-inch hackberry 174 feet NE., and a 6-inch hackberry 161.1 feet ENE. from the bench. In the SE.  $\frac{1}{4}$  sec. 30, T. 24 N., R. 6 W., *Tazewell County, Ill.*, approximately 450 feet eastward from the S. quarter corner of said section.

P. B. M. 47.—Near *Gales Landing, Tazewell Co., Ill.*; stone, pipe, and cap (see note 41, p. 129), set on the SE. side of the highway along the foot of the bluffs to the E. and NE. of the upper part of Spring Lake, 2.1 feet NW. from its SE. fence line and about 12 feet W. of line between secs. 21 and 22, T. 24 N., R. 6 W., Tazewell County, Ill., as defined by fence line on top of hill, which fence, in coming down the hillside, deflects to the pipe at the highway. The bench is near the NE. corner of John and Miriam Brewer's land and at an estimated distance of 700 feet NNE. from their farmhouse.

T. B. M. 228.—Near *Stoehrs, Tazewell Co., Ill.*, on the top of coping stone at NW. end of SW. stone abutment of iron highway bridge over New Mackinaw River, about  $\frac{1}{4}$  mile N. of the center of sec. 24, T. 24 N., R. 6 W., Tazewell County, Ill., and about 5.5 miles SW. of Pekin. (Note 42, p. 129.)

U. S. G. S.—Near *Stoehrs, Tazewell Co., Ill.*, about 5.5 miles SW. of Pekin, Tazewell County, Ill., on the SE. end of the SW. stone abutment of the iron highway bridge over New Mackinaw River, being the center of the cross on the top of bronze tablet cemented into coping stone.

P. B. M. 48.—Stone, pipe, and cap (see note 41, p. 129), set on the right of way of the Chicago, Peoria and St. Louis R. R., 45.25 feet SE., square out, from center of track, 38.5 feet S. from center line (as defined by fences) of the E. and W. highway between secs. 9 and 16, T. 24 N., R. 5 W., *Tazewell*

*County, Ill.*, and 130.7 feet southeasterly from a wild-cherry tree 1.75 feet in diameter, standing in the N. and S. fence line through the center of the SW.  $\frac{1}{4}$  sec. 9. A 12-inch wild cherry (on right of way) stands 96.6 feet NE. and a 6-inch elm (on north fence line of highway) stands 121 feet NW. of bench. About 3 miles SW. from *Pekin*.

T. B. M. 235.—On top of stone doorstep of large door (10.4 feet wide between wooden jambs), about midway of the side facing the Chicago, Peoria and St. Louis R. R. track, of the main building of the Illinois Sugar Refining Co.'s works, 1.5 miles SW. of *Pekin, Ill.* The mark is 0.55 foot back from front edge of step and 0.37 foot from NE. jamb. (Note 42, p. 129.)

T. B. M. 237.—On top of the stone forming the northwesterly corner of brick foundation of Smith, Hippen & Co.'s elevator at foot of hills, at river, in *Pekin, Ill.* The bench is 0.37 foot W. of W. side and 0.35 foot S. of N. end of elevator. (Note 42, p. 129.)

P. B. M. 49.—In top of coping stone on N. end of E. abutment of railroad bridge over the Illinois River at *Pekin, Ill.* The bolt is 1.16 feet S. of N. end and 2 feet E. of W. edge of coping. (Note 43, p. 129.)

T. B. M. 238.—Top of vertical foundation bolt, securing to its concrete foundation the SW. corner of the cast-iron electric block-signal post, which is situated first N. of the railroad river bridge at *Pekin, Ill.*, on the Peoria and Pekin Union R. R. The bolt is the one below the hinges of the large lower cast-iron door to base part of post.

T. B. M. 239.—Top of vertical foundation bolt securing to its concrete foundation the SW. corner of cast-iron electric block-signal post which is situated second N. of the railroad river bridge at *Pekin, Ill.*, on the Peoria and Pekin Union Ry. The bolt is the one below the hinges of the large lower cast-iron door to base part of post.

T. B. M. 240.—Top of vertical foundation bolt securing to its concrete foundation the cast-iron electric block-signal post third N. of the railroad river bridge at *Pekin, Ill.*, on the Peoria and Pekin Union Ry. The bench bolt is the one below the hinges of the larger lower cast-iron door to base part of post. This signal post is near the SW. corner of the old part of Lake Side Cemetery.

P. B. M. 50.—Stone, pipe, and cap (see note 41, p. 129), set in the highway between *Pekin and Wesley, Ill.*, about 0.75 mile northward from Lake Side Cemetery, where the highway turns from paralleling the Peoria and Pekin Union Ry., directly E., near the center of sec. 23, T. 25 N., R. 5 W., *Tazewell County, Ill.* The bench is 126 feet E.; square out, from center of E. track of railroad, 48 feet E., square out, from the range of a row of telephone poles on the eastward side of highway to the southward of bench, and 60.6 feet S. from the range of a row of telephone poles on the S. side of highway to the E. of bench.

P. B. M. 51.—Stone, pipe, and cap (see note 41, p. 129), set in the front dooryard of Mrs. Elizabeth Walmsley's residence in *Wesley, Ill.*, which is situated between the Peoria and Pekin Union Ry. and the public highway leading through the village. The bench is 140 feet E. from edge of low water in Illinois River, 105.3 feet N. of the range of N. side of schoolhouse, 35.5 feet W. of the range of its E. or rear end, and 14.85 feet from the SW. corner of Mrs. Walmsley's house, being 5.2 feet S. and 14.3 feet W. of the ranges of the S. and W. sides of house, respectively.

T. B. M. 249.—Top of the southeasterly one of the four vertical bolts which secure to concrete foundation the plank to which are attached two bell-crank levers of block-signal apparatus operated from *Wesley Junction* interlocking tower of the Peoria and Pekin Union Ry. The bench is 357.4 feet southerly, measured along the track, from the range of the southerly side of tower, 51.4 feet northerly from center of iron interlocking post southerly of tower, and 5.5 feet, square out, westerly from center of W. main track. T. B. M. 249 is cut on the plank.

P. B. M. 52.—In top of coping stone at SW. end of SE. stone abutment of the Peoria and Pekin Union Ry. bridge over the Illinois River at *Peoria, Ill.* The bolt is 0.94 foot from SW. end, 2.62 feet from river side, and 2.6 feet from land side of coping stone, and is 0.58 foot from stone block resting on the coping and supporting the SW. bridge seat. (Note 43, p. 129.)

T. B. M. 250.—Highest point in square cut on top of coping stone at NE. end of NW. stone abutment of the Peoria and Pekin Union Ry. bridge over the Illinois River at *Peoria, Ill.* The bench is 0.43 foot back from the NE. edge, 2.85 feet from river side, and 2.43 feet from land side of coping stone. The square is surrounded by the letters U. S. B. M.

T. B. M. 251.—In center of top of stone post, 2.7 feet long by 0.95 foot square, projecting 1.25 feet above ground, situated on the SE. side of the room called the "tower" of distillery No. 11 (Great



Western Distillery), in *Peoria, Ill.* The bench is 30.1 feet NE. from the S. corner and 2.65 feet, square out, from river side of "tower" room. It is 130.3 feet SW. from center of large steel smokestack of the same works. (Note 42, p. 129.)

T. B. M. 253.—On top of the SW. end stone of top course of earth wall of NW. abutment of the Toledo, Peoria and Western Ry. bridge over the Illinois River at *Peoria, Ill.* The bench is 10.05 feet SW., square out, from center of track, 1.35 feet from end and 0.33 foot back from river face of stone on which it is. (Note 42, p. 129.)

B.eM.—*Peoria, Peoria County, Ill.*; on the top of the southerly corner of the SW. end stone in the top course of the earth wall of the NW. abutment of the Toledo, Peoria and Western Ry. bridge over the Illinois River, being a square with the letters B. M. cut near it. This bench is said to be a railroad bench.

P. B. M. 53.—In top of the coping course of the NW. stone abutment of the Toledo, Peoria and Western Ry. bridge over the Illinois River at *Peoria, Ill.* The bench is on the second stone of coping SW. from the one directly supporting the NW. bridge seat of drawspan, 1.97 feet back from river edge of coping, 0.58 foot in front of river face of earth wall, and 5.15 feet from the SW. edge of iron bridge seat. (Note 43, p. 129.)

P. B. M. 54.—In top of stone doorstep of large double-door entrance on the NE. end of the Chicago, Rock Island and Pacific Ry. depot building in *Peoria, Ill.* The bench is directly in front of the stone column at NW. side of doorway, 0.4 foot back from front edge of step, 0.92 foot from its NW. end, and 4.3 feet from the NW. stone corner of depot. (Note 43, p. 129.)

T. B. M. 254.—In top of stone doorstep of the double doors on the NW. side of the Leisy Brewing Company's brick brewery on the NE. corner of Irving and North Water streets in *Peoria, Ill.* The door is 7.87 feet wide between brick jambs, opens on the alley, and is nearly opposite the office building. The bench is 0.26 foot back from front edge and 0.65 foot from NE. end of stone step, being 19.1 feet NE. from the NW. corner of building. (Note 42, p. 129.)

T. B. M. 256.—Center of cross cut on top of cast-iron doorstep of second door northeastward from the SW. corner of building No. 4 of the Kingman Plow Co.'s works in *Averyville (Peoria), Ill.*, which adjoins the SE. side and faces the Chicago, Rock Island and Pacific Ry. track. The cross is 65.4 feet northeastward, along the building, from its SW. corner, 49.8 feet SE., or square out, from the center of railroad track, 0.26 foot back from front edge of doorstep, and 0.27 foot from SW. face of doorway.

T. B. M. 257.—Near *Peoria, Peoria Co., Ill.*, on top of lowest stone step of S. or main entrance to Peoria Water Works' pumping station on the Illinois River, N. of the city. The bench is 1.05 feet back from front edge, and 1.48 feet E. of extreme W. end of step, 0.87 foot in front of second step, and 0.51 foot E. of E. edge of stone pier, supporting brick column at W. side of entrance. (Note 42, p. 129.)

P. B. M. 55.—Stone, pipe, and cap (see note 41, p. 129) set in the front yard of the Peoria Water Works' pumping station, *Peoria, Ill.* The bench is 174.7 feet southwestward from the SW. corner of pumping-station building, being 10 feet NW. from the range of its NW. side, and 174 feet SW. from the range of its SW. or front side. It is 50.4 feet SE., square out, from the center of the Chicago, Rock Island and Pacific Ry. track, or 0.75 foot SE. from right-of-way fence line, along which fence the bench is distant 76.65 feet from the N. fence of E. and W. highway in front of waterworks yard leading to the bridge, and 42.5 feet southwesterly from the center of a double wild-cherry tree standing near the fence. In sec. 26, T. 9 N., R. 8 E., *Peoria County, Ill.*

B.eM. 1 P. (wye level).—Near *Peoria, Peoria Co., Ill.*, on the W. stone pier of the upper free wagon bridge over the Illinois River near the pumping station N. of the city, being a cross cut on the upstream end of the pier about 8 inches from N. edge and about 15 inches from E. edge of coping.

T. B. M. 258.—Near *Peoria, Peoria Co., Ill.*, at a point 6.14 feet E. of center of Chicago, Rock Island and Pacific Ry. track, and  $\frac{7}{8}$  mile N. from the Peoria Water Works' pumping station. It is 288.25 feet northward from signboard reading, "Siding at narrows  $\frac{1}{2}$  M." and 15.5 feet S. of switch block of siding into gravel pit, just S. of E. J. Singer's house on the bluff hillside. The rail projects 0.5 foot above ground, and is painted white. (Note 44, p. 130.)

P. B. M. 56.—Near *Peoria, Peoria Co., Ill.*; stone, pipe, and cap (see note 41, p. 129) set in the highway, adjacent to and paralleling the SW. side of the Chicago, Rock Island and Pacific Ry. at a point about 3.25 miles northward from the Peoria Water Works' pumping station. It is 110.4 feet SW., or square out, from the center of railroad track, 1.74 feet out from SW. fence line of highway, 87.4 feet NW. from center of wagon bridge over creek, and 89 feet westward from an elm tree, 1.8 feet in diameter, standing on the N. side of a creek. It is near the S. line of sec. 10, T. 9 N., R. 8 E., *Peoria Co., Ill.*, along lands of Anton Gauwitz.

P. B. M. 57.—Stone, pipe, and cap (see note 41, p. 129) set in the SW. corner of the school yard at *Mossville, Ill.*, at the N. end of the village, on the SW. corner of State and Grant streets. The bench is 2.7 feet N. and 2.5 feet E. of the S. and W. fences of school yard, respectively, 95.2 feet NW. from the NW. corner of A. Bauer's house, and 89.1 feet SW. from the SW. corner of old brick schoolhouse (burned and a new building erected in 1904). A 32-inch poplar tree stands 132.6 feet (center), about N. 80° E., and a 23-inch elm tree, 83.8 feet (center), about N. 35° E. from bench, both trees being in the school yard.

P. B. M. 58.—Stone, pipe, and cap (see note 41, p. 129) set in the highway leading from *Mossville* to *Rome, Ill.*, where the highway crosses from the W. to the E. side of the Chicago, Rock Island and Pacific Ry., about 2.5 miles NE. from *Mossville*. The bench is 58.15 feet from the intersection of wagon with railroad track, 3.65 feet SE. from NW. fence line of highway, 56.35 feet NW., or square out, from center of track, 65.5 feet NW. from center of S. cattle guard, and 91.45 feet W. from the center of N. cattle guard at this crossing.

P. B. M. 59.—Stone, pipe, and cap (see note 41, p. 129) set in the highway known as the "Farmington road," or as Knox street in *Rome, Ill.*, being the first road or street S. from Chicago, Rock Island and Pacific Ry. depot. The bench is 41.85 feet eastward, or square out, from center of railroad track, 194.5 feet southward from SE. corner of depot, 253 feet SW. from the SW. corner of S. Dahl's house, and about 2.5 feet N. from the S. hedge fence of Farmington road, in *Rome, Ill.*

P. B. M. 60.—Stone, pipe, and cap (see note 41, p. 129), set near the NW. corner of the public square in *Chillicothe, Ill.* It is 4.95 feet S. from northern fence of square, 28.94 feet SE. from the NW. corner post of fence surrounding square, 66.3 feet eastward, or square out, from center of main track of Chicago, Rock Island and Pacific Ry., and 104.5 feet SE. from the SE. corner of depot. A 28-inch soft-maple tree stands 21.8 feet (center) to the westward, a 20-inch soft maple, 19.7 feet (center) to the eastward, and a 12-inch elm, 55.2 feet (center) to the southward of bench; the first tree being near the NW. corner, and the second, one of a row along the northern side of the square.

T. B. M. 283.—At a point 6.16 feet E. of the center line of the Chicago, Rock Island and Pacific Ry. track; 105.6 feet northward, along the track, from signboard reading, "Chillicothe  $\frac{1}{2}$  M.," and 15.2 feet southward from the switch block to wye track connecting the Rock Island with the Atchison, Topeka and Santa Fe Ry. in the SW. angle of the intersection of these roads, about 0.7 mile above *Chillicothe, Ill.* The rail projects 0.7 foot above ground and has two holes through web part. (Note 44, p. 130.)

P. B. M. 61.—In top of the fourth stone from the S. end in the upper course of the S. retaining wall of the E. abutment of the Atchison, Topeka and Santa Fe Ry. bridge over the Chicago, Rock Island and Pacific Ry. track, about 0.7 mile above *Chillicothe, Ill.* The bolt is in a niche cut in the front face of the stone, and is 16.45 feet southward, along the wall, from S. end of abutment proper. (Note 43, p. 129.)

P. B. M. 62.—Stone, pipe, and cap (see note 41, p. 129) set in the NE. corner of the front dooryard of Fred. Bennett's farmhouse on the westward side of the river road and of the Chicago, Rock Island and Pacific Ry. at the foot of the bluffs, about 4 miles NNE. from *Chillicothe, Ill.* The bench is 377 feet southward from the N. quarter post (stone) of sec. 3, T. 11 N., R. 9 E., *Peoria Co., Ill.*, which stone is on the Peoria-Marshall Co. line 54 feet W. from westward fence line of the river road; 74.55 feet westward, or square out, from the center of Chicago, Rock Island and Pacific Ry. track; 65.3 feet N. from a honey locust tree 2.2 feet in diameter; 32.2 feet southwestward from the center of a 22-inch black oak in road; 2.2 feet S. from northerly fence, and 2 feet W. from easterly or front fence of dooryard; and 48.2 feet NE. from the NE. corner of N. wing of Mr. Bennett's house, being 28.25 feet northward from the range of the northerly end of N. wing and 33.54 feet eastward from the range of the easterly or front side of main part of his house.

T. B. M. 291.—At a point 6.25 feet E. from the center of the Chicago, Rock Island and Pacific Ry. track, 112 feet N., along the track, from the center of pile bridge, No. 49, and 1.46 miles S. of *Sparland* station, being milepost 136. In sec. 23, T. 12 N., R. 9 E., *Marshall Co., Ill.* (Note 44, p. 130.)

P. B. M. 63.—Stone, pipe, and cap (see note 41, p. 129) set in the SE. corner of lot No. 14 of Cotton's first addition to *Sparland, Ill.*, at the NW. corner of the intersection of Railroad and Walnut streets. This lot is owned and occupied by Fred Vincent. The bench is 31.55 feet SE. from the SE. corner of his house, being 21.25 feet S. and 23.3 feet E. from said corner. It is 85 feet NW. from a soft maple tree, 1.4 feet in diameter, the middle one of three, 5.35 feet SE. from a catalpa tree in same corner of yard, 1.6 feet N. of N. fence of Walnut street, and 1.55 feet W. of W. fence of Railroad street.



T. B. M. 293.—Near *Sparland, Marshall Co., Ill.*, at a point 6 feet W. from the center of the Chicago, Rock Island and Pacific Ry., 31.4 feet northward along the track from the N. whistling post for highway, crossing first N. of Sparland and 0.54 mile northward from Sparland depot, being milepost 134. The rail projects 0.8 foot above ground, and the cross is a little to the W. of the middle of the base part of the end of the rail. (Note 44, p. 130.)

P. B. M. 64.—Stone, pipe, and cap (see note 41, p. 129) set on the right of way of the Chicago, Rock Island and Pacific Ry., 45 feet NW., or square out, from a point in the center line of track, 1 031 feet NE. along the track from milepost 131 (a piece of railway rail set vertically in the ground near track) being 5.45 feet from the NW. right-of-way fence line of railway or SE. fence line of highway. The bench is in the W.  $\frac{1}{2}$  SW.  $\frac{1}{4}$  sec. 30, T. 13 N., R. 10 E., Marshall Co., Ill., and about 3 miles SW. from *Henry, Ill.* It is Triangulation Station Crow Creek at SW. end of measured base.

T. B. M. 297.—At a point 6.08 feet SE., or square out, from the center of the Chicago, Rock Island and Pacific Ry. track, about 2.25 miles SW. from *Henry, Ill.*, being milepost 130. In the NW.  $\frac{1}{4}$  NE.  $\frac{1}{4}$  sec. 30, T. 13 N., R. 10 E., Marshall Co., Ill. (Note 44, p. 130.)

T. B. M. 299.—At a point 6.09 feet SE., or square out, from the center of the Chicago, Rock Island and Pacific Ry. track, being milepost 129. In sec. 20, T. 13 N., R. 10 E., Marshall Co., about 1.25 miles SW. from *Henry, Ill.* (Note 44, p. 130.)

P. B. M. 65.—Stone, pipe, and cap (see note 41, p. 129) set on the right of way of the Chicago, Rock Island and Pacific Ry., 45.6 feet NW., or square out, from a point in the center line of track, 1 003.8 feet SW., along the track, from milepost 128, and about  $\frac{1}{2}$  mile SW. from depot at *Henry, Ill.* It is 1 011.3 feet NE., along the track, from post reading, "Henry  $\frac{1}{2}$  M.," 4.5 feet SE. from the NW. right-of-way fence line, which separates railroad and highway. It is Triangulation Station Henry at NE. end of measured base.

T. B. M. 303.—At a point 6.15 feet E., or square out, from the center of the Chicago, Rock Island and Pacific Ry. track, and 80 feet N., along the track, from the center, as defined by fences, of the E. and W. highway along the south line of sec. 4, T. 13 N., R. 10 E., Marshall Co., Ill., being milepost 126. The rail projects 0.5 foot above ground and is about 1.5 miles N. of *Henry, Ill.* (Note 44, p. 130.)

T. B. M. 304.—Near *Henry, Marshall Co., Ill.*, at a point 6.16 feet NE., or square out, from the center of the Chicago, Rock Island and Pacific Ry. track and about 178 feet NW., along the track, from the center line, as defined by fences, of the highway along the E. line of sec. 5, T. 13 N., R. 10 E., Marshall Co., Ill., being milepost 125. The rail projects 0.3 foot above ground and is near the NE. corner of sec. 5, being 425 feet SE., along the track, from the Marshall-Putnam Co. line, as defined by fences of highway on this line. (Note 44, p. 130.)

P. B. M. 66.—Near *Putnam, Putnam Co., Ill.*; stone, pipe, and cap (see note 41, p. 129) set in the E. and W. highway on the Marshall-Putnam Co. line, 2.65 feet S. of N. fence line of highway, 45.6n feet SW., or square out, from the center of the Chicago, Rock Island and Pacific Ry. track, and 4.4 feet toward the track from the range of the SW. right-of-way fence line S. of the highway. It is 53.5 feet northwestward from railway post reading, "Marshall Co.-Putnam Co.," and 74.6 feet WNW. from postn of danger warningsign at this crossing.n

P. B. M. 67.—Stone, pipe, and cap (see note 41, p. 129) set in the SE. corner of the First M. E. Church yard in *Putnam, Ill.*, which church stands on the NE. corner of the intersection of highways at the center of sec. 19, T. 14 N., R. 10 E., Putnam Co., Ill. The bench is 131 feet SE. from the NE. corner of the church, and 149.8 feet eastward from the SW. corner of church, being 29 feet S. of the range of the S. or front end of church, and 108 feet E. of the range of the E. side. It is 5.45 feet N. of front fence, and 4.75 feet W. of E. fence of churchyard, and 20 feet W. from a soft maple tree, 1.9 feet in diameter, standing in the front dooryard of the parsonage.

P. B. M. 68.—Near *Putnam, Putnam Co., Ill.*; stone, pipe, and cap (see note 41, p. 129) set in the NE. corner of the front dooryard of William Anderson's farmhouse on the W. side of the highway along the foot of the bluffs, some 400 or 500 feet S. from Putnam-Bureau Co. line and in sec. 6, T. 14 N., R. 10 E., Putnam Co., Ill. The bench is 4 feet S. of N. fence and 4.85 feet W. of front fence of dooryard and 70 feet NE. from the NE. corner of house, being 40.85 feet N. of the N. end and 56.7 feet E. of the front side of house. A 30-inch elm stands 63.9 feet (center) S. about 40° E., a 30-inch elm, 69.3 feet (center) S. about 30° W., and a 19-inch burr oak 55.8 feet (center) SSE. from bench.

T. B. M. 314.—Near *Bureau, Bureau Co., Ill.*, at a point 6.16 feet E., or square out, from the center of the Chicago, Rock Island and Pacific Ry. track and just northward from the N. end of the curve in the track S. from the farmhouse occupied by John Mavity, being milepost 118. It is in the NE.  $\frac{1}{4}$  sec. 36, T. 15 N., R. 9 E., Bureau Co., Ill. The rail projects 0.4 foot above ground. (Note 44, p. 130.) n

T. B. M. 317.—Near Bureau, Bureau Co., Ill., at a point 6.15 feet E., or square out, from center of Chicago, Rock Island and Pacific Ry. track, 475.75 feet northward from switch block to siding, and about 155 feet southward from the first curve in track southward from the iron railroad bridge over Big Bureau Creek, being milepost 116. The rail projects 0.6 foot above ground. (Note 44, p. 130.)

P. B. M. 69.—Stone, pipe, and cap (see note 41, p. 129) set in the front dooryard of the residence of D. B. George, in the SW. angle of the intersection of highways, at Bureau Valley Mill, on the SW. bank of Big Bureau Creek, about 1 mile SW. of Bureau, Ill. The bench is 139.25 feet southward from S. e corner of mill, 228.35 feet southwestward from the SW. corner of Chicago, Rock Island and Pacific Ry. e bridge over Big Bureau Creek; 185 feet NE. from a soft-maple tree, 1.6 feet in diameter, standing on the NW. side of the highway along the foot of the bluffs; 59.45 feet NW., or square out, from center of railroad track; 21.7 feet SW. from NE. fence and 8.5 feet NW. from SE. fence of dooryard, and 23.6 feet eastward from the E. corner of Mr. George's house, being 21.2 feet SE. from the range of the SE., or front side, e and 10.55 feet NE. from the range of the NE. side of house. A 14-inch white pine tree stands 10.5e feet northeasterly and a 10-inch white pine tree 11.5 feet westerly from bench. e

T. B. M. 319.—Center of cross cut in top of base of cast-iron bridge seat at SW. end of NW. plate girder of the Chicago, Rock Island and Pacific Ry. bridge, on the Peoria branch, over the Hennepin Canal, in the southern outskirts of Bureau, Ill. The cross is opposite the NE. one of two 2-inch bolt holes through the base of cast-iron bridge seat for bolts to secure the bridge seat to the masonry, which hole has no bolt in it. It is between the middle and the NE. vertical ribs on the NW. side of seat, being 0.5 foot from the NW. edge, and 5.1 inches from the NE. edge of base of casting.

T. B. M. 321.—On the top of a rock, NE. from Bureau, Ill., on the Chicago, Rock Island and Pacific Ry. right of way. The square is 18.64 feet NW., or square out, from center of NW. track, and 348 feet southward, along the track, from railway post reading, "Station one mile." The stone presents an inclined flat face nearly toward the track, is about 1.5 feet thick by 4 feet broad, and projects about 1.7 feet on its NW., and about 3.2 feet on its SE. side above ground. (Note 42, p. 129.)

P. B. M. 70.—Stone, pipe, and cap (see note 41, p. 129) set on the right of way of the Chicago, Rock Island and Pacific Ry., 41.5 feet SE., or square out, from the center of the SE. track, or 1.3 feet in from the SE. right-of-way fence line, at a point 215 feet NE. along said fence, from the center of a farm gate, at farm crossing, on lands of Frank Rawson, whose farmhouse stands on the bluffs, approximately NW. from the bench. The bench is 0.877 mile NE. along the track from railway post reading, "Station one mile," or 1.877 miles from Bureau station, Ill. It is on a knoll of ground between railroad cut and marsh ground. The tracks curve more toward the E, 1000 feet (estimated) to the NE. of the bench. In sec. 4, T. 15 N., R. 10 E., Bureau Co., Ill.

T. B. M. 324.—On top of N. end stone of first course above the bridge seat course of E. stone abutment of bridge No. 237 of the Chicago, Rock Island and Pacific Ry., about 0.5 mile to the westward of Depue, Ill. The bench is 7.6 feet N., or square out, from center of N. track, 1.02 feet from northerly edge and 1.5 feet from westerly face of stone on which it is. In the SE.  $\frac{1}{4}$  sec. 34, T. 16 N., R. 10 E., Bureau Co., Ill. (Note 42, p. 129.)

P. B. M. 71.—Stone, pipe, and cap (see note 41, p. 129), set on the right of way of the Indiana, Illinois and Iowa R. R., 98.2 feet W., or square out, from a point in the center line of the track, 234 feet northward, along the track, from the N. end of the plate-girder bridge over the Chicago, Rock Island and Pacific Ry. tracks. The bench is 1.6 feet E. from the westerly right-of-way fence line, and along this fence line it is 251.5 feet northward from the center of the N. track of the Chicago, Rock Island and Pacific Ry., and 400.3 feet southward from the S. fence line of E. and W. highway. In sec. 36, T. 16 N., R. 10 E., Bureau Co., Ill., about 1.17 miles E. from Depue.

T. B. M. 328.—On W. stone of coping on S. side of E. abutment of the Chicago, Rock Island and Pacific Ry. bridge, No. 232, over Nigger Creek, about 0.54 mile W. of depot at Marquette, Ill. The bench is 5.94 feet S. of center of S. track, 1.1 feet from S. face, and 0.8 foot from W. face of coping stone. (Note 42, p. 129.)

B. M. (railroad), on SE. corner of S. coping of W. abutment of Chicago, Rock Island and Pacific Ry. bridge No. 232, over Nigger Creek, about 0.54 mile W. of depot at Marquette, Bureau Co., Ill.

T. B. M. 330.—On top of N. end stone of bridge seat course of W. stone abutment of bridge No. 227 of the Chicago, Rock Island and Pacific Ry., about 0.8 mile E. of Marquette, Ill. The bench is 0.85 foot from N. end and 0.75 foot from E. face of stone and 10.04 feet N. from center of N. track. (Note 42, p. 129.)



T. B. M. 332.—On top of stone, forming the first course above the bridge seat, at S. end of W. stone abutment of bridge No. 219 of the Chicago, Rock Island and Pacific Ry., about 1 mile W. of *Spring Valley, Ill.*, and about 500 feet E. of where the highway turns N. up the bluff hillside from paralleling the railroad. The bench is 10.35 feet S., or square out, from center of S. track, 0.65 foot from S. end and 0.92 foot from E. face of stone. It is 462 feet eastward from P. B. M. 72. In the SE.  $\frac{1}{4}$  sec. 33, T. 16 N., R. 11 E., *Bureau Co., Ill.* (Note 42, p. 129.)

P. B. M. 72.—Stone, pipe, and cap (see note 41, p. 129), set at the angle in the highway which follows the foot of the bluffs and parallels the Chicago, Rock Island and Pacific Ry. for about 2.3 miles E. from Marquette, Ill., where it turns N. up the bluff hillside about 1.1 miles W. of *Spring Valley*. The bench is 42.95 feet N., or square out, from center of N. track of railroad, or 7 feet N. of fence between railway and highway; 90 feet E. of range of center line of culvert under wagon track; 7.85 feet W. of E. face of highway up the bluff hillside; 93.1 feet SE. from 16-inch black oak in highway; 62 feet southward from 18-inch elm on E. fence line of highway, and 60.5 feet E. from center of farm gate to farm track crossing. In the SE.  $\frac{1}{4}$  sec. 33, T. 16 N., R. 11 E., *Bureau Co., Ill.*

T. B. M. 333.—On top of stone next above bridge seat course at S. end of E. stone abutment of bridge No. 217 of the Chicago, Rock Island and Pacific Ry., about 0.58 mile W. of the Rock Island depot at *Spring Valley*. The bench is 7.15 feet S. from center of S. track, 0.46 foot from S. end, 0.7 foot from W. face of stone. In sec. 3, T. 15 N., R. 11 E., *Bureau Co., Ill.* (Note 42, p. 129.)

P. B. M. 73.—In the top of the fourth stone below the top of the S. parapet wall of the stones forming the steps of the S. wing wall at the E. end of the double-arch stone bridge over Spring Creek, on the Chicago, Rock Island and Pacific Ry., in *Spring Valley, Ill.* The bolt is 11.77 feet S., or square out, from the center of S. track, 0.94 foot from the SE. end of step, and 0.63 foot from SW. face of wing wall. (Note 43, p. 129.)

Sanitary B. M.—*Spring Valley, Bureau Co., Ill.*, on westerly corner of the W. coping stone of the N. parapet wall of the double-arch stone bridge of the Chicago, Rock Island and Pacific Ry. over Spring Creek. The letters S. D. B. M. are cut near the bench.

T. B. M. 335.—On the top of N. stone of second course down from the top of the E. abutment of a small bridge of the Chicago, Rock Island and Pacific Ry., which was converted in 1898 into a concrete culvert within the span of the original bridge. The bench is 748 feet E. of railroad post reading "*Spring Valley  $\frac{1}{2}$  M.*," 215 feet W. of milepost 103, and about 1.25 miles E. of the Rock Island depot in *Spring Valley, Ill.*, and about 0.6 mile W. along the track from Bureau-Lasalle county line. It is 11.55 feet N. from center of N. track, 0.6 foot from N. end, and 0.53 foot from W. face of stone. (Note 42, p. 129.)

P. B. M. 74.—Near *Spring Valley, Bureau Co., Ill.*; stone, pipe, and cap (see note 41, p. 129), set on the Chicago, Rock Island and Pacific Ry. right of way, 62.15 feet S. from center of N. track, 1.5 feet N. from S. right-of-way fence line, 91.2 feet southwesterly from T. B. M. 335, or 55.1 feet W. along the track from it, and 274 feet southwesterly from milepost 103. In the NW.  $\frac{1}{4}$  sec. 1, T. 15 N., R. 11 E., *Bureau Co., Ill.*

T. B. M. 336.—Near *Peru, Lasalle Co., Ill.*; highest point in a square cut on top of stone, first above bridge seat course, on N. end of E. stone abutment of bridge No. 201 of Chicago, Rock Island and Pacific Ry., about 0.13 mile eastward from Bureau-Lasalle county line. The bench is 8.07 feet N. from center of N. track, 1.17 feet from N. end, and 1 foot from W. face of stone.

T. B. M. 337.—On top of coping of parapet wall at the N. side of stone arch bridge of the Chicago, Rock Island and Pacific Ry., situated 2 344 feet W., along the track, from the crossing of said R. R. with the Chicago, Burlington and Quincy R. R. in the western part of *Peru, Ill.* The bench is 10.64 feet N. of the center of N. track, 0.82 foot E. of W. end, and 0.7 foot S. of N. face of coping. (Note 42, p. 129.)

T. B. M. 338.—On top of W. coping stone of N. parapet wall of small stone culvert of the Chicago, Rock Island and Pacific Ry., situated about 350 feet E. of the interlocking tower at the crossing of said R. R. with the Chicago, Burlington and Quincy R. R. in the western part of *Peru, Ill.* The bench is 346.95 feet eastward from the SE. corner of tower, 12.55 feet N. from center of N. track, 1.2 feet from W. end, and 0.91 foot from N. face of coping. The number 156, in large figures, is cut near the center of top of coping. (Note 42, p. 129.)

P. B. M. 75.—In top of bridge seat course of pier at N. end of draw span of highway bridge over the Illinois River at foot of Marion street in *Peru, Ill.* The bolt is 1.3 feet from N. face and 1.25 feet from W. end of pier. (Note 43, p. 129.)

Sanitary B. M.—*Peru, Lasalle Co., Ill.*, on top of NW. stone of bridge seat course in pier at N. end of draw span of wagon bridge over the Illinois River at foot of Marion street, being the highest point in a circle on the NW. corner of the pier, 1.49 feet northwesterly from P. B. M. 75. The letters S. D. B. M. are cut near the bench.

B. M. 70 A (Seddon).—A cross within a square cut on the top of the S. wall of Lock No. 15 of the Illinois and Michigan Canal at *Lasalle, Ill.*, on the second stone W. from the S. lower gate, 6.1 feet westward from center of quoin post, 0.5 foot back from face of lock wall, and 0.46 foot eastward from the half-foot jog in wall. In the absence of any letters near this bench, or definite description of the Seddon bench on this lock, there is some uncertainty about this being 70 A. Designated as B. M. 1 on Lock No. 15 in field notes and computations.

B. M. 38 of 1883.—Highest point in a circle cut on top of the wall, at right angles to lock wall, at lower end of S. tail wall of Lock No. 15 of the Illinois and Michigan Canal in *Lasalle, Ill.* The circle is on the largest one of the coping stones on this part of the wall, there being 2 coping stones to the S. and 2 to the N. of it—all to the S. of the curved lower end of tail wall. The circle is 23.77 feet SW. from the center of quoin post of S. lower gate, 0.38 foot back from face of wall, and 3 feet from southerly edge of stone on which it is. It is a very indistinct mark with no letters near it, but reputed to be an old bench. Designated as B. M. 2 on Lock No. 15 in field notes and computations. It is "on the second square stone from the curve in the left tail wall."

P. B. M. 76.—In top of N. granite stone bridge seat on the W. pier of the Chicago, Burlington and Quincy R. R. bridge over the Illinois and Michigan Canal, between Locks 14 and 15, in *Lasalle, Ill.* The bolt is 0.96 foot from N. edge of stone, midway between E. and W. edges, and 0.62 foot N. from N. edge of iron bridge seat. (Note 43, p. 129.)

T. B. M. 340.—On top of coping of N. end of the second pier from the E. end of the aqueduct bridge carrying the Illinois and Michigan Canal over Little Vermilion Creek, in the eastern part of *Lasalle, Ill.*, a few hundred feet to the E. of the Illinois Central R. R. bridge. The bench is near the center of the SE. one of the 5 coping stones on this end of the pier, being 1.56 feet from the E. edge and 2.2 feet from the S. edge of this stone. (Note 42, p. 129.)

Sanitary B. M.—*Lasalle, Lasalle Co., Ill.*, on top of the SE. corner of the coping stone at the rounded southerly end of E. stone abutment of aqueduct bridge carrying the Illinois and Michigan Canal over Little Vermilion Creek, being highest point in a square. The letters S. D. B. M. are cut near the bench.

P. B. M. 77.—In top of stone forming the bridge seat at base of column at N. end of E. girder of the Illinois Central R. R. bridge over the Chicago, Rock Island and Pacific Ry. and the Illinois and Michigan Canal in *Lasalle, Ill.* This pier of the bridge is between the street and the Chicago, Rock Island and Pacific Ry. tracks. The bolt is 1.52 feet from E. edge and 1.46 feet from N. edge of stone in which it is, and 1.52 feet N. from N. edge and 0.59 foot W. from range of E. edge of cast-iron bridge seat at base of column. (Note 43, p. 129.)

T. B. M. 343.—Near *Lasalle, Lasalle Co., Ill.*, on the top of a granite boulder marking, it is said, the SE. corner of sec. 13, T. 33 N., R. 1 E., *Lasalle Co., Ill.* This stone is flat on the top, dark in color, and about 2 feet square, except for a deficiency on the S. side, where a small portion is white. There are a number of other but smaller stones around this stone. The bench is 0.55 foot W. from E. edge and 1.2 feet S. from N. edge of stone and 6 feet N. from center of wagon track of E. and W. river road, which at the stone turns NE. for a short distance and then continues its general direction. (Note 42, p. 129.)

P. B. M. 78.—Stone, pipe, and cap (see note 41, p. 129), set near the junction of the river road, between *Lasalle* and *Utica* bridge, with a road running from it, first N., then E., etc., to *Utica, Ill.* This road junction is in the SE.  $\frac{1}{4}$  sec. 18, T. 33 N., R. 2 E., *Lasalle Co.*, and 1.3 miles W. from *Utica* bridge, over the Illinois River. The bench is 2.33 feet W. from E. fence of N. and S. road, along which fence it is 66.7 feet N. from center of wagon track of river road, 61.5 feet N. from junction of said fence, with N. fence line of river road, and 16.5 feet N. from a small box elder.

T. B. M. 347.—On the top of the NE. end stone of the eleventh or lowest stepped course below the bridge seat (this course being the fourth course up from the ground) of the E. wing wall of the N. stone abutment of the *Utica* bridge over the Illinois River, about 1 mile S. of *Utica, Ill.* The bench is 0.59 foot from NE. end of stone and 0.72 foot from its SE. face. (Note 42, p. 129.)

B. M. 69 (Seddon).—1 mile S. of *Utica, Ill.*, 0.85 foot from T. B. M. 347 and on the same stone. The letters B. M. are cut below it on the vertical drafted edge of the stone. Same as U. S. B. M. No. 36 of 1883.



U. S. B. M.—The center of a circle cut on the E. stone of the bridge-seat course of the N. abutment of the Utica bridge over the Illinois River, about 1 mile S. of *Utica, Lasalle Co., Ill.* The circle is near the E. corner of the stone, and the letters U. S. are cut near it.

P. B. M. 79.—In top of the SW. one of the 3 coping stones on the E. end of the first stone pier S. of the N. stone abutment of the Utica bridge over the Illinois River, about 1 mile S. of *Utica, Ill.* The bolt is 2.02 feet N. of S. face of stone, 1.39 feet E. of E. edge of the stone forming the NE. bridge seat for the second span from N. end of bridge, and 5.27 feet southwestward from the upper cut-water edge of the pier. (Note 43, p. 129.)

T. B. M. 348.—On the top of the N. parapet wall of a small stone arch bridge on the river road 0.64 mile E. of the Utica bridge over the Illinois River. The bench is 1.2 feet S. of N. face of wall and 1.4 feet E. of a point vertically over the center of the keystone of the arch. In sec. 16, T. 33 N., R. 2 E., *Lasalle Co., Ill.* There is another small stone bridge on this road about 300 feet to the westward of this bridge. (Note 42, p. 129.)

T. B. M. 349.—On the top of NE. end stone of NE. wing wall of small stone arch bridge on the river road, being the third bridge eastward from the Utica bridge over the Illinois River. The bench is 0.47 foot from NE. end of wing wall, 0.3 foot from its NW. face, 9.75 feet NE. from center of N. keystone of arch, and 5.8 feet N. from the range of the N. face of N. parapet wall. In sec. 15, T. 33 N., R. 2 E., *Lasalle Co., Ill.* (Note 42, p. 129.)

P. B. M. 80.—Stone, pipe, and cap (see note 41, p. 129), set in the NE. corner of the front dooryard of Henry Zimmermann's large stone house, formerly known as Sulphur Spring House, situated on the S. side of the river road, about 2.5 miles E. of the Utica bridge over the Illinois River. The bench is 1.96 feet W. of E. fence of dooryard, 4.33 feet S. of S. fence of road E. of field E. of dooryard, and 134.8 feet NE. from NE. corner of stone house, being 112.6 feet N. and 73.3 feet E. from said corner. It is 35 feet northwestward from a 36-inch cottonwood, 11.15 feet eastward from a 10-inch locust, and 94.5 feet northeastward from a 42-inch cottonwood in yard. In sec. 23, T. 33 N., R. 2 E., *Lasalle Co., Ill.*

P. B. M. 81.—Near *Ottawa, Lasalle Co., Ill.*; top of copper bolt leaded vertically into the top of the W. beveled end stone of the sixth course, above the towpath, of the S. abutment of the wagon bridge over the Illinois and Michigan Canal N. of D. M. Farson's orphan home, on the Buffalo Rock farm, about  $\frac{1}{2}$  mile W. from *Lasalle Co.* poorhouse. The bench is 0.4 foot from N. face of abutment, 0.43 foot W. of W. end of stone in next course above, and 0.36 foot E. from top edge of beveled face of stone in which it is. In sec. 17, T. 33 N., R. 3 E., *Lasalle Co.*

P. B. M. 82.—Near *Ottawa, Lasalle Co., Ill.*; stone, pipe, and cap (see note 41, p. 129), set in the NE. corner of the field which adjoins, on the W., the private driveway along the W. side of the front yard of the *Lasalle Co.* poorhouse. The bench is 2.3 feet S. of S. fence line of river road, 1.7 feet W. from W. fence of private drive, 89.2 feet S. from center line of electric railway, 27.15 feet W. from center of 16-inch soft maple at NW. corner of front yard of poorhouse, and 40.8 feet NW. from the center of the third tree S. from the N. end of the row of shade trees along the W. side of said poorhouse yard. In the SE.  $\frac{1}{4}$  sec. 17, T. 33 N., R. 3 E., *Lasalle Co., Ill.*

T. B. M. 357.—Highest point in a square cut into an outcropping of sandstone rock, on a level with the ground surface, in the river road in the Western outskirts of *Ottawa, Ill.*, and here known as Ottawa avenue. The bench is about 0.53 mile NE. of an angle in the river road; 56.47 feet SE., square out, from center of street car track; 39.5 feet SE. from center of wagon track; 165.87 feet NE. from the NE. corner of a lone house, S. of road, belonging to the Development Assn.; and 138.6 feet NE. of the range of the NE. side, and 89.25 feet NW. of the NW. or front side of the house. In the NW.  $\frac{1}{4}$  sec. 15, T. 33 N., R. 3 E., *Lasalle Co.*

B. M. 64 (Seddon).—Highest point in a circle cut on the top of the coping stone at the E. end of the first pier S. of the N. abutment of the Chicago, Burlington and Quincy R. R. bridge over the Illinois River at *Ottawa, Ill.* The circle is 8 inches W. of the cut water angle of coping. Marked with the letters U S, above which is the circle.

P. B. M. 83.—In top of coping on E. end of N. stone abutment of the Chicago, Burlington and Quincy R. R. bridge over the Illinois River at *Ottawa, Ill.* The bolt is 2.57 feet from NE. corner, 4.66 feet from upstream angle, and 5.84 feet from SE. corner of coping. It is 5.63 feet E. from E. face of E. granite bridge seat of plate girder span of this bridge. (Note 43, p. 129.)

B. M. 63 (Seddon).—Highest point in a sector cut on the top of the SE. corner of coping stone at E. end of N. abutment of highway bridge over the Illinois River at *Ottawa, Ill.* The bench is on the first course of stone below the bridge seat stone. "Same as B. M. 87, Sanitary." The letters S. D. B. M. are cut near the bench.

T. B. M. 361.—On the top of the stone curbing on the W. side of Lasalle street, at a point between the E. end of the Hydraulic Basin and the old City (flour) Mills, in *Ottawa, Ill.* It is 51.95 feet NW. from the SW. corner of S. wing, and 77.2 feet SW. from the NW. corner of N. wing of mill, and 28.05 feet N. from the center of the Chicago, Burlington and Quincy R. R. siding track along S. side of basin. (Note 42, p. 129.)

P. B. M. 84.—In top of coping stone on S. end of W. stone abutment of Main Street bridge over Fox River, in *Ottawa, Ill.* The bolt is 0.8 foot from S. end of coping, 0.85 foot from its E. edge, and 0.97 foot S. of S. face of bridge seat stone. (Note 43, p. 129.)

T. B. M. 363.—On the top of the E. end stone of the second course up from the ground, in the E. wing wall of the S. abutment of the highway bridge over the Illinois and Michigan Canal, about 1.65 miles E. of the center of *Ottawa, Ill.* The bench is 1.33 feet from N. face of wing wall, 0.89 foot from E. end of stone. (Note 42, p. 129.)

B. M. 62 (Seddon).—Near *Ottawa, Lasalle Co., Ill.*, on same bridge as T. B. M. 363; highest point in a circle cut on the top of the E. end stone of the fourth course above the water in the E. wing wall of the N. abutment. The circle is near the SE. corner of the step. The letters U. S. are cut near the circle.

T. B. M. 366.—On the top of the coping of the S. parapet wall of the small stone arch culvert under the Illinois and Michigan Canal first E. of the highway bridge over the canal, the bridge being about 1.65 miles E. of the center of *Ottawa, Ill.*, and the culvert about 1.67 miles E. from the bridge. The bench is 0.31 foot W. from vertically over the center of keystone of arch and 1.18 feet N. from the S. edge of coping. It is about 0.68 mile W. from schoolhouse (district No. 152), and near the W. line of sec. 9, T. 33 N., R. 4 E., Lasalle Co. (Note 42, p. 129.)

P. B. M. 85.—Stone, pipe, and cap (see note 41, p. 129) set on the S. fence line of the highway which parallels and adjoins on the S. the Illinois and Michigan Canal between *Ottawa and Marseilles, Ill.*, at a point 65.6 feet E. of the E. side of schoolhouse (district No. 152), and 8.2 feet S. of the range of the N. or front end of schoolhouse. The bench is also 74.7 feet S. of the S. water edge of canal, 37 feet S. of the center of wagon track, and 40.75 feet N. of the center line of the electric ry. track. In sec. 9, T. 33 N., R. 4 E., Lasalle Co., about 3.84 miles eastward from Main Street bridge over Fox River in *Ottawa, Ill.*

T. B. M. 371.—On the top of the stone wall along the N. side of the Illinois and Michigan Canal, under and extending a short distance to the east of Elevator A, which stands about 29.5 feet to the W. of the W. line of Main street in *Marseilles, Ill.* The bench is on the first stone of the wall to the E. of the SE. corner of the elevator, 2.03 feet from E. side of elevator, and 1.03 feet back from face of wall. (Note 42, p. 129.)

P. B. M. 86.—In top of NE. end stone of the eighth course, below the bridge seat stone, in the E. wing wall of the N. abutment of the highway bridge over the Illinois River at *Marseilles, Ill.* The bolt is 1.86 feet from NE. end of stone and 0.95 foot back from SE. face of wing wall. (Note 43, p. 129.)

B. M. 59 (Seddon).—*Marseilles, Lasalle Co., Ill.*, on same bridge and abutment as P. B. M. 86; highest point in a circle cut near the SW. corner of the W. bridge seat stone. "Same as B. M. 103, Sanitary." The letters S. D. B. M. are cut near the bench.

P. B. M. 87.—In the top of the S. wall of lock No. 10 of the Illinois and Michigan Canal in *Marseilles, Ill.* The bench is on the first stone W. of the quoin post of the S. lower gate. The bolt is 1.96 feet S. of N. face of stone, 1.56 feet N. of S. edge of stone, and 9.5 feet W. of center of quoin post of gate. (Note 43, p. 129.)

B. M. (E. J. Ward, 1902).—*Marseilles, Lasalle Co., Ill.*, on S. wall of Lock No. 9 of the Illinois and Michigan Canal, being highest point in a circle just above recess for upper S. gate. Marked B. M.

P. B. M. 88.—Stone, pipe, and cap (see note 41, p. 129), set on the S. embankment of the Illinois and Michigan Canal, and in a driveway from the towpath to a hay barn on the farm of E. H. Spicer. The bench is 18 feet S. of water edge of canal, 145.2 feet N. from the NW. corner of barn, 1.25 feet W. of the range of W. end of barn, and about 554 feet W., along the towpath, from the center of the stone culvert under the canal and over Kickapoo Creek. It is 2.9 miles eastward, along the canal, from Main street, in *Marseilles, Ill.*

B. M. 10 (E. J. Ward, 1899).—A cross cut on top of coping of S. parapet wall (curved) of stone culvert over Kickapoo Creek and under the Illinois and Michigan Canal, about 3 miles eastward along the towpath, from Main street, *Marseilles, Lasalle Co., Ill.* The cross is near the SW. corner of coping, being 0.4 foot back from SE. face and 0.38 foot from SW. end of coping.



T. B. M. 378.—On top of coping of N. parapet wall of stone arch culvert under the Illinois and Michigan Canal, about  $\frac{1}{2}$  mile W. of *Seneca, Ill.* The bench is on the W. stone of coping, 0.7 foot from its N. face and 3.36 feet from its W. end. (Note 42, p. 129.)

B. M. 15 (E. J. Ward, 1899).—Highest point in a sector cut on NW. corner of W. coping stone of S. parapet wall of stone culvert under the Illinois and Michigan Canal, about  $\frac{1}{2}$  mile W. from *Seneca, LaSalle Co., Ill.* Marked B. M.

T. B. M. 380.—Top of the SW. one (the one nearer the track) of the two  $\frac{3}{4}$ -inch rods projecting 4 inches vertically upward from the top of the SE. one of the two low concrete posts set on the NE. side of the Seneca and Kankakee R. R., near milepost 1, for supporting extra rails. This bench bolt is 11.1 feet NE. or square out from center of track, 19.4 feet southwesterly from center of milepost 1, and 71 feet N. of center of wagon track of E. and W. highway on S line of sec. 24, T. 33 N., R. 5 E., *LaSalle Co., Ill.*, near the LaSalle-Grundy County line, 1 mile east of *Seneca, Ill.*

P. B. M. 89.—Stone, pipe, and cap (see note 41, p. 129), set on the right of way of the Seneca and Kankakee R. R., near its intersection with the river road, here running along the S. line of sec. 24, T. 33 N., R. 5 E., *LaSalle Co., Ill.* The bench is 47.57 feet NE. or square out from center of R. R. track, 2.5 feet from NE. right-of-way fence line, 123.17 feet southeasterly from center of milepost 1, 117.75 feet southeasterly from T. B. M. 380, 20.15 feet northeasterly from post of "Railroad crossing" sign, 84.2 feet NW. from osage orange tree, and nearly in line of the N. fence of river road.

P. B. M. 90.—Stone, pipe, and cap (see note 41, p. 129), set in the front dooryard of William Holtenbeck's farmhouse (Barry farm), on the N. side of the river road between *Seneca* and *Morris, Ill.*, about 3.6 miles ENE. from *Seneca*, in the SE.  $\frac{1}{4}$  sec. 16, T. 33 N., R. 6 E. The bench is 52 feet southward from the SW. corner of house, being 45.75 feet WSW. and 24.2 feet SSE. from the ranges of the WSW. and SSE. sides of the house, respectively. It is 56.4 feet southward from an elm tree (diameter 1.4 feet), 6.35 feet southward from 1-inch box elder, and 2.2 feet from northward fence line of river road. The excavation for this bench was almost entirely through soft sandstone rock.

P. B. M. 91.—Stone, pipe, and cap (see note 41, p. 129), set in the river road, which parallels and adjoins the N. side of the Illinois and Michigan Canal between "5-mile bridge" and *Morris, Ill.*, 2.45 feet from N. fence line of road, at field gate, and in line with the first N. and S. field fence W. from the E. line of sec. 12, T. 33 N., R. 6 E., Grundy Co., from which line it is distant, along the river road, about 0.29 mile SW. It is about 113 feet from water edge of canal, about 300 feet southwestward from an angle in the river road NW. of the lower end of Waupecan or Sugar Island, and about opposite the middle of a curve in the canal; in the SE. quarter of section 12.

T. B. M. 394.—Center of a circle cut on the S. corner of the S. stone of the top course of the E. abutment of the aqueduct bridge, carrying the Illinois and Michigan Canal over Nettle Creek in the W. part of *Morris, Ill.* Same as U. S. B. M. 46 (Seddon), 1899. Marked U. S.

T. B. M. 395.—Highest point in a square cut in a niche on the inclined face of the lowest coping stone of the W. wing wall of the S. abutment of the highway bridge over the Illinois and Michigan Canal on the street in *Morris, Ill.*, leading to and across the Illinois River bridge. The bench is 0.4 foot from N. edge and 0.6 foot up from lower end of coping stone. It is marked U. S. above the square.

P. B. M. 92.—In top of the NE. end stone of the seventh course down from the top of the E. wing wall of the N. abutment of the highway bridge over the Illinois River at *Morris, Ill.* The bench is 0.43 foot back from the face of the wing wall and 0.46 foot from the NE. end of this course of stone. (Note 43, p. 129.)

B. M. 45 A (Seddon).—*Morris, Grundy Co., Ill.*, on the same bridge, abutment, and wall as P. B. M. 92; highest point in a square cut on the top of the NE. corner of the upper course of stone (consisting of two stones). The bench is 5.85 feet E. of the range of the E. face of E. truss of bridge. "Same as B. M. 90, Sanitary." Marked B. M.

B. M. 45 B (Seddon).—*Morris, Grundy Co., Ill.*, on the same bridge and abutment as P. B. M. 92; highest point in a circle cut on the top of a projection on the S. face of the second stone from the E. corner in the lowest visible course. The bench is 6 feet from E. corner of abutment and about 2 inches above ground. "Same as U. S. B. M. No. 21 of 1883." The letters B. M. are cut above the bench on the next higher course.

T. B. M. 398.—On top of foundation stone to N. iron gatepost of W. carriage entrance to Evergreen Cemetery, on the river road, about 1.5 miles NE. of *Morris, Ill.* The bench is 1.03 feet W. of W. side of base of iron post of gateway, and 0.52 foot N. of the range of the S. side of base of post, in the NW.  $\frac{1}{4}$  sec. 2, T. 33 N., R. 7 E., Grundy Co. (Note 42, p. 129.)

T. B. M. 400.—On the top of a granite boulder, triangular in plan and bluntly wedged shaped in elevation, whose sides are about 4.8 feet, 5.3 feet, and 5.8 feet, respectively, at surface of ground, and whose height is about 2.25 feet above ground. It is situated on a knoll in a field on the SE. side of the river road, 33 feet from SE. fence line of road, 61 feet from center of wagon track, 131.9 feet S. of P. B. M. 93, nearly opposite the farmhouse of Thomas Hutchings, on whose land it is, and 63 feet SW., or square out, from the SW. fence line of his private driveway; in the SE.  $\frac{1}{4}$  sec. 36, T. 34 N., R. 7 E., *Grundy Co., Ill.*, about 3.1 miles NE. from *Morris*. (Note 42, p. 129.)

P. B. M. 93.—Stone, pipe, and cap (see note 41, p. 129) set in the S. corner of a small field on the NW. side of the river road, and on the NE. side of the private driveway leading from the river road to the farm buildings of Thomas Hutchings, about 3.1 miles NE. from *Morris, Ill.* The bench is 2.65 feet from NW. road fence, 3.8 feet from NE. fence of driveway, 344.5 feet SE. from the SE. corner of Thomas Hutchings's house, and 290.2 feet S. from the S. corner of George Hutchings's house. It is between the Illinois River and the Illinois and Michigan Canal, and in the SE.  $\frac{1}{4}$  sec. 36, T. 34 N., R. 7 E., *Grundy Co.*

T. B. M. 402.—Near *Morris, Grundy Co., Ill.*, on the NW. corner of the top stone of the NW. wing wall of the NE. abutment of a small iron highway bridge on the river road, about 0.96 mile SW. from Lock No. 8 of the Illinois and Michigan Canal at the Aux Sable Creek. The bench is 308.5 feet SW., along the road, from the range of the SW. side of Richard Sharp's farmhouse, 0.17 foot from N. end of stone, 0.23 foot back from face of wing wall, and 10.43 feet out from center line of bridge. (Note 42, p. 129.)

P. B. M. 94.—In top of coping of S. wall of Lock No. 8 of the Illinois and Michigan Canal at Aux Sable Creek, about 6 miles NE. of *Morris, Ill.* The bench is on the second coping stone below the lower gates, 1.57 feet back from the N. face of coping, 10.1 feet westward from center of quoin post of lower S. gate, 3.8 feet from E. end, and 3.65 feet from W. end of the stone in which it is, and 37.05 feet NW. from P. B. M. 95. (Note 43, p. 129.)

B. M. 39 (Seddon).—Near *Morris, Grundy Co., Ill.*; highest point in a circle cut on the top of the S. wall of Lock No. 8 of the Illinois and Michigan Canal at Aux Sable Creek. It is on the coping stone first E. of the recess for lower S. gate, 0.3 foot E. of upper end of recess, and 1.33 feet back from S. face of lock chamber; in sec. 29, T. 34 N., R. 8 E., *Grundy Co., Ill.* Marked U S.

P. B. M. 95.—Near *Morris, Grundy Co., Ill.*; stone, pipe, and cap (see note 41, p. 129) set in the yard of the house of the keeper of Lock No. 8 of the Illinois and Michigan Canal, at Aux Sable Creek, *Grundy Co., Ill.* The bench is nearly opposite the lower gates of the lock, being 36.75 feet southward from the center of quoin post of S. lower gate. It is 15.7 feet southwesterly from the NW. corner and 18.9 feet northwesterly from the SW. corner of the keeper's house. It is 10.5 feet E. of a 20-inch box elder tree, 8.8 feet S. of a 16-inch box elder, and 16.2 feet SW. from a second 16-inch box elder.

T. B. M. 404.—Near *Morris, Grundy Co., Ill.*; highest point in a square cut on the top of the N. wing wall of the E. abutment of a small bridge on the river road, over a creek, about 0.67 mile E. of Lock No. 8 of the Illinois and Michigan Canal at Aux Sable Creek. The bench is 11.3 feet E. of middle of bridge, and 8.3 feet N. of its center line. There is a stone arch culvert under the Illinois and Michigan Canal, to the NE. of the road bridge, over the same creek; in sec. 28, T. 34 N., R. 8 E., *Grundy Co., Ill.* The letters U S are cut near the square.

T. B. M. 405.—Near *Channahon, Will Co., Ill.*; highest point in a square cut on the highest point of a granite boulder, about 3 feet long by 2.7 feet wide by 1.5 feet above ground, lying near the N. side of the river road, at a point 1.28 miles ENE., along the river road, from Lock No. 8 of the Illinois and Michigan Canal at Aux Sable Creek, about  $\frac{1}{4}$  mile WSW. from a marked angle in the river road, and about  $\frac{1}{2}$  mile W. of the Elgin, Joliet and Eastern R. R. The stone lies 3.3 feet S. of the N. road fence, 15 feet northward from center of wagon track, and 2 feet W. of fence on the E. line of sec. 28, T. 34 N., R. 8 E., *Grundy Co., Ill.* The square is near the southwestward end of the top of the stone which has a conchoidal depression in it to the SE. of the bench. It is marked U S, the letters being to the SE. of the square.

B. M. 38 A (Seddon).—Near *Channahon, Will Co., Ill.*; highest point in a circle cut on the top of the coping of the S. abutment of the Elgin, Joliet and Eastern R. R. bridge over the Illinois and Michigan Canal, about 1.96 miles ENE. from Lock No. 8 at Aux Sable Creek. The circle is near the NE. corner of coping, being 0.54 foot back from the N. and E. edges of the coping, respectively, at corner of bevel; in sec. 22, T. 34 N., R. 8 E., *Grundy Co., Ill.* Marked U S.



P. B. M. 96.—Stone, pipe, and cap (see note 41, p. 129) set in the SW. corner of Dresden Catholic Cemetery in the NE.  $\frac{1}{4}$  sec. 26, T. 34 N., R. 8 E., Grundy Co., Ill., and on the N. side of the river road between the Aux Sable lock, No. 8, of the Illinois and Michigan Canal and Channahon, Ill. The bench is about 3 miles E. of the Aux Sable lock, about 3 miles SW. of Channahon, and about 0.25 mile E. of Jacob Hansel's farmhouse. It is 2.5 feet E. of W. fence of cemetery, 2.1 feet N. of the front fence of cemetery, 10.6 feet N. of the range of the N. fence line of river road to the W. of cemetery, 22.6 feet SE. of an 8-inch box elder tree, and 79.85 feet W. of an 11-inch box elder.

P. B. M. 97.—In top of coping of E. wall of Lock No. 7 of the Illinois and Michigan Canal, which is the lower lock at Channahon, Ill. The bench is near the center of the top of the coping stone, first S. of the quoin coping stone at the E. lower gate. The bolt is 2.44 feet back from the face of the E. e wall, 2.3 feet N. of S. end of stone, and 5.93 feet southward from center of E. lower gate quoin post. e (Note 43, p. 129.)e

B.eM.—Channahon, Will Co., Ill., on E. wall of Lock No. 7 of the Illinois and Michigan Canal, e being cross cut on the top of an iron bolt leaded vertically into the top of the quoin coping stone of the E. upper gate. The bolt is 0.75 foot N. from S. end of stone, 3.21 feet back from face of lock chamber, e and 3.48 feet SE. from wooden quoin post of gate. The letters B. M. are cut near and to the SW. of bolt. e

P. B. M. 98.—Stone, pipe, and cap (see note 41, p. 129) set in the front dooryard of Patrick Briscoe's farmhouse, which is about  $\frac{1}{4}$  mile E. of Channahon, Ill., on the road to Smiths Bridge over the Des Plaines River. The bench is 47.9 feet NNE. of the NE. corner of house, 50.55 feet northwestward from a 26-inch hackberry tree, 13.4 feet S. of a 23-inch elm, 25.3 feet SE. of a 26-inch elm, 2.55 feet W. of E. fence, and 20 feet S. of front fence of dooryard. It is in the NE.  $\frac{1}{4}$  sec. 20, T. 34 N., R. 9 E., e Will Co. e

S. D. 144.—On the top of a large boulder lying 34 feet SW. of creek, 430 feet SW. of S. D. 143 and e 253 feet SE. of SE. face (end) of culvert over first creek SW. of the Isaac Van Alstyne farmhouse (now occupied by an O'Brien) on the bluff road running S., W., and S. to Smiths Bridge over the Des Plaines River, or W. to Channahon, Ill. It is nearly W. of Millsdale. The bench square is now somewhat indistinct and the "highest point" may have been worn or broken away. Stone lies on unstable ground. (Note 45, p. 130.)

S. D. 143.—Near Channahon, Will Co., Ill., on a large boulder 3.9 feet long by 3.6 feet wide by e 1.5 feet above ground, lying near foot of hill slope 118 feet SE., or square out, from the SE. fence line of the bluff road, which, in this vicinity, gradually changes its direction from E. to N., and 464.75 feet E. of the center line of a small stone culvert, first SW. of the Isaac Van Alstyne farmhouse (now occupied by an O'Brien), on said road. In the SW.  $\frac{1}{4}$  sec. 11, T. 34 N., R. 9 E., Will County, Ill., and nearly W. of Millsdale. The stone is on springy, marshy ground. (Note 45, p. 130.)e

P. B. M. 99.—Near Channahon, Will Co., Ill.; stone, pipe, and cap (see note 41, p. 129) set in the high-way which crosses the Des Plaines River at Millsdale, Ill. It is on the NW. bank of the NW. channel of the river, 106 feet westward from the water edge, 40.65 feet WSW. from a 28-inch elm tree in highway, 86 feet NE. from a 19-inch burr oak, in pasture field, 139.5 feet WSW. from the W. end of the S. girder of the iron wagon bridge over NW. channel of river, and 27.5 feet SE., or square out, from center of wagon track. It is in the SW.  $\frac{1}{4}$  sec. 11, T. 34 N., R. 9 E., Will Co.

B.eM. 25 A (Seddon).—Highest point in a circle cut on the top of the SW. corner of the E. stone e abutment of the highway bridge over the W. channel (W. of Treats Island) of the Des Plaines River at Millsdale, Ill., about 3 miles ENE. from Channahon. It is in the SW.  $\frac{1}{4}$  sec. 11, T. 34 N., R. 9 E., Will Co., Ill. The letters U. S. are cut near the circle.

S.eD. 141.—Near Millsdale, Will Co., Ill., on a large boulder lying in the bluff road running S., W., e and S. to Smiths Bridge, 13 feet W. of E. fence line of road, near edge of bluffs. The bench 262.6 is feet N. along the road from the range of the N. side of William O'Brien's farmhouse. In the SW.  $\frac{1}{4}$  sec. 2, T. 34 N., R. 9 E., Will Co., Ill. (Note 45, p. 130.)

T. B. M. 424.—Highest point in a square cut on the top of the SE. bridge seat stone of the NE. abutment of small iron bridge over Rock Run on the Channahon road, which runs SW. from Joliet to Channahon, Ill., between the Des Plaines River and the Illinois and Michigan Canal. The bridge is about  $\frac{1}{4}$  mile NE. from where the road forks to Channahon and to Minooka, Ill. The bench is 1.03 feet from SW. face and 0.63 foot from SE. end of stone on which it is. Same as S. D. P. B. M. 137. The letters S. D. P. B. M. are cut near the bench.

P. B. M. 100.—Stone, pipe, and cap (see note 41, p. 129) set in the front dooryard of Michael Meegan's house on the NW. side of the Channahon road, which runs SW. from *Joliet, Ill.*, between the Des Plaines River and the Illinois and Michigan Canal. It is about 725 feet NE., along the road, from the bridge over Rock Run. The bench is 93.9 feet SSE. from the E. corner of house, 83.8 feet SE. from the S. corner of house, 1.8 feet NE. of the range of the SW. side of house, and 3.77 feet from front dooryard fence; in the SW.  $\frac{1}{4}$  sec. 26, T. 35 N., R. 9 E., Will Co., Ill.

T. B. M. 427.—Highest point in a square cut on the top of a red granite boulder, bluntly wedge-shaped upward, obliquely truncated at NE. corner, about 2.1 feet wide, 3.7 feet in extreme length, E. and W., and 0.7 foot above ground. It lies in the barnyard of Caleb A. Glasscock, on the NW. side of the Channahon road, running SW. from *Joliet, Ill.*, between the Des Plaines River and the Illinois and Michigan Canal. It is about 1.76 miles NE., along this road, from Rock Run bridge. The bench is 35.3 feet from NW. fence line of road, 34.25 feet E. from SE. corner of his barn, 123 feet W. from SW. corner of house, and 152.6 feet WNW. from the NW. corner of a barn across the road from his house; near the SE. corner of sec. 24, T. 35 N., R. 9 E., Will Co., Ill.

T. B. M. 429.—Near *Rockdale, Will Co., Ill.*; highest point in a square cut on the top of a granite boulder lying in the Channahon road, running southwestward from *Joliet, Ill.*, between the Des Plaines River and the Illinois and Michigan Canal, at a point 3.55 feet from northerly fence line of road, and 134.5 feet NNE. from the NW. corner of red frame house on the Folk's farm, being 107.5 feet easterly from the range of the westward side of house, and 81.8 feet northerly from the range of the northward or front side of house. This stone is in a depression or ravine across which the fill for the roadway appears to have been made by throwing in stones, so that the bench stone is in a pile of stones. It is about 1 mile westward from Brandon's bridge. Same as S. D. P. B. M. 133. The letters S. D. P. B. M. are cut about the square.

S. D. 135.—Near *Rockdale, Will Co., Ill.*; center punch mark in the end of copper bolt leaded horizontally into stone foundation wall at NE. end of large red barn on Folk's farm, on the SSE. side of the Channahon road, about 2 miles below *Joliet, Ill.* The bolt is 1 foot below weatherboards in second course down from top of wall, and 19.2 feet SE. along the wall from the N. corner of the barn. This barn is S. from S. D. P. B. M. 133 or T. B. M. 429. The end of the bolt and the lead surrounding it were found mutilated by a cold chisel, but otherwise apparently undisturbed. A new center was made in the end of the bolt and used in determining the elevation. Of the original marking, S. D. P. B. M., only the letter S is now visible.

P. B. M. 101.—Stone, pipe, and cap (see note 41, p. 129) set in the front dooryard of a house, owned by Henry H. Stassen & Son, on the northerly side of the Channahon road, between the Illinois and Michigan Canal and the Des Plaines River, at *Rockdale, Ill.* It is about  $\frac{1}{4}$  mile SW., following the highway, from Brandon's bridge over the canal. It is 49 feet southwestward from a 0.7-foot box-elder tree in same yard, 46.75 feet southwestward from SW. corner of house, 2.47 feet from front fence of yard, 13.3 feet SW. from an 8-inch box-elder tree, and 31.7 feet S. from a second 8-inch box elder; in the NE.  $\frac{1}{4}$  sec. 20, T. 35 N., R. 10 E., Will Co., Ill.

S. D. 130.—In the northerly face of the S. abutment of Brandon's bridge over the Illinois and Michigan Canal at *Rockdale, Ill.*, a suburb of *Joliet*. The bolt is in the third course of stone up from the ground and 10.35 feet eastward from the W. end of abutment. The end of the bolt appears to have been hammered, so that the center point was destroyed. A new center was made in the bolt before determining its elevation. (Note 46, p. 130.)

P. B. M. 102.—Top of copper bolt leaded vertically into top of coping stone of E. wing wall of N. abutment of Brandon's bridge over the Des Plaines River, near *Rockdale* (a suburb of *Joliet*), *Ill.* The bolt is 0.9 foot back from E. face of wing wall, 2.73 feet E. from upper face of upstream girder of bridge, and 0.6 foot N. from the N. end of bridge. This bench was found in place and marked S. D. P. B. M., to which is added U. S. P. B. M.

T. B. M. 432.—Near the E. corner of capstone at SE. end of rectangular stone culvert on Railroad street in *Joliet, Ill.*, being the first street W. from and parallel to the Illinois and Michigan Canal. This culvert is about 0.6 mile NE. from Brandon's bridge. It is opposite stone quarry to its westward and is over drain from quarry. It is 138 feet W. from SW. corner of house No. 1004, having yard surrounded by stone fence, and 274 feet NE. along street from range of N. side of house No. 1114. The square is 0.48 foot from SE. face of capstone and 0.75 foot from its NE. end. (Note 42, p. 129.)



T. B. M. 433.—Highest point in W. angle of the cross, within a circle, cut on the top of the S. stone bridge seat of the W. abutment (W. side of canal) of the wagon bridge over the Illinois and Michigan Canal and the Des Plaines River on McDonough street in *Joliet, Ill.* The center of the circle is 0.5 foot W. from E. face of stone, 0.25 foot E. of E. end of iron plate under expansion rollers, and 0.23 foot S. of S. face of inclined end post. Same as U. S. B. M. 14, Seddon, of 1899. It is marked U. S.

P. B. M. 103.—In top of stone coping course which forms the bridge seat course of the concrete abutment at the W. end of Jefferson street bridge over the Des Plaines River, in *Joliet, Ill.* The bolt is near the S. end of abutment, being 1.25 feet from S. end of coping course, 1.9 feet from its E. edge, and 1.84 feet E. of E. face of concrete earth wall. (Note 43, p. 129.)

S. D. 127.—In the center of the third course of stone up from the ground, in the S. wall of the courthouse, in *Joliet, Ill.*, at a point 0.85 foot W. of its SE. corner. (Note 46, p. 130.)

T. B. M. 434.—Center of cross cut on top of the middle one of the three vertical bolts, securing to the W. concrete wall of lock the lower curved strap of hinge at top of wooden quoin post of lower W. gate of Lock No. 5, of the Illinois and Michigan Canal, just above Bridge or Jackson street, in *Joliet, Ill.* This bolt is 3.15 feet southwestward from center of wooden quoin post and 2.3 feet back from W. face of tail-bay. It is marked U. S. on iron strap.

T. B. M. 435.—*Joliet, Will Co., Ill.*, on the same bridge and course as P. B. M. 104; highest point in a circle cut on the top of the SE. corner of the SW. end stone. The circle is 11.5 feet SW., along the face of the wing wall, from the angle at its junction with the abutment, 0.12 foot back from face of wing wall, and 0.15 foot from SW. end of stone. Same as U. S. B. M. 10, Seddon, of 1899. The letters U S are cut near the circle.

P. B. M. 104.—In the SE. face of the fourth course up from the ground, or sixth course down from the bridge seat in the S. wing wall of the W. stone abutment of Ruby or Columbia Street bridge, over the Illinois and Michigan Canal and the Des Plaines River, in *Joliet, Ill.* The bolt is 0.86 foot SW., along the face of the wing wall, from the angle at its junction with the abutment. (Note 47, p. 130.)

T. B. M. 436.—On the top of the W. stone retaining wall of the Illinois and Michigan Canal, at a point 91 feet N. from the range of the upper end of the canal basin, opposite the steel works, in the N. part of *Joliet, Ill.* The bench is 0.45 mile up the canal from Ruby Street bridge. The square is 0.5 foot back from face of wall and 2.1 feet from S. end of stone on which it is. (Note 42, p. 129, except square is below U S.)

P. B. M. 105.—In the center of a depressed square cut on the top of the coping below the bridge seat, and near the NE. corner of the NW. abutment of the Chicago, Santa Fe and California R. R. bridge over the Illinois and Michigan Canal, just below Lock No. 4 of the canal, in the northern part of *Joliet, Ill.* The bolt is 0.57 foot from NE. end of coping, 0.53 foot from its SE. edge, and about 2.7 feet above ground. Same as S. D. P. B. M. 119 and U. S. B. M. 9, Seddon, of 1899. (Note 43, p. 129, except that the lettering is S. D. P. B. M.)

P. B. M. 106.—In top of the third step up from the ground (middle of third main course) in the SW. wing wall of the NW. stone abutment of the Elgin, Joliet and Eastern R. R. bridge over the Illinois and Michigan Canal, just below Lock No. 3 of the canal, in the northern outskirts of *Joliet, Ill.* The bolt is 0.87 foot back from SE. face of wall, 0.84 foot from SW. end of step, 34 feet SW., along the face of the wing wall, from its angle with the abutment, and about 3.85 feet above ground. (Note 43, p. 129.)

S. D. 117.—Cut on the top of the W. wall of Lock No. 3 of the Illinois and Michigan Canal, which is N. from *Joliet, Ill.*, and just above the Elgin, Joliet and Eastern R. R. bridge over the canal. The bench is at N. end of recess for W. lower gate, the center of square being 0.38 foot N. of N. end of recess, and 0.41 foot W. of W. face of lock chamber. Same as U. S. B. M. 7, Seddon, of 1899. (Note 45, p. 130, except the letter P is omitted.)

T. B. M. 437.—Near *Joliet, Will Co., Ill.*, on the top of the south stone of the remains of the W. abutment of a former R. R. bridge over the Illinois and Michigan Canal, 0.67 mile N., along the canal, from P. B. M. 106. The present railway track, along the W. side of the canal, terminates about 20 feet N. of the bench. This old abutment is about 2 feet back from the face of the W. retaining wall of canal. The bench is 0.33 foot from S. end of stone and 0.38 foot from E. face of abutment. (Note 42, p. 129.)

T. B. M. 438.—On the top of the W. wall of Lock No. 2 of the Illinois and Michigan Canal, at a point 0.3 foot back from E. face of tail-bay to lock chamber and 0.6 foot below the S. side of wooden quoin post of lower W. gate. It is about 1.5 miles below *Lockport, Ill.* Same as S. D. P. B. M. 110, U. S. B. M. 6, Seddon, of 1899, and D. W. S. No. 58. (Note 45, p. 130.)

S. D. 109.—Highest point in a square cut on the W. wall of Lock No. 2 of the Illinois and Michigan Canal (second lock below *Lockport, Ill.*) at a point 5.3 feet N. of N. end of recess for upper gate and 0.3 foot W. of E. face of head bay. The square is at a joint in the wall coping stones. The letters S. D. are cut, one at either side of the square, and the letters B. M. near by. The bench appears to have been injured.

S. D. 107.—Highest point in E. angle of a cross cut on top of W. wall of Lock No. 1 of the Illinois and Michigan Canal at *Lockport, Ill.* The cross is at E. angle in wall at N. end of recess of W. lower gate, and is 11 feet N. of the wooden quoin post of this gate. "Same as U. S. No. 6." Same as U. S. B. M. 4, Seddon, of 1899.

S. D. 106.—Highest point in a square cut on the top of the W. wall of Lock No. 1 of the Illinois and Michigan Canal at *Lockport, Ill.*, at point of curve in head bay wall, 5.15 feet N. of N. end of recess for W. upper gate, 15.9 feet N. of the wooden quoin post of this gate, and 0.3 foot back from face of wall. It is at the S. side of a joint of the coping stones. The letters B. M. S. D. are cut near the square. "Same as D. W. S. No. 57."

P. B. M. 107.—In the top of the W. end stone of the third course up from the ground, or eighth course down from the bridge seat, in the W. wing wall of the NW. stone abutment of the bridge over the Illinois and Michigan Canal, on the Chicago and Alton R. R. side track to mills, W. of canal, in *Lockport, Ill.* The bolt is 0.54 foot back from S. face of wing wall, 0.98 foot from W. end of stone, and 11.4 feet westward, along the face of the wing wall, from angle at its junction with abutment. (Note 43, p. 129.)

P. B. M. 108.—In E. face of W. stone abutment of Sixteenth Street bridge, over the Illinois and Michigan Canal, in *Lockport, Ill.* The bolt is in the third course up from the ground (fifth below bridge seat), 10.73 feet S. from N. end (angle) of abutment, and 3.9 feet above the towpath. (Note 47, p. 130.)

S. D. 116.—In the N. water table of the building known as "Arnold's Building," on the SW. corner of State and Ninth streets in *Lockport, Ill.* The bolt is 21.7 feet W. of the NE. corner of building. (Note 46, p. 130.)

S. D. 114.—In the E. face of the W. stone abutment of Ninth Street bridge of the Illinois and Michigan Canal in *Lockport, Ill.* The bolt is in the fifth course, 4.25 feet up from the ground, and 1.89 feet S. along the face of the wall, from the N. end of abutment. (Note 46, p. 130.)

T. B. M. 440.—*Lockport, Ill.*, on the same bridge seat course as P. B. M. 109. The bench is 0.64 foot from E. end and 0.66 foot from S. face of coping. (Note 42, p. 129.)

P. B. M. 109.—In the top of the bridge seat or coping course of the N. abutment of bridge No. 38 of the Chicago, Santa Fe and California R. R. in *Lockport, Ill.* This bridge is some 500 feet S. from depot. The bolt is 0.91 foot from W. end of coping, 1.25 feet from S. face of coping, and 1.3 feet from S. face of earth wall of abutment. (Note 43, p. 129.)

P. B. M. 110.—In the top of the bridge seat or coping course of the S. abutment of bridge No. 37 A of the Chicago, Santa Fe and California R. R. This bridge is E. of the controlling works of the Chicago Drainage Canal at *Lockport, Ill.* The bolt is 0.65 foot from E. end and 0.66 foot from N. face of coping. (Note 43, p. 129.)

P. B. M. 111.—In top of stone doorstep of the S. double doors of the brick building at S. end of wastewear at the controlling works of the Chicago Drainage Canal at *Lockport, Ill.* The bolt is 0.88 foot from E. end of stone, 0.25 foot back from front edge of step, and 0.55 foot W. from E. brick jamb of doorway. (Note 43, p. 129.)

T. B. M. 441.—Near *Lockport, Will Co., Ill.*, on the top of E. concrete wall of the Chicago Drainage Canal, 2.33 feet back from face of wall, 3.67 feet from rear edge of wall, and 0.707 mile from P. B. M. 111 at the controlling works. It is opposite a Sanitary B. M. near front edge of wall. (Note 42, p. 129.)

Sanitary B. M.—Near *Lockport, Will Co., Ill.*, 0.17 foot back from the E. face of the canal, 2.16 feet W. of, or opposite, T. B. M. 441, and near a gauge on vertical face of canal wall, being the highest point in a square. The figures +4941 are cut near this bench.

T. B. M. 442.—Near *Lockport, Will Co., Ill.*, on the top of E. concrete wall of the Chicago Drainage Canal, 2.14 feet back from face of wall, 4.18 feet from rear edge of wall, 1.46 feet southeasterly from an eyebolt in top of wall (for supporting life cable), and 1.36 miles northward from P. B. M. 111 at the controlling works. There is a jog in the W. concrete wall of canal and a break in the W. spoil bank, nearly opposite the bench. A break in the E. spoil banks occurs about 200 feet above the bench. (Note 42, p. 129.)



T. B. M. 443.—On the top of the short section of concrete wall (132 feet in length) on the E. side of the Chicago Drainage Canal, first above the long concrete wall, extending northward from the controlling works. The bench is 42.85 feet N. of the S. end of this wall, 2.36 feet back from face of wall, and 0.8 foot E. of eyebolt in top of wall (for supporting life cable). It is 2 miles from P. B. M. 111 at controlling works and 1.17 miles below the wagon bridge over the canal at *Romeo, Ill.* (Note 42, p. 129.)

T. B. M. 444.—On the top of a short section of stone retaining wall on the E. side of the Chicago Drainage Canal, 0.45 mile below the wagon bridge over the canal at *Romeo, Ill.* The bench is 54 feet from S. end of wall, 133 feet from N. end of wall, 2.07 feet back from front face of wall, and 126.6 feet S. from P. B. M. 112 on same section of wall. (Note 42, p. 129.)

P. B. M. 112.—In the top of a short section of stone retaining wall on the E. side of the Chicago Drainage Canal, at a point 0.43 mile below the wagon bridge over the canal at *Romeo, Ill.* The bolt is 6.4 feet below, measured along the face of the wall, the extreme upper end of wall (upper end not square across), 1.7 feet back from face of wall, and 2.2 feet from rear edge of wall. (Note 43, p. 129.)

S. D. 94.—Highest point in a square cut at E. edge of coping of W. retaining wall of the Illinois and Michigan Canal, at a point "87 feet S. of S. side of highway bridge over canal" (88.2 feet S. of S. end of floor beams of bridge) in *Romeo, Ill.* It is 68.75 feet northeasterly from the NE. corner of stone foundation of elevator building just W. of towpath. The square is not marked. "Same as D. W. S. No. 54."

P. B. M. 113.—In the top of the bridge seat or coping course of the pier at the E. end of the draw span of the wagon bridge over the Chicago Drainage Canal at *Romeo, Ill.* The bolt is near the S. end of the pier, being 0.94 foot from S. end of coping and 0.95 foot W. of its E. edge. (Note 43, p. 129.)

S. D. 93.—In the E. face of W. abutment of highway bridge over the Illinois and Michigan Canal in *Romeo, Ill.* The bolt is in the fifth course, 4.15 feet up from the ground, and 3 feet N. of SE. corner of abutment. (Note 46, p. 130.)

Sanitary B. M.—*Romeo, Will Co., Ill.*, on the N. end of the pier at the E. end of the highway draw-bridge over the Chicago Drainage Canal, being the highest point of a circular niche cut on the quarry-faced projection on the N. face of the fourth course down from the coping, or bridge seat course, 1.1 feet W. of the NE. corner of the pier and 5.94 feet down from the top of the coping course. The letters B. M. are cut near the bench.

T. B. M. 445.—On the top of a short section stone retaining wall on the E. side of the Chicago Drainage Canal, at a point 0.577 mile above the center line of the wagon bridge over the canal at *Romeo, Ill.* The square is 24.25 feet from S. end of wall, 23.5 feet from its N. end, 1.1 feet back from face of wall, and 3.34 feet from rear edge of wall. It is opposite, and W. from, a point on the Chicago, Santa Fe and California R. R. track about 95 paces S. from the beginning of the long curve in this track about 0.6 mile N. of *Romeo*. There is a corresponding short section of stone retaining wall on opposite side of the canal. (Note 42, p. 129.)

T. B. M. 446.—On the top of the bared rock, in place, along the E. side of the Chicago Drainage Canal, at a point 1.11 miles northward, along the canal, from the center line of the wagon bridge over the canal at *Romeo, Ill.*, and about 0.22 mile southward, along the canal, from the quarry dock of the Lemont Limestone Co. on W. side of canal. The square is 2.9 feet back from vertical side of the canal and 5.84 feet southerly from an eyebolt on canal bank (for supporting life cable). About opposite this bench the height of the spoil bank on the W. side of the canal changes, being higher to the southward. On the E. side of the canal the spoil bank opposite and above the bench is of considerable height. (Note 42, p. 129.)

T. B. M. 447.—On the top of the bared rock, in place, along the E. side of the Chicago Drainage Canal, at a point 1.755 miles northward along the canal, from the center line of the wagon bridge over the canal at *Romeo, Ill.*, and 0.246 mile southwestward, along the canal, from the lower side of engine house at dock of Western Stone Company's quarry No. 6, on SE. bank of canal. The square is 7.84 feet back from vertical side of canal, 2 feet from edge of earth, and 8.6 feet SSW. from an eye-bolt on bank (for supporting life cable). (Note 42, p. 129.)

T. B. M. 449.—On the top of the bared rock, in place, on the SSE. side of the Chicago Drainage Canal, at a point 0.33 mile ENE. of the range of the northeasterly side of the stone-crusher building on the northward side of the canal, known as Western Stone Co.'s No. 5; 1.377 miles WSW. along the canal, from center line of the wagon bridge over the canal at *Lemont, Ill.*, and 0.23 mile ENE. along the canal from Will-Cook county line, as indicated by tablet set in northerly wall of canal. The square

is 6.4 feet back, square out, from vertical face of canal, 2.3 feet from edge of earth, and 4.68 feet SE. from an eyebolt on bank (for supporting life cable). (Note 42, p. 129.)

T. B. M. 450.—On the top of the bared rock, in place, on the SSE. side of the Chicago Drainage Canal, at a point 0.69 mile below, WSW., along the canal, from the center line of wagon bridge over canal on Stevens street, in *Lemont, Ill.* It is 290 feet WSW., along the canal, from the lower end of high S. spoil banks, about opposite the middle of the second curve below Lemont depot, in the Chicago, Santa Fe and California R. R. track, and opposite telephone pole No. 673 of the Sanitary District line, being 44.8 feet distant from this pole. The square is 4.3 feet back, square out, from vertical face of canal, 1.8 feet back from eyebolt on canal bank opposite bench, and 4.8 feet from edge of earth. (Note 42, p. 129.)

T. B. M. 451.—Highest point in semicircular niche cut on quarry-faced projection on NNW. face of a stone in the first course up from the ground in the SSE. abutment of the drawbridge over the Chicago Drainage Canal, on Stevens street, in *Lemont, Ill.* The bench is 1.94 feet above ground and 5.9 feet ENE. along the abutment from the angle at its junction with SW. wing wall. This is a Sanitary District bench. The letters B M were cut above the niche and U S is added below it.

P. B. M. 114.—In the top of the sandstone bridge seat or coping course of the NNW. abutment of the drawbridge over the Chicago Drainage Canal, on Stevens street, in *Lemont, Ill.* The bolt is 1.89 feet northward from angle in coping course at junction of abutment with its westerly wing wall, 1.47 feet out from face of earth wall of abutment, and 2.62 feet westward from the center of the westward bearing wheel under northerly end of land span of draw. (Note 43, p. 129.)

P. B. M. 115.—In the top of the W. end stone of the second course above ground (fourth course below bridge seat) in the W. wing wall of the S. abutment of the Chicago, Santa Fe and California R. R. drawbridge over the Chicago Drainage Canal at *Lemont, Ill.* The bolt is 1.1 feet back from the face of the wing wall, 2.2 feet from W. end of stone on which it is, and 23.1 feet westward along the face of the wing wall from the angle at its junction with the abutment. (Note 43, p. 129.)

S.eD. 88.—In center of water table on the NNW. side of Dutton's stone building standing on the SE. corner of Stevens and Talcott streets in *Lemont, Ill.* The bolt is 1.65 feet eastward along the water table from its NW. corner. (Note 46, p. 130.)

S.eD. 80.—Highest point in a square cut on the top of the flagging at the NW. corner of Dutton's stone building on the SE. corner of Stevens and Talcott streets in *Lemont, Ill.* The center of the square is 0.28 foot from the easterly edge and 0.14 foot from the northerly edge of the flagging. The letters B.eM. are cut near the square.

S.eD. 79.—In the SSE. face of the NW. one of four stone piers supporting trusses carrying traveling crane over the Illinois and Michigan Canal at Western Stone Co.'s quarry, No. 2, in *Lemont, Ill.* The bolt is 4.3 feet ENE., along the face of the pier, from its SW. corner, and in the tenth course down from the top of the pier (sixth course up from the ground). (Note 46, p. 130.)

T. B. M. 452.—On the top of the stone retaining wall on the SSE. side of the Chicago Drainage Canal, 0.505 mile ENE. along the canal from the drawbridge over it on Stevens street in *Lemont, Ill.* The square is 1.7 feet back from face of wall, 0.86 foot SSE. from an eyebolt in wall (for supporting life cable), 21 feet WSW. along the canal from the upper end of long stone retaining wall, first above R. R. bridge at Lemont, and 333 feet in the same direction from the lower side of engine house at Illinois Stone Co.'s dock on canal. (Note 42, p. 129.)

P. B. M. 116.—In the top of stone retaining wall on the SSE. side of the Chicago Drainage Canal, 1.287 miles ENE. along the canal from the drawbridge over it on Stevens street in *Lemont, Ill.* It is 795.5 feet in the same direction from the upper side of the engine house at the dock on the canal of Western Stone Co.'s quarry No. 1 and 93.85 feet WSW. along the canal from the upper end of a long stone retaining wall. The bolt is 2.26 feet back from face of wall and 2.1 feet from its rear edge on a coping stone 5.7 feet long. (Note 43, p. 129.)

T. B. M. 453.—On the top of the stone retaining wall on the SSE. side of the Chicago Drainage Canal, at a point 1.9 miles ENE., along the canal, from the drawbridge over it, on Stevens street, in *Lemont, Ill.* It is 0.322 mile WSW., along the canal, from the lower end of the curved portion of this wall, at the curve in the canal, between Sag and Lemont. The square is 1.32 feet back from face of wall, and 2.72 feet from rear edge of wall, on a coping stone 3.85 feet face length. It is about 250 feet below a levee running S. from the canal to the farmhouse, near the Illinois and Michigan Canal, occupied by George Nagel. In the SW.  $\frac{1}{4}$  sec. 15, T. 37 N., R. 41 E., Dupage Co., Ill. (Note 42, p. 129.)



P. B. M. 117.—In the top of the stone retaining wall on the SE. side of the Chicago Drainage Canal, at a point 509 feet below the upper end of the curve in this wall at the bend in the canal between Sag and Lemont, Ill. The bolt is 2.03 feet back from the face of wall, and 1.9 feet from rear edge of wall on a through coping stone of 2.7 feet face length. In sec. 15, T. 37 N., R. 11 E., Dupage Co. (Note 43, p. 129.)

Lower Sanitary B. M.—Near Lemont, Cook Co., Ill., on the top of the SE. wall of the Chicago Drainage Canal, about 1 193.5 feet NE., along the wall, from P. B. M. 117, about 684.5 feet, in the same direction, from the upper end of the curve in this wall at the bend in the canal between Sag and Lemont, Ill., and 31 feet below, opposite telephone pole No. 564, being a square, 0.2 foot on a side, 0.45 foot back from the face of the wall. Marked B. M.

Upper Sanitary B. M.—On the top of the SE. wall of the Chicago Drainage Canal, about 1 728.5 feet NE., along the wall, from P. B. M. 117, about 1 219.5 feet, in the same direction, from the upper end of the curve in this wall at the bend in the canal between Sag and Lemont, Ill., about 4 feet above, opposite telephone pole No. 561, and 6.85 feet SW. from steel rope ladder on canal wall, being a square 0.17 foot on a side, 0.45 foot back from face of wall. Marked B. M.

T. B. M. 454.—On the top of the stone retaining wall on the SE. side of the Chicago Drainage Canal, at a point 0.567 mile NE., along the canal, from the upper end of the curve in this wall at the bend in the canal between Sag and Lemont, Ill. It is nearly N. of the junction of the Calumet Feeder with the Illinois and Michigan Canal, and nearly W. from the farmhouse, on the NW. bank of the Illinois and Michigan Canal, occupied by Joseph Polarek. It is 228.85 feet SW., along the canal, from the lower side of the engine house at the Delaney Stone Co.'s dock, on canal, and about opposite Sag Bridge station of the Chicago and Joliet Electric Ry. The square is 1.96 feet back from face of wall, on coping stone 6 feet long. In the NW.  $\frac{1}{4}$  sec. 14, T. 37 N., R. 11 E., Dupage Co. (Note 42, p. 129.)

T. B. M. 455.—On the top of the stone retaining wall on the SE. side of the Chicago Drainage Canal, at a point 0.77 mile NE., along the canal, from the lower side of the engine house at the Delaney Stone Co.'s dock, on canal, opposite Sag Bridge Station of the Chicago and Joliet Electric Ry. It is 118 feet below a ditch, about 250 feet long, at right angles to canal, bordered with poplars, and emptying into the Illinois and Michigan Canal. It is 7.92 feet SW. from an eyebolt, in canal wall, and 25 feet SW. from opposite telephone pole No. 524. The square is 1.33 feet back from face of wall, and 1.93 feet from rear edge of wall, on a stone 3 feet in length and 3.2 feet thick. (Note 42, p. 129.)

T. B. M. 456.—Near Willow Springs, Cook Co., Ill., on the top of the stone retaining wall on the SE. side of the Chicago Drainage Canal, at a point 1.21 miles NE., along the canal, from the lower side of the engine house at the Delaney Stone Co.'s dock, on canal; and 0.467 mile SW., along the canal, from P. B. M. 118, which is opposite Philip Koch's farmhouse. The square is 1 foot back from the face of the wall. (Note 42, p. 129.)

P. B. M. 118.—In the top of the stone retaining wall on the SE. side of the Chicago Drainage Canal, at a point 42.5 feet NE., along the canal, from the lower end of wall next above, about 755 feet of mostly natural rock canal bank, situated between two long stretches of built retaining wall. It is opposite Philip Koch's farmhouse and suspension footbridge over the Illinois and Michigan Canal. It is 1.569 miles, along the canal, below the lower end of the curve in this wall, at the bend in the canal, below Willow Springs, Ill. The bolt is 1.64 feet back from face of wall, and 22.8 feet below an eyebolt in wall, on a stone 6.5 feet in face length. In the NE.  $\frac{1}{4}$  sec. 12, T. 37 N., R. 11 E., Cook County, Ill. (Note 43, p. 129.)

S. D. 64.—Near Willow Springs, Cook Co., Ill., in the NE. wing wall of the NW. stone abutment of Philip Koch's suspension footbridge over the Illinois and Michigan Canal, about 1.67 miles above Sag. The bolt is 2.3 feet N., along the wing wall, from the E. corner of abutment and 1.75 feet down from the top of the old abutment. This bridge abutment is now much out of plumb and the courses in the wing wall inclined, indicating a settlement which is also shown by the levels. (Note 46, p. 130.)

S. D. 63.—Near Willow Springs, Cook Co., Ill., on the same bridge, abutment, and wall as S. D. 64; highest point in the SE. quarter of a circle cut on the top of the second step down from the top of the old bridge abutment. The bench is 4.95 feet N., along the wing wall, from the E. corner of abutment, 0.3 foot back from face of wing wall and 0.45 foot from N. end of step. This bench has settled due to the settlement of the abutment. "Same as U. S. No. 27." Marked B M on horizontal part of step and S D on its vertical face.

S. D. 62.—Near *Willow Springs, Cook Co., Ill.*, on the same bridge, abutment, and wall as S. D. 64; highest point a small square, within a larger square, cut on the NE. corner of a stone. This bench is near the toe of earth embankment forming the NNW. approach to bridge, 15.1 feet ENE. or square out from the range of the upper cable of bridge and 11.25 feet NNW. from the southerly face of abutment. This bench stone has the appearance of having been moved from its original place in the wing wall, and the levels show that its displacement has been nearly a foot. The letters S. D. P. B. M. are cut near the square. "Same as D. W. S. No. 40."

T. B. M. 457.—On the top of the stone retaining wall on the SE. side of the Chicago Drainage Canal, 0.692 mile NE., along the canal, from P. B. M. 118, and 0.877 mile below the lower end of the curve in this wall, at the bend in the canal, below *Willow Springs, Ill.* It is about 60 feet above an opening in the spoil banks on this side. The square is 2.5 feet back from face of wall and 2.83 feet from rear edge, on a stone of 7.3 feet face length. In the SW.  $\frac{1}{4}$  sec. 6, T. 37 N., R. 12 E., Cook County. (Note 42, p. 129.)

T. B. M. 458.—On the top of the stone retaining wall on the SE. side of the Chicago Drainage Canal, at a point 0.2 mile below the lower end of the curve in this wall, at the bend in the canal, below *Willow Springs, Ill.* The square is 1.65 feet back from face of wall and 1.35 feet from rear edge of wall, on a coping stone having a face length of 6.9 feet and a width about 1 foot less than width of wall. The square is about 13.5 feet above opposite telephone pole, No. 454, of the Sanitary District line. (Note 42, p. 129.)

P. B. M. 119.—Center of cross cut on the top of a 1-inch iron bolt set in the top of the stone retaining wall on the SE. side of the Chicago Drainage Canal, at a point on the curved portion of this wall, 469.25 feet below the upper end of the curve, at the bend in the canal, below *Willow Springs, Ill.* The bolt projects 1.5 inches above the stone and is 1.6 feet back from face of wall, on a through coping stone 2.45 feet thick and 3.6 feet face length. This bolt was found in place. It is lettered U. S. P. B. M.

T. B. M. 459.—On the top of the lowest step of the SW. wing wall of the SE. abutment of the highway drawbridge over the Chicago Drainage Canal at *Willow Springs, Ill.*, being on the top of the fifth course of stone up from the ground in this wing wall. The square is 0.87 foot back from face of wall, 1.2 feet from S. end of wing wall, and 1.45 feet from S. end of course next above. (Note 42, p. 129.)

Sanitary B. M.—*Willow Springs, Cook County, Ill.*, on the SE. side of the octagonal stone pier of the highway drawbridge over the Chicago Drainage Canal, being highest point in a semicircular niche cut on the quarry-faced projection in the first course above ground, 2.95 feet NE. from the southerly angle of octagonal pier, and 1.15 feet above ground. Marked B. M. below the bench.

S. D. 54.—In the SW. end wall of the stone foundation of Chas. Piper's barn, about 250 feet northerly from the northeastward corner of wagon bridge over the Des Plaines River at *Willow Springs, Ill.* The bolt is 1.9 feet down from top of foundation, and 10 feet NW. along the wall, from SW. corner of barn. (Note 46, p. 130.)

S. D. 51.—On the top of the SW. bridge-seat stone of the SE. abutment of the wagon bridge over the Illinois and Michigan Canal at *Willow Springs, Ill.* The square is 2 feet SW. from the center of the inclined end post of SW. truss, and 1.65 feet back from the NW. face of abutment. "Same as D. W. S. No. 50." (Note 45, p. 130, except B. and M. are interchanged.)

S. D. 50.—Highest point in the SE. quarter of a circle cut on the top of the SW. bridge-seat stone of the NW. abutment of the wagon bridge over the Illinois and Michigan Canal at *Willow Springs, Ill.* The circle is 0.31 foot from SW. end of stone, 0.19 foot back from face of abutment, and 1.54 feet SW. from SW. face of inclined end post of lower truss. "Same as U. S. No. 43." Marked with the letters P. B. M. S. D. around the circle.

P. B. M. 120.—In the top of the sandstone coping course of the octagonal stone pivot pier of the highway drawbridge over the Chicago Drainage Canal at *Willow Springs, Ill.* The bolt is 1.1 feet radially in from the SSW. angle of octagon and 1.16 feet radially out from the cogs of the iron base of turntable. (Note 43, p. 129.)

P. B. M. 121.—In the top of the stone doorstep of the door on the SW. side of Henry B. Koller's brick block on the N. corner of Wentworth and Archer avenues in *Willow Springs, Ill.* The bolt is 0.16 foot back from face of step, 0.59 foot from its NW. end, and 7.36 feet from NW. corner of building. It is marked on the vertical face of stone step, below the bolt. (Note 43, p. 129.)

S. D. 57.—The top of a cast-iron Standard bench mark set in Archer avenue at *Willow Springs, Ill.*, at a point 0.59 foot square out from the SE. fence line of avenue, 68.11 feet NE. from the N. corner



of J. M. Abbitt's store building, 141.6 feet E. from the E. corner of John Zenk's brick saloon, 150.3 feet WSW. from the W. corner of Mrs. D. W. Crumpacker's residence, and 20 feet SE. from the outer rail of the SE. track of the Chicago and Joliet Electric Ry. The top of this bench is nearly even with the ground surface. The cast-iron post has a cross section in the form of a plus.

T. B. M. 460.—On the top of the uppermost course of stone in the NW. abutment for bridge (now gone) over the Illinois and Michigan Canal at *Mount Forest, Ill.* The center of this abutment is about 80.5 feet below opposite the center of the Chicago and Alton R. R. depot at Mount Forest. The square is 1.14 feet back from face of abutment, and 2.41 feet from SW. end of top course. (Note 42, p. 129.)

S. D. 49.—*Mount Forest, Cook Co., Ill.*, on the same bridge and abutment as T. B. M. 460; highest point in the NW. quarter of a circle cut on the third step from the bottom in the SW. wing wall. The center of this abutment is about 80.5 feet below opposite the center of Mount Forest depot building of the Chicago and Alton Ry. The circle is 0.25 foot from W. end of step, and 0.5 foot back from face of wing wall. The bench mark and the letters are quite weather worn. "Same as U. S. No. 65." Marked S. D. above the circle and P. B. M. below it.

S. D. 48.—*Mount Forest, Cook Co., Ill.*, on the same bridge and abutment as T. B. M. 460; highest point in a square cut on the top of the uppermost course. The center of this abutment is about 80.5 feet below opposite the center of Mount Forest depot building of the Chicago and Alton Ry. The bench is near the E. corner of the NE. end of top course, 0.1 foot from SE. face, and 0.15 foot from NE. end of stone. "Same as D. W. S. No. 49." The letters S. D. B. M. are cut near the square.

T. B. M. 461.—Near *Mount Forest, Cook Co., Ill.*; highest point in a square cut on the top of a large boulder situated on the NW. side of the Illinois and Michigan Canal, 18.5 feet back from the front edge of towpath, 420 feet NE., along the canal, from the center of the remains of an old wooden abutment of railroad bridge (now gone) over said canal, and 197 feet ENE. from the N. corner of stone foundation of "Piper's residence above Mount Forest" (house gone). It is 1.795 miles, along the towpath, above Wentworth avenue in Willow Springs, Ill., and 38.3 feet ENE. from telephone pole No. 426. The boulder is about 5 feet N. and S., 4 feet E. and W., and 2.6 feet high. Same as S. D. P. B. M. 46, which is the same as an older bench. Marked U. S. P. B. M. below the square.

T. B. M. 462.—Near *Mount Forest, Cook Co., Ill.*; highest point in a square cut on the top of the SW. one of two boulders, 5.5 feet apart, situated on the NW. side of the Illinois and Michigan Canal at a point 2.145 miles, along the towpath, above Wentworth avenue in Willow Springs, Ill., and 2.254 miles below the Chicago and Calumet Terminal R. R. bridge over said canal. The bench is 20 feet back from front edge of towpath, 32.5 feet ENE. from double cottonwood tree, and 58.75 feet SW. from telephone pole No. 408. The bench stone is about 3 feet square at the ground, from which it projects from 6 to 8 inches. Near the center of sec. 27, T. 38 N., R. 12 E., Cook County. Same as S. D. P. B. M. 45. (Note 45, p. 130, except that the letters are all below the square.)

T. B. M. 463.—Near *Summit, Cook Co., Ill.*; highest point in a square cut on the top of a limestone boulder lying in the towpath on the NW. side of the Illinois and Michigan Canal at a point 1.52 miles along the canal below the Chicago and Calumet Terminal R. R. bridge over said canal, and about 1 010 feet below where the wagon track leaves the towpath to follow along the top of the spoil banks. It is about opposite the middle of a row of 10 willow trees, parallel to the canal and from 50 to 75 feet back of the spoil banks, 94 feet below an apple tree at SE. foot of spoil banks, and 14.35 feet SE. from telephone pole No. 373. The boulder is 9.5 feet back from front edge of towpath, and lies between the towpath proper and the wagon track, which is about 2 feet the higher, so that one side of the stone is covered and the other exposed. The square is near the NE. end of the stone, which is about 1.6 by 2.3 feet in plan. The letters U. S. are cut to the SE. of the square on the sloping face of the stone.

T. B. M. 464.—Near *Summit, Cook Co., Ill.*; highest point in a square cut on the highest part of a "large embedded granite boulder at cove or recess in spoil banks" on NW. side of the Illinois and Michigan Canal, "about 3 460 feet" SW. along the towpath from the center of the Chicago and Calumet Terminal R. R. bridge over the canal. The boulder lies near the foot of the SE. slope of the spoil banks, 7 feet SE. from telephone pole No. 331, 23 feet back from front angle of towpath, and 6.35 feet NE. from a 3-inch crab-apple tree. There are a few other small trees NE. from the bench. Same as S. D. P. B. M. 41. The letters S. D. P. B. M. are cut on the inclined surface of the stone, which is nearly on a level with the ground surface.

T. B. M. 465.—On the top of the third step down from the top of the W. wing wall of the NW. abutment of the Chicago and Calumet Terminal R. R. bridge over the Illinois and Michigan Canal, about 1 mile below *Summit, Ill.* The square is 0.39 foot back from S. face of wing wall, 0.71 foot from W. end of step, and 13.33 feet SW. from inside of SW. rail of SW. track. (Note 42, p. 129.)

P. B. M. 122.—In the top of the bridge seat, or coping course, of the SE. abutment of the Chicago and Calumet Terminal R. R. bridge over the Chicago Drainage Canal, about 1 mile below *Summit, Ill.* The bolt is near the SW. end of abutment, being 1.85 feet from front edge of coping stone, 1 foot from SW. edge of cast-iron bridge seat, 1.75 feet in front of earth wall of abutment, and 1.05 feet from the SSE. edge of coping. (Note 43, p. 129.)

S. D. 40.—Center punch mark in the end of copper bolt leaded horizontally into the NE. end of the third course down from the iron bridge seat (second course below the coping course) of the NW. abutment of the Chicago and Calumet Terminal R. R. bridge over the Illinois and Michigan Canal, about 1 mile below *Summit, Ill.* The bolt is about 4.9 feet above ground and 0.83 foot NW. from the E. corner of abutment. The letters S. D. P. B. M. are cut near the bolt.

S. D. 39.—Near *Summit, Cook Co., Ill.*, highest point in the SW. quadrant of a circle cut on the top of a flat limestone boulder, about 3.3 feet N. and S. by 4.8 feet E. and W., lying on the SE. slope of the spoil banks on the NW. side of the Illinois and Michigan Canal, 40 feet back from the front edge of towpath, and 270.5 feet NE. from the inside of the outer rail of the NE. track of the Chicago and Calumet Terminal R. R. The bench is about 9.15 feet SSE. from the center of a red granite boulder. "Same as U. S. No. 87." Marked B at left of circle, M at right, and S D above.

Sanitary B. M.—About 1 mile below *Summit, Cook Co., Ill.*, on the SW. end stone of the second course down from the top of the earth wall of the SE. abutment of the Chicago and Calumet Terminal R. R. bridge over the Chicago Drainage Canal, being highest point in a square cut 6 inches back from westerly angle of stone. Marked B M, the square being between the letters.

P. B. M. 123.—Stone, pipe, and cap (see note 41, p. 129) set in the NW. corner of the front dooryard of William T. Welbourn's brick residence on the eastward side of the Archer road, between the Michigan Central Ry. right of way and the German Lutheran Church property, about  $\frac{1}{2}$  mile S. of *Summit, Ill.* It is 64.15 feet WNW. from the NW. corner of Mr. Welbourn's residence; 115.3 feet WSW. from the SW. corner of his large red barn; 167.4 feet SW. from Triangulation Station Chicago West Base; 36.8 feet E. of the center of the E. track of the Chicago and Joliet Electric Ry.; and 1.95 feet E. and 1.27 feet S. of front and N. dooryard fences, respectively.

Chicago West Base.—Same as S. D. 38; top of agate hemisphere marking Triangulation Station West Base of the Chicago base line, Lake Survey of 1877. This geodetic point is situated in the front yard of William T. Welbourn's large red barn, on the E. side of Archer road, between the Michigan Central R. R. right of way and the German Lutheran Church property, about  $\frac{1}{2}$  mile below *Summit, Ill.* It is 2.5 feet W. of W. side of barn, 68.9 feet N. of SW. corner of barn, 114.34 feet E., or square out, from the center of E. track of the Chicago and Joliet Electric Ry., 171.4 feet NNE. from the NW. corner of Mr. Welbourn's brick residence, 167.4 feet NE. from P. B. M. 123, 80.4 feet southerly from the SW. corner of Lutheran Church, and 106.3 feet SSE. from a 28-inch oak tree in front yard of church. The two original "stone reference posts" are standing. The bench mark is 1.7 feet below ground surface.

T. B. M. 466.—On the top of the horizontal base of the coping of the lower wing wall of the WNW. concrete abutment of the highway bridge over the Illinois and Michigan Canal at *Summit, Ill.* The square is 0.83 foot back from face of abutment and 0.85 foot from lower end of wing walls. (Note 42, p. 129.)

P. B. M. 124.—In the top of the stone coping, or bridge seat course, of the SE. abutment of the highway drawbridge over the Chicago Drainage Canal at *Summit, Ill.* The bolt is 1.5 feet back from NW. edge of coping, 0.97 foot from W. edge of coping, and 0.79 foot in front of the earth wall of abutment. (Note 43, p. 129.)

Sanitary B. M.—*Summit, Cook Co., Ill.*, very near P. B. M. 124, being the highest point in a square 1.45 feet back from NW. face of coping and 0.88 foot in front of earth wall of abutment. Marked B at the left and M at the right of the square.

T. B. M. 468.—Near *Summit, Cook Co., Ill.*, on the top of a granite boulder lying on the southerly slope of the spoil banks on the NNW. side of the Illinois and Michigan Canal, 19 feet back from front edge of towpath, and 2.1 feet S. of the line of telephone poles, nearer the canal, being 63.7 feet above pole No. 57 and 44.5 feet below pole No. 56. It is about 125 feet ENE. from the range of the NE. side of the Chicago, Santa Fe and California R.R. drawbridge over the Chicago Drainage Canal. The boulder is about 1.5 feet N. and S. by 2.2 feet E. and W. in plan. (Note 42, p. 129.)

P. B. M. 125.—In the top of the bridge seat, or coping course, of the SE. abutment of the Chicago, Santa Fe and California R. R. drawbridge over the Chicago Drainage Canal, about 1.7 miles NE. from *Summit, Ill.* The bolt is on the SW. end stone of the bridge seat course, 2.23 feet from its NW. edge, 0.79 foot from its SW. edge, 0.81 foot from SW. edge of base of cast-iron bridge seat, and 1.4 feet in front of earth wall of abutment. (Note 43, p. 129.)



P. B. M. 126.—Stone, pipe, and cap (see note 41, p. 129) set 48.65 feet SSE., or square out, from a point on the inside of the southerly rail of the Chicago, Santa Fe, and California R. R., 1 783.5 feet eastward, measured along this rail, from the crossbeam at the SE. end of said railroad's drawbridge over the Chicago Drainage Canal, which is about 1.7 miles NE. from *Summit, Ill.* The bench is 457.5 feet above the whistling board east of the bridge, 1.1 feet SSE., or square out, from the southerly right-of-way fence line, and 23.2 feet in the same direction from telegraph pole on R. R. right of way. It is 2 feet NE. from the range of two telephone poles, in different lines, on the Illinois and Michigan Canal right of way, the nearer pole being 20 feet SE. and the farther pole, No. 47, being 73.5 feet SE. from the bench. It is 112.8 feet NNE. from pole No. 48 in the line of poles nearer the Illinois and Michigan Canal.

S. D. 22.—Near *Chicago, Ill.*; the top of a cast-iron Standard B. M. set at NNW. foot of the spoil banks on the NNW. side of the Illinois and Michigan Canal, 220.4 feet SSE. from the center of the Chicago, Santa Fe and California R. R. track, 30.25 feet square out from center of wagon track on top of spoil banks, about 118 feet above the upper end of that part of spoil banks densely overgrown with small willows, 1 279 feet SSW. along the spoil bank, from the range of the center line of culvert on the Chicago and Alton Ry. over creek, and 159 feet W. from S. D. P. B. M. 20 or T. B. M. 470. The original elm tree and telegraph pole witnesses have been cut off, but the stumps are still standing, the former 4 feet W. and the latter 2.7 feet E. of bench. The cast-iron post has a cross section in the form of a plus, 6 inches in extreme dimension, and projects about 6 inches above ground.

T. B. M. 470.—Near *Chicago, Ill.*; highest point in a square cut on the top of a granite boulder (embedded to near surface of ground), lying at southeasterly foot of spoil banks on the NNW. side of the Illinois and Michigan Canal, 7.3 feet back from present front angle of towpath, at a point 1 136 feet WSW., along the towpath, from the range of the center of a culvert on the Chicago and Alton R. R. over a creek entering the canal from the SE., about 260 feet above a part of the spoil bank densely overgrown with small willows, and "about 9 010 feet below the Belt Line R. R. bridge over the canal." The bench is 4.55 feet SE. from the center of telephone pole No. 15. Same as S. D. P. B. M. 20.

T. B. M. 471.—Near *Chicago, Ill.*; highest point in a square cut on the top of a granite boulder lying at southeasterly foot of spoil banks on the NNW. side of the Illinois and Michigan Canal, 14 feet back from front angle of towpath, at a point "about 5 390 feet below the Belt Line R. R. bridge over the canal." The bench is 469 feet SSW. from the Chicago, Santa Fe and California R. R. "Yard limits" sign; 13.5 feet SSE., or square out, from line of telegraph poles, being 59.2 feet eastward of pole No. 017 and 52.45 feet southwestward from pole No. 018, which is braced, and 205 feet WSW., along the towpath, from a 9-inch cottonwood tree at foot of spoil banks. Same as S. D. P. B. M. 19. It is marked with the letters U S and an arrow.

T. B. M. 472.—Highest point of a niche cut in the quarry-faced projection on the southerly face of the W. end stone of the second course up from the ground in the N. abutment of the Chicago and Western Indiana Belt R. R. bridge over the Illinois and Michigan Canal in *Chicago, Ill.* The bench is 3.5 feet up from the towpath and 4.1 feet ENE., along the face of the abutment, from its SW. corner. The letters U S are cut below the bench.

P. B. M. 127.—In the top of the SE. end stone of the second course down from the top of the earth and E. wing wall of the S. abutment of the four-track drawbridge of the Chicago and Western Indiana Belt R. R. over the Chicago Drainage Canal in *Chicago, Ill.* The bolt is 2.31 feet from SE. end of wing wall, 1.56 feet back from its face, 1.63 feet from the end of next course above, and about 16.85 feet E. of E. face of bridge. (Note 43, p. 129.)

S. D. 24.—*Chicago, Ill.*, on the same bridge and abutment as T. B. M. 472; the bolt is in the sixth course from the top and 8.35 feet N. from the range of the southerly face of abutment. (Note 46, p. 130.)

S. D. 18.—*Chicago, Ill.*, on the same bridge and abutment as T. B. M. 472; highest point in a square cut on the top of E. bridge-seat stone. The square is at E. edge of bridge seat, 1 foot S. of its NE. corner. Bridge-seat stone badly fractured. The letters S. D. P. B. M. are cut on E. vertical face of stone.

P. B. M. 128.—Stone, pipe, and cap (see note 41, p. 129) set in or near the east line of Crawford avenue in *Chicago, Ill.*, at a point 12 feet east of a N. and S. line of telephone poles along the E. side of this street, and on the prolongation of the nearer one, to the canal, of two lines of telephone poles paralleling the NNW. side of the Illinois and Michigan Canal, W. from Crawford avenue. It is 22.65 feet NE. from center of pole No. 078, and 34.07 feet SSE. from the pole next N. of the above (not numbered), both on the Crawford avenue line. It is 62 feet square out from the row of piles at the northerly water edge of canal, and 21.5 feet in the same direction from center of wagon track along this side of canal.

T. B. M. 474.—Highest point on the bottom of a square niche cut in the quarry-shaped projection on the SE. face of the NE. end stone in the fourth course below the coping, or bridge seat course, of the NW. abutment of the W. Chicago, Santa Fe and California R. R. bridge (on wye track) over the Illinois and Michigan Canal at Corwith, in *Chicago, Ill.* The bolt is 1.05 feet SW. from the E. corner of abutment and 5.89 feet below the top of the coping. The letters U S are cut below the bench.

P. B. M. 129.—In the top of the SW. end stone of the third course, up from the bridge seat, in the W. wing wall of the S. abutment of the Chicago, Santa Fe and California R. R. bridge over the Chicago Drainage Canal, opposite Corwith, in *Chicago, Ill.* The bolt is on the second step down from the top of the earth wall of abutment, 13.23 feet W. of the inner edge of the W. rail of W. track, 0.85 foot back from face of wing wall, and 1 foot from end of step. (Note 43, p. 129.)

Sanitary B. M.—*Chicago, Ill.*, on the same abutment of the same bridge as P. B. M. 129, being the highest point in a square cut on the top of the NE. corner of the stone at the junction of the earth wall and wing wall in the second course down from the top of the earth wall. The letters B. M. are cut near the square.

S. D. 16.—Highest point in the NW. quadrant of a circle cut on the top of the coping of the SW. wing wall of the same bridge and abutment as T. B. M. 474, in *Chicago, Ill.* The center of the circle is 0.21 foot from the NW. end, 0.21 foot from the SW. face, and 0.3 foot E. of W. corner of coping. It is 8.6 feet square out from the inside of SW. rail of track. "Same as U. S. No. 106." It is marked B M on top of coping, the circle being between the letters, and S. D. P. B. M. on the vertical face of the coping below the bench.

S. D. 15.—In the NE. face of the coping, or bridge seat course, of the same bridge and abutment as T. B. M. 474, in *Chicago, Ill.* The bolt is 1 foot along the face of the coping from its northerly corner, and 0.64 foot down from its upper surface. (Note 46, p. 130.)

S. D. 14.—Highest point in a square cut on the top of the projecting coping course below the bridge seat stone blocks of the N. abutment of the E. Chicago, Santa Fe and California R. R. bridge over the Illinois and Michigan Canal at Corwith, in *Chicago, Ill.* The square is at E. edge of coping, 3.8 feet N. from its SE. corner, 0.25 foot S. from directly beneath the S. end of coping to E. wing wall, and 1.63 feet E. from E. face of NE. bridge seat stone.

T. B. M. 475.—On the top of the coping, or bridge seat course, of the N. abutment of the Kedzie Avenue bridge over the Illinois and Michigan Canal, in *Chicago, Ill.* The square is near the W. end of the abutment, being 0.58 foot from S. face, and 0.69 foot from W. end of coping. (Note 42, p. 129.)

P. B. M. 130.—In the top of the coping course of the W. wing wall of the S. abutment of the Kedzie Avenue drawbridge over the Chicago Drainage Canal, in *Chicago, Ill.* The bolt is 0.25 foot back from the SE. face of coping, 0.46 foot in front of parapet wall surmounting coping of wing wall, 14.9 feet NE. along the wall from the SW. end of coping, and 12.7 feet W. from the range of the W. side of bridge. (Note 43, p. 129.)

Sanitary B. M.—*Chicago, Ill.*, on top of the E. corner of the coping of the parapet wall which surrounds the coping course of the E. wing wall of the same bridge and abutment as P. B. M. 130, being highest point in a square. Marked B. M.

P. B. M. 131.—In the top of the coping or bridge seat course of the E. abutment of the Chicago, Madison and Northern R. R. drawbridge over the Chicago Drainage Canal, in *Chicago, Ill.*, just E. of Kedzie avenue. The bolt is near the S. end of the abutment, being 2.45 feet back from W. face of coping, 1.8 feet in front of earth wall of abutment, 1 foot from S. edge of base of cast-iron bridge seat, and 1.34 feet from S. face of coping; in a concrete block forming the corner of the coping course. (Note 43, p. 129.)

South Sanitary B. M.—*Chicago, Ill.*, on the top of the SW. corner of the top course of stone in the earth wall of the same bridge and abutment as P. B. M. 131, being highest point in a square. Marked B. M.

North Sanitary B. M.—*Chicago, Ill.*, same as South Sanitary B. M., but on the top of the NW. corner.

T. B. M. 476.—Highest point in a square cut on the quarry-faced projection on the S. face of the E. stone of the first or lowest course above ground (thirteenth course down from top) of the N. abutment of California Avenue bridge over the Illinois and Michigan Canal, in *Chicago, Ill.* The square is 2.18 feet W. from E. end of abutment proper, or jog in abutment wall, and 1.25 feet above ground. The letters U S are cut below the bench.



T. B. M. 477.—On the top of the third step up from the ground (second step down from top) of the old wing wall at the extreme E. end of the N. abutment of the Pittsburg, Cincinnati, Chicago and St. Louis R. R. bridge over the Illinois and Michigan Canal, in *Chicago, Ill.* The square is 0.5 foot W. from E. corner of step, 18.25 feet E. of inside of E. rail of E. track (8 tracks), and 4.15 feet N. from face of abutment. (Note 42, p. 129.)

T. B. M. 478.—On the top of the coping stone of the lowest step of the N. curved wing wall of the E. abutment of the Chicago, Santa Fe and California R. R. bridge over South West Boulevard, in *Chicago, Ill.* The square is 12.75 feet E. of face of abutment and 22.2 feet NE. from its NW. corner. It is 1.5 feet from W. face and 1.25 feet from N. face of stone on which it is. (Note 42, p. 129.)

P. B. M. 132.—In the top of the second step down from the top of the E. wing wall of the S. abutment of the Pittsburg, Cincinnati, Chicago and St. Louis R. R. bridge over the Chicago Drainage Canal, in *Chicago, Ill.*, being on the E. end stone of the third course of stone in the abutment down from the top. The bolt is 1 foot from E. end of stone, 1 foot back from face of wing wall, and 11.4 feet E. of inside of E. rail of E. track (8 tracks). (Note 43, p. 129.)

P. B. M. 133.—In the N. face of the N. curved wing wall of the W. abutment of the Chicago, Santa Fe and California R. R. bridge over South West Boulevard, in *Chicago, Ill.* The bolt is in the fourth course of stone below the coping and 1.85 feet W. from the NE. corner of abutment proper. (Note 47, p. 130.)

P. B. M. 134.—In the top of the coping, or bridge seat course, of the S. abutment of the drawbridge on South West Boulevard and Western avenue over the Chicago Drainage Canal, in *Chicago, Ill.* The bolt is near the western end of abutment, being 1.4 feet back from N. face of coping, 1.5 feet E. from W. face of coping, 0.96 foot out from earth wall of abutment, and about 4.9 feet below sidewalk. (Note 43, p. 129.)

West Sanitary B. M.—*Chicago, Ill.*, on the top of the NW. corner of the coping course (below the parapet wall) of the W. wing wall of the same bridge and abutment as P. B. M. 134, being highest point in a square. Marked B. M.

East Sanitary B. M.—*Chicago, Ill.*, on the top of the NE. corner of the coping course (below the parapet wall) of the E. wing wall of the same bridge and abutment as P. B. M. 134, being highest point in a square. Marked B. M.

T. B. M. 479.—Highest point in a square cut on the top of a quarry-faced projection on the N. or back face of the NW. abutment of the Chicago, Santa Fe and California R. R. bridge over the Illinois and Michigan Canal, near Robey street, in *Chicago, Ill.*, about  $5\frac{1}{8}$  mile below, WSW. of, the canal pumping works at Bridgeport. The square is on the bridge seat course of stone, which is the fourth course down from the top of the earth wall of abutment, and 3.4 feet westerly from the NE. corner of abutment. The letters U S are cut above the bench.

S. D. 9.—In the E. face of the same bridge and abutment as T. B. M. 479, in *Chicago, Ill.* The bolt is 1.7 feet N. of the SE. corner of abutment, 5.4 feet above ground in third course. (Note 46, p. 130.)

T. B. M. 480—*Chicago, Ill.*; highest point in a square in the bottom of a niche on a quarry-faced projection on the S. face of the second course up from the ground, or sixth course below the coping course, of the same bridge and abutment as P. B. M. 135. The bench is 4 feet W. from the SE. corner of abutment, and 1.6 feet up from the ground. The letters U S are cut below the bench.

P. B. M. 135.—In the S. face of the N. abutment of the Ashland Avenue bridge over the Illinois and Michigan Canal, at Bridgeport, in *Chicago, Ill.* The bolt is 3.8 feet E. of the SW. corner of the abutment and 2.9 feet above ground, being in the third course above ground, or fifth course below the coping course. (Note 47, p. 130.)

S. D. 7.—Highest point in a square cut on the top of the NW. corner of stone foundation of N. brick chimney of boiler house of the Illinois and Michigan Canal pumping works on the W. side of Ashland avenue, at Bridgeport, in *Chicago, Ill.* The bench is 1.8 feet above ground. It appears to have shelled off some.

S. D. 6.—Highest point in a square cut on the top of the SW. corner of stone foundation of S. brick chimney of boiler house of the Illinois and Michigan Canal pumping works, on the W. side of Ashland avenue, at Bridgeport, in *Chicago, Ill.* The bench is 1.6 feet above ground. The outer half of the square has been broken off. The elevation given is of the remaining part. "Same as D. W. S. No. 13."

S. D. 2.—Highest part of the remaining half of a square cut near the front edge of the SE. wall of old lock of the Illinois and Michigan Canal, E. of Ashland avenue, at Bridgeport, in *Chicago, Ill.* The square is near the center of recess for E. gate of lock, and 265.7 feet NE. from the NE. corner of canal collector's office. "Same as D. W. S. No. 22." (Note 45, p. 130.)

S. D. 1.—On the SW. end of doorstep, on front or NW. side of canal collector's office, on the SE. side of the Illinois and Michigan Canal, 85.6 feet NE. from the NE. corner of S. abutment of Ashland avenue bridge over the canal, at Bridgeport, in *Chicago, Ill.* The square is 0.45 foot NE. from the SW. end of doorstep, and 0.2 foot back from its front face. This doorstep is now broken across near the middle of its length. "Same as D. W. S. No. 12." (Note 45, p. 130.)

T. B. M. 481.—On the top of the horizontal base part of the inclined coping of the N. concrete wing wall of the E. abutment of the bridge carrying the Chicago, Sante Fe and California R. R., the Chicago and Alton R. R., and Illinois Central R. R. over Quarry street, in *Chicago, Ill.* The square is 1.24 feet from W. face of coping, 0.87 foot from its N. end, and 0.75 foot from foot of inclined part of coping. (Note 42, p. 129.)

T. B. M. 482.—Highest point in a square cut on the top of the base, or foundation projecting course, of the W. concrete abutment of the bridge carrying the Chicago, Sante Fe and California R. R., the Chicago and Alton R. R., and the Illinois Central R. R. over Twenty-third place, and on the N. side of Archer avenue, in *Chicago, Ill.* The square is at the N. end of abutment, 0.45 foot E. of face of abutment, 0.23 foot S. of its N. end, 0.3 foot W. of E. face of foundation, projecting course, and 1 foot above street surface. Marked U S above the square.

T. B. M. 483.—On the top of the W. one of the eight sandstone bearing blocks, on which rests the iron columns of the same bridge as P. B. M. 136, in *Chicago, Ill.*, and which are situated between the roadway and the N. sidewalk of the street. The square is 0.52 foot from the S. and W. edges of the bearing block, respectively, 13.65 feet out from face of N. abutment, 16.65 feet SE. from its SW. corner, and 16.25 feet SW. from P. B. M. 136. The iron column over this bearing block has not yet been placed. (Note 42, p. 129.)

P. B. M. 136.—In the S. face of the fourth course up from the sidewalk in the N. stone abutment of the bridge carrying the Chicago, Rock Island and Pacific R. R. and the Lake Shore and Michigan Southern R. R. over Twenty-third street, in *Chicago, Ill.* The bolt is 0.55 foot E. of SW. corner of abutment and 5.3 feet above sidewalk. (Note 47, p. 130.)

T. B. M. 484.—On the top of stone sidewalk at the SE. corner of Twenty-second street and Michigan (avenue) Boulevard, in *Chicago, Ill.* The square is 10.54 feet E. of E. curb line of Michigan avenue and 16.3 feet S. of S. curb line of Twenty-second street, being at N. end of iron railing at W. tide of outdoor cellar stairway on E. side of avenue. (Note 42, p. 129.)

City 7.—Situated on Michigan (avenue) Boulevard 4 feet W. of the W. curb line of the avenue (or 11 feet E. of the W. line of the avenue) and 206.5 feet S. of the S. line of Twenty-second street, in *Chicago, Ill.* (Note 49, p. 130.)

T. B. M. 485.—*Chicago, Ill.*; top of the W. vertical bolt, which secures to its masonry foundation the base of the cast-iron lamp-post situated on Michigan (avenue) Boulevard, 1.6 feet E. of E. curb line of avenue, 44.15 feet SW. from NW. corner and 38.15 feet W. from SW. corner of house No. 1441. Marked U S on the cast-iron base of the lamp-post.

P. B. M. 137.—On Michigan avenue, 4.15 feet E. of E. curb line and 26 feet S. of S. line of Harmon place, opposite Lake Park, in *Chicago, Ill.* Same as Chicago Standard bench No. 3. (Note 49, p. 130.)

P. B. M. 138.—On Michigan avenue, 4.3 feet E. of E. curb line and 15.3 feet S. of S. line of Congress street, opposite Lake Park, in *Chicago, Ill.* Same as Chicago Standard bench No. 2. (Note 49, p. 130.)

P. B. M. 139.—On the SE. corner of Michigan avenue and Randolph street, in *Chicago, Ill.*, being 29.35 feet E. of E. curb line of Michigan avenue and 24.17 feet S. of the center of S. parapet wall of approach to bridge on Randolph street over the Illinois Central R. R. tracks. Same as Chicago Standard bench No. 1. (Note 49, p. 130.)

T. B. M. 486.—Highest point in a square cut on the top of the N. stone foundation wall of the brick freight office of the Illinois Central R. R., situated on the S. side of Water street, in *Chicago, Ill.* The square is at N. edge of stone foundation, 9.75 feet W. from the NE. corner of building, and 2.7 feet above ground. The letters U S are cut on the brick work above the bench.

P. B. M. 99.—*Chicago, Ill.* (See App. 8, Report for 1899, p. 737, and App. 3, Report for 1903, p. 808.) The B. M. is of the type described in note 47, p. 130.



T. B. M. 488.—*Chicago, Ill.*, on the top of the N. stone curb of Michigan street, between Lincoln Park Boulevard (Pine street) and St. Clair street, 1.15 feet W. and 14 feet S. of the SW. corner of George Bullen & Co.'s elevators and 117.55 feet E. of the E. curb line of Lincoln Park Boulevard. The square is 0.2 foot back from face of curb. (Note 42, p. 129.)

P. B. M. 98.—*Chicago, Ill.* (See App. 8, Report for 1899, p. 737.) The B. M. is of the type described in Note 43, p. 129.

City 9.—On the NE. corner of Chicago avenue and Tower place (near water tower) 5.75 feet N. of N. curb line of Chicago avenue and 16.5 feet E. of E. curb line of Tower place, in *Chicago, Ill.* (Note 49, p. 130.)

B. M. VII.—*Chicago, Ill.* (See App. 8, Report for 1899, p. 737.) Same as S. D. P. B. M. 198 (1890-91), described as "at edge of bevel of water table, being highest point in triangle." In 1904 the outer corner of this bench was reported as "found to be broken off, and the elevation given is that of the remaining part of the triangle."

B. M. VI.—*Chicago, Ill.* (See App. 8, Report for 1899, p. 737.) Same as S. D. P. B. M. 205 (of 1890-91) and described as "at S. side of Chicago avenue, W. of N. Clark street, being highest point in square." In 1904 it was said "this square is at the S. edge of the base of iron post of fence, 0.26 foot W. of E. end of stone base and 0.28 foot N. of S. face of stone base."

P. B. M. 96.—*Chicago, Ill.* (See App. 8, Report for 1899, p. 736, and Note 47, p. 130.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN PEKIN AND CHAMPAIGN, ILL., ESTABLISHED BY THE UNITED STATES GEOLOGICAL SURVEY, 1905.

[From information furnished by the United States Geological Survey.]

A.—City.—*Pekin, Tazewell Co., Ill.*, on the E. side of the county office building on the court-house square; the top of a bolt in the stone water table beneath a window of the county clerk's office.

B.—*Pekin, Tazewell Co., Ill.*; a bronze tablet in the water table on E. side of county clerk's office, 2.65 feet N. of B. M. A. (Note 50, p. 130.)

P. B. M. 49.—*Pekin, Tazewell Co., Ill.*; U. S. Army Engineers B. M.; a copper bolt in top of E. abutment of traction line bridge across the Illinois River, 12 feet N. of center of track.

D.—1 mile W. of *Leslie, Tazewell Co., Ill.*, 6 miles E. of *Pekin*, 15 rails E. of milepost marked P15; 15 feet from center of Peoria and Eastern Ry. track; in coping stone of concrete culvert, aluminum tablet. (Note 50, p. 130.)

E.—*Tremont, Tazewell Co., Ill.*, at W. end of concrete platform of station, 25 feet SE. of street crossing, iron post. (Note 51, p. 130.)

F.—0.33 mile W. of *Menert, Tazewell Co., Ill.*, in top of N. end of E. abutment of plate girder bridge over Mud Creek, aluminum tablet. (Note 50, p. 130.)

G.—0.67 mile E. of *Menert, Tazewell Co., Ill.*, on top of and on S. end of W. abutment of a through bridge over Mackinaw River, 6 feet below top of rail, 3.5 feet from center of track, and midway between S. shoe plate and S. floor beam in first panel from W., aluminum tablet. (Note 50, p. 130.)

H.—*Mackinaw, Tazewell Co., Ill.*, 175 feet W. of station, in top of first cap in E. pier of first row of piers to railroad water tank, aluminum tablet. (Note 50, p. 130.)

I.—*Lilly, Tazewell Co., Ill.*, in top of SW. corner of W. end of concrete platform of RR. station, 5 feet N. of center of track, aluminum tablet. (Note 50, p. 130.)

J.—*Woodruff, McLean Co., Ill.*, 900 feet W. of coaling sheds, 30 feet S. of center of track, on right-of-way line in front of house of N. C. Osman, iron post. (Note 51, p. 130.)

K.—*Danvers, McLean Co., Ill.*, in top of SW. corner of W. end of concrete platform of station about 120 feet S. of station, aluminum tablet. (Note 50, p. 130.)

L.—4.5 miles E. of *Danvers, McLean Co., Ill.*, in coping of E. wall of a wagon pass under railroad 6 feet N. of center of track, aluminum tablet. (Note 50, p. 130.)

M.—*Twin Grove, McLean Co., Ill.*, at N. end of station platform, due S. of elevator owned by F. Supple, 10 feet S. of track, iron post. (Note 51, p. 130.)

N.—0.75 mile W. of *Bloomington, McLean Co., Ill.*, Chicago, Alton and Big Four junction, in S. side of W. abutment of a plate girder bridge across a creek used as an open sewer for the city, 6 feet below top of rail and 15 feet from center of track, aluminum tablet. (Note 50, p. 130.)

O.—*Bloomington, McLean Co., Ill.*, in N. pier of the water tank about 350 feet E. of passenger station and on S. side of track, aluminum tablet. (Note 50, p. 130.)

P.—*Bloomington, McLean Co., Ill.*, in SE. corner of court-house, about 2 feet above ground and in face of wall, aluminum tablet. (Note 50, p. 130.)

Q.—2 miles W. of *Gillum, McLean Co., Ill.*, in top of parapet wall of and on S. side of concrete arch 300-88 across a draw on the Big Four R. R.; 20 feet from center of track, aluminum tablet. (Note 50, p. 130.)

R.—*Gillum, McLean Co., Ill.*, 75 feet W. of station, 20 feet from center of track, on S. side and 1.75 feet below rail, iron post. (Note 51, p. 130.)

S.—*Downs, McLean Co., Ill.*, 360 feet E. of station, 15 feet S. of center of track, 10 feet NW. of section car house, iron post. (Note 51, p. 130.)

T.—0.67 mile W. of *Ford Woods, McLean Co., Ill.*, in coping stone on N. side of stone arch 293-94 on R. R., 12 feet from center of track, aluminum tablet. (Note 50, p. 130.)

U.—*Le Roy, McLean Co., Ill.*, 330 feet E. of station, 20 feet S. of center of track, at intersection of right-of-way line and street line, iron post. (Note 51, p. 130.)

V.—*Empire, McLean Co., Ill.*, 130 feet W. of station, 15 feet N. of center of track and 15 feet E. of switch stand at siding, iron post. (Note 51, p. 130.)

W.—1 mile W. of *Farmer City, De Witt Co., Ill.*, in top of and on W. side of abutment of a small I-beam bridge on railroad, 10 feet from center of track, aluminum tablet. (Note 50, p. 130.)

X.—*Farmer City, De Witt Co., Ill.*, 375 feet E. of junction of Big Four and Illinois Central Rys., 18 feet S. of center of track and 65 feet S. of where first street E. of Peoria and Eastern Ry. station crosses tracks, iron post. (Note 51, p. 130.)

Y.—*Harris, De Witt Co., Ill.*, 60 feet W. of station, 16 feet N. of center of tracks, iron post. (Note 51, p. 130.)

Z.—*Mansfield, De Witt Co., Ill.*, 270 feet E. of Wabash and Big Four R. R. crossing, 18 feet S. of the center of Big Four, iron post. (Note 51, p. 130.)

A<sub>1</sub>.—3.5 miles E. of *Mansfield, De Witt Co., Ill.*, in S. end of the W. abutment of plate-girder bridge 270-40 on the Big Four R. R., aluminum tablet. (Note 50, p. 130.)

B<sub>1</sub>.—*Mahomet, Champaign Co., Ill.*, 230 feet W. of station, 15 feet N. from center of track, iron post. (Note 51, p. 130.)

C<sub>1</sub>.—2 miles W. of *Mahomet, Champaign Co., Ill.*, in top of S. side of stone culvert 266-11 on Peoria and Eastern Ry., 10 feet from center of tracks, aluminum tablet. (Note 50, p. 130.)

D<sub>1</sub>.—*Rising, Champaign Co., Ill.*, 75 feet W. of station, 15 feet N. of center of tracks, iron post. (Note 51, p. 130.)

E<sub>1</sub>.—2 miles W. of *Champaign, Champaign Co., Ill.*, in S. side of W. abutment of a small I-beam bridge on Big Four Ry., 15 feet S. of center of track, aluminum tablet. (Note 50, p. 130.)

F<sub>1</sub>=Z<sub>4</sub>.—*Champaign, Champaign Co., Ill.*, 53 feet SE. of SE. corner of Engineering Building at University of Illinois, iron post stamped "Prim. Trav. Sta. No. 1."

G<sub>1</sub>.—*Champaign, Champaign Co., Ill.*, on S. side of E. entrance to Engineering Building, University of Illinois, aluminum tablet. (Note 50, p. 130.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN OLNEY AND CHAMPAIGN, ILL., ESTABLISHED BY THE UNITED STATES GEOLOGICAL SURVEY, 1906.

[From information furnished by the United States Geological Survey.]

C. & G. S. II.—*Olney, Richland Co., Ill.* (See App. 8, Report for 1899, p. 566.)

C. & G. S. B<sub>3</sub>.—*Olney, Richland Co., Ill.* (See App. 8, Report for 1899, p. 566.)

A<sub>3</sub>.—*Olney, Richland Co., Ill.*, in top of W. stone balustrade of steps at S. entrance of Richland Co. court-house; aluminum tablet stamped "483 1906." (Note 50, p. 130.)

B<sub>3</sub>.—2.87 miles N. of *Olney, Richland Co., Ill.*, 45 feet W. of road crossing, 40 feet N. of road, in SE. corner of lot owned by J. M. Fleming; iron post stamped "465 1906." (Note 51, p. 130.)

C<sub>3</sub>.—5.36 miles N. of *Olney, Richland Co., Ill.*, 30 feet E. of tracks, 40 feet SE. of private road crossing, 50 feet SE. of whistle post, 10 feet S. of gate to house; iron post stamped "475 1906." (Note 51, p. 130.)

D<sub>3</sub>.—*Dundas, Richland Co., Ill.*, 439 feet N. of station, 50 feet NE. of road crossing, 30 feet E. of track, in SW. corner of Dundas Rolling Mill; aluminum tablet stamped "480 1906." (Note 50, p. 130.)



E<sub>3</sub>.—1.59 miles N. of *West Liberty, Jasper Co., Ill.*, 160 feet N. of milepost 169-78, 70 feet S. of bridge B 168-93, 590 feet S. of road crossing, 30 feet E. of tracks, E. of right-of-way line; iron post stamped "480 1906." (Note 51, p. 130.)

F<sub>3</sub>.—4.52 miles N. of *West Liberty, Jasper Co., Ill.*, 8 feet W. of milepost 166-81; iron post stamped "506 1906." (Note 51, p. 130.)

G<sub>3</sub>.—1.84 miles N. of *Boos, Jasper Co., Ill.*, 40 feet NE. of milepost 163-84, in fence corner, 25 feet E. of track, 15 feet E. of warning post, 50 feet SE. of road crossing; iron post stamped "524 1906." (Note 51, p. 130.)

H<sub>3</sub>.—*Newton, Jasper Co., Ill.*, 180 feet NW. of station, 70 feet W. of railroad crossing, 20 feet W. of water plug on S. side of road; iron post stamped "512 1906." (Note 51, p. 130.)

I<sub>3</sub>.—3.03 miles N. of *Newton, Jasper Co., Ill.*, 165 feet S. of milepost 157-90, in fence corner, 30 feet E. of track, 10 feet N. of private road crossing; iron post stamped "538 1906." (Note 51, p. 130.)

J<sub>3</sub>.—1.4 miles N. of *Falmouth, Jasper Co., Ill.*, 40 feet E. of track, at edge of fence, 50 feet E. of milepost 154-93, 175 feet W. of oil derrick; iron post stamped "564 1906." (Note 51, p. 130.)

K<sub>3</sub>.—1.05 miles N. of *Rose Hill, Jasper Co., Ill.*, 553 feet N. of milepost 151-96, in fence corner, 35 feet SE. of road crossing; iron post stamped "566 1906." (Note 51, p. 130.)

L<sub>3</sub>.—0.31 mile N. of *Hidalgo, Jasper Co., Ill.*, 30 feet W. of track, 8 feet W. of milepost 148-99; iron post stamped "581 1906." (Note 51, p. 130.)

M<sub>3</sub>.—3.37 miles N. of *Hidalgo, Jasper Co., Ill.*, 245 feet N. of milepost 145-102, 30 feet E. of tracks, 9 feet N. of center of road through field, at edge of right of way; iron post stamped "593 1906." (Note 51, p. 130.)

N<sub>3</sub>.—*Greenup, Cumberland Co., Ill.*, 700 feet NW. of station, 40 feet N. of track, 570 feet SE. of milepost 142-105; iron post stamped "543 1906." (Note 51, p. 130.)

O<sub>3</sub>.—3.18 miles NW. of *Greenup, Cumberland Co., Ill.*, 45 feet NW. of road crossing, 25 feet N. of warning post, 15 feet W. of wagon road; iron post stamped "553 1906." (Note 51, p. 130.)

P<sub>3</sub>.—0.75 mile N. of *Toledo, Cumberland Co., Ill.*, 210 feet N. of milepost 136-111, in fence corner, 35 feet W. of track, 10 feet N. of private road to Glenn Mowel house; iron post stamped "602 1906." (Note 51, p. 130.)

Q<sub>3</sub>.—*Bradbury, Cumberland Co., Ill.*, 630 feet N. of station, 25 feet W. of track, 3 feet W. of milepost 133-114; iron post stamped "607 1906." (Note 51, p. 130.)

R<sub>3</sub>.—2.94 miles N. of *Bradbury*, and 0.53 mile S. of *Janesville, Cumberland Co., Ill.*, 30 feet W. of track, in fence corner, 20 feet S. of road; iron post stamped "676 1906." (Note 51, p. 130.)

S<sub>3</sub>.—2.60 miles NW. of *Janesville, Cumberland Co., Ill.*, 235 feet S. of milepost 127-120, in fence corner, 35 feet E. of track; iron post stamped "735 1906." (Note 51, p. 130.)

T<sub>3</sub>.—*Lerna, Coles Co., Ill.*, SE. corner of station, on E. side, corner of platform, 113 feet NW. of junction; iron post stamped "753 1906." (Note 51, p. 130.)

U<sub>3</sub>.—3.01 miles NE. of *Lerna, Coles Co., Ill.*, 40 feet N. of track, 20 feet E. of road; iron post stamped "708 1906." (Note 51, p. 130.)

V<sub>3</sub>.—5.74 miles NE. of *Lerna, Coles Co., Ill.*, 50 feet N. of track, 25 feet E. of road, 20 feet W. of silver poplar tree; iron post stamped "615 1906." (Note 51, p. 130.)

W<sub>3</sub>.—*Charleston, Coles Co., Ill.*, in SW. corner of Clover Leaf station, 5 feet E. of entrance to baggage room, in stone coping; aluminum tablet stamped "672 1906." (Note 50, p. 130.)

X<sub>3</sub>.—*Charleston, Coles Co., Ill.*, Coles Co. court-house; 15 feet W. of N. entrance, in section of building occupied by post-office, on W. end of top step; aluminum tablet stamped "686 1906." (Note 50, p. 130.)

Y<sub>3</sub>.—3.68 miles N. of *Charleston, Coles Co., Ill.*, 35 feet E. of track, 25 feet N. of county road, in SW. corner of G. W. Wasson lot; iron post stamped "686 1906." (Note 51, p. 130.)

Z<sub>3</sub>.—0.95 mile NE. of *Fairgrange, Coles Co., Ill.*, 45 feet S. of rock, 25 feet S. of warning post, 25 feet E. of county road, 2 feet W. of fence corner; iron post stamped "686 1906." (Note 51, p. 130.)

A<sub>4</sub>.—0.85 mile NE. of *Bushton, Coles Co., Ill.*, 50 feet NE. of road crossing, 30 feet N. of county road, near fence corner; iron post stamped "666 1906." (Note 51, p. 130.)

B<sub>4</sub>.—1.58 miles NE. of *Rardin, Coles Co., Ill.*, 53 feet S. of private road crossing, 10 feet S. of angle in road; iron post stamped "658 1906." (Note 51, p. 130.)

C<sub>4</sub>.—*Oakland, Coles Co., Ill.*, 820 feet S. of junction, 60 feet W. of track, 140 feet NW. of milepost "St. L. 147-Toledo 304," 25 feet S. of wagon road; iron post stamped "652 1906." (Note 51, p. 130.)

D<sub>4</sub>.—2.98 miles N. of *Oakland, Coles Co., Ill.*, 50 feet E. of track, 30 feet E. of milepost "St. L. 150-T. 301," 465 feet N. of small bridge 302, in edge of field; iron post stamped "661 1906." (Note 51, p. 130.)

E<sub>4</sub>.—5.89 miles NE. of *Oakland* and 0.47 mile SW. of *Brocton, Edgar Co., Ill.*, 65 feet N. of road crossing, 35 feet W. of track, in fence corner; iron post stamped "661e1906." (Note 51, p. 130.)

F<sub>4</sub>.—2.36 miles NE. of *Brocton, Edgar Co., Ill.*, at Paynes Siding, 25 feet E. of tracks, 50 feet SE. of switch, 6 feet E. of telephone pole, and 15 feet N. of county road; iron post stamped "678 1906." (Note 51, p. 130.)

G<sub>4</sub>.—5.16 miles NE. of *Brocton* and 0.48 mile NE. of *Hughes, Edgar Co., Ill.*, 40 feet E. of track, 12 feet E. of telegraph pole; iron post stamped "655 1906." (Note 51, p. 130.)

H<sub>4</sub>.—1.47 miles N. of *Hume, Edgar Co., Ill.*, 1 000 feet N. of milepost "Olney 78-Sidell 7," 40 feet E. of track, 90 feet NE. of whistle post; iron post stamped "645 1906." (Note 51, p. 130.)

I<sub>4</sub>.—4.34 miles N. of *Hume, Edgar Co., Ill.*, 330 feet N. of milepost "Olney 81-Sidell 4," 25 feet W. of track and 5 feet N. of private road; iron post stamped "693 1906." (Note 51, p. 130.)

J<sub>4</sub>.—1.99 miles N. of *Hildreth, Edgar Co., Ill.*, at road crossing, 150 feet N. of Archie siding, 30 feet W. of track and 10 feet S. of road; iron post stamped "691 1906." (Note 51, p. 130.)

K<sub>4</sub>.—*Sidell, Vermilion Co., Ill.*, in W. side of high school, NW. corner, in stone water table, 2 feet S. of corner of building; aluminum tablet stamped "684 1906." (Note 50, p. 130.)

L<sub>4</sub>.—3.13 miles NE. of *Sidell, Vermilion Co., Ill.*, 50 feet E. of track, 10 feet N. of private road; iron post stamped "679 1906." (Note 51, p. 130.)

M<sub>4</sub>.—*Jamaica, Vermilion Co., Ill.*, 145 feet NW. of station, 100 feet W. of track, 30 feet N. of road, at SE. corner of Joe Collin's store (owned by Wm. Cohain); iron post stamped "677 1906." (Note 51, p. 130.)

N<sub>4</sub>.—2.22 miles N. of *Jamaica, Vermilion Co., Ill.*, 60 feet W. of track, 70 feet NW. of milepost "C. 134-T. 260," 195 feet NW. of switch; iron post stamped "668 1906." (Note 51, p. 130.)

O<sub>4</sub>.—56 feet NW. of *Fairmount Junction, Vermilion Co., Ill.*, 50 feet W. of Chicago and Eastern Illinois R. R. tracks, 60 feet W. of signal station, 35 feet N. of Wabash tracks, in fence corner; iron post stamped "654 1906." (Note 51, p. 130.)

P<sub>4</sub>.—3.32 miles E. of *Fairmount Junction, Vermilion Co., Ill.*, 40 feet directly N. of milepost "St. L. 178-Tol. 258," 30 feet N. of track; iron post stamped "672 1906." (Note 51, p. 130.)

Q<sub>4</sub>.—*Catlin, Vermilion Co., Ill.*, T. 19 N., R. 12 W., sec. 34, 195 feet N. of track, 30 feet W. of road, at "Champion's Corner;" iron post stamped "658 1906." (Note 51, p. 130.)

R<sub>4</sub>.—2.69 miles W. of *Fairmount, Vermilion Co., Ill.*, 40 feet N. of track, 50 feet N. of milepost "St. Louis 172-Tol. 264;" iron post stamped "655 1906." (Note 51, p. 130.)

S<sub>4</sub>.—5.59 miles W. of *Fairmount, Vermilion Co., Ill.*, 35 feet N. of track, 25 feet E. of road, near fence corner; iron post stamped "664e1906." (Note 51, p. 130.)

T<sub>4</sub>.—*Homer, Champaign Co., Ill.*, 605 feet W. of station, 30 feet N. of track, 25 feet W. of road, at E. side of asphalt pavement; aluminum tablet stamped "674 1906." (Note 50, p. 130.)

U<sub>4</sub>.—3.56 miles W. of *Homer, Champaign Co., Ill.*, 45 feet N. of milepost "St. L. 163-T. 273," 35 feet N. of track, 5 feet N. of telegraph pole, iron post. (Note 51, p. 130.)

V<sub>4</sub>.—*Sidney, Champaign Co., Ill.*, in SW. corner of high school; aluminum tablet stamped "673 1906." (Note 50, p. 130.)

W<sub>4</sub>.—*Deers, Champaign Co., Ill.*, 65 feet W. of track, 25 feet S. of road, 70 feet N. of post-office and store of F. C. Edwards, at NE. corner of barn; iron post stamped "691e1906." (Note 51, p. 130.)

X<sub>4</sub>.—*Mira, Champaign Co., Ill.*, 30 feet W. of track, 30 feet S. of road, 3 feet W. of fence corner; iron post stamped "695 1906." (Note 51, p. 130.)

Y<sub>4</sub>.—*Urbana, Champaign Co., Ill.*, 1e059 feet E. of station, 220 feet N. of Wabash tracks, 45 feet S. of Big Four tracks, in SW. corner of stone culvert under Big Four R. R.; aluminum tablet. (Note 50, p. 130.)

Z<sub>4</sub>=E<sub>1</sub>.—*Champaign, Champaign Co., Ill.* (See p. 209.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN CHILLICOTHE AND PORTSMOUTH, OHIO, ESTABLISHED BY THE UNITED STATES GEOLOGICAL SURVEY, 1906.

[From information furnished by the United States Geological Survey.]

Q.—*Chillicothe, Ohio.* (See App. 8, Report for 1899, p. 564.)

A.—1.20 miles S. of *Renick, Ross Co., Ohio*, on W. side of N. abutment of R. R. bridge, on top of retaining wall; aluminum tablet stamped "617." (Note 50, p. 130.)



B.—0.19 mile S. of station at *Locks, Ross Co., Ohio*, on W. side of N. abutment of R. R. bridge over road, on top of retaining wall; aluminum tablet stamped "610." (Note 50, p. 130.)

C.—1.9 miles S. of *Locks, Ross Co., Ohio*, W. side of track, on top of R. R. culvert; aluminum tablet stamped "589." (Note 50, p. 130.)

D.—0.12 mile S. of *Higby, Ross Co., Ohio*, W. side of N. abutment of R. R. bridge, top of retaining wall; aluminum tablet stamped "589." (Note 50, p. 130.)

E.—385 feet S. of station at *Omega, Pike Co., Ohio*, W. side of N. abutment, top of retaining wall; aluminum tablet stamped "596." (Note 50, p. 130.)

F.—2.71 miles S. of *Omega, Pike Co., Ohio*, E. side of track, top of R. R. culvert; aluminum tablet stamped "571." (Note 50, p. 130.)

G.—0.3 mile S. of *Waverly, Pike Co., Ohio*, E. side of track; N. abutment of R. R. bridge, top of retaining wall; aluminum tablet stamped "570." (Note 50, p. 130.)

H.—2.73 miles S. of *Glen Jean, Pike Co., Ohio*, W. of track; top of N. abutment, E. side of highway bridge; aluminum tablet stamped "562." (Note 50, p. 130.)

I.—*Piketon, Pike Co., Ohio*, NW. corner of United Brethren Church, on foundation; aluminum tablet stamped "578." (Note 50, p. 130.)

J.—0.21 mile N. of *Sargents, Pike Co., Ohio*, E. of track at SW. corner of Sargent's farm primary traverse station, No. 17; iron post stamped "580." (Note 51, p. 130.)

K.—1.5 miles N. of *Wakefield, Pike Co., Ohio*, w.s. of N. abutment of R. R. bridge over creek; aluminum tablet stamped "551." (Note 50, p. 130.)

L.—0.08 mile N. of *Clifford, Scioto Co., Ohio*, E. of track, SW. corner of stone culvert over road; aluminum tablet stamped "556." (Note 50, p. 130.)

M.—0.25 mile N. of *Lucasville, Scioto Co., Ohio*, NW. corner of R. R. bridge over highway; aluminum tablet stamped "554." (Note 50, p. 130.)

N.—1 mile N. of *Davis, Scioto Co., Ohio*, SE. corner of S. abutment of R. R. bridge over highway; aluminum tablet stamped "559." (Note 50, p. 130.)

O.—1.08 miles S. of *Davis, Scioto Co., Ohio*, SW. corner of S. abutment of R. R. bridge over highway; aluminum tablet stamped "558." (Note 50, p. 130.)

P.—0.6 mile N. of *Vera, Scioto Co., Ohio*, SW. corner of stone arch over creek; aluminum tablet stamped "534." (Note 50, p. 130.)

U. S. E.—*Portsmouth, Scioto Co., Ohio*; square cut on the first course of foundation above ground, on SE. corner of post-office at NE. corner of Gallia and Chillicothe streets, 1 foot from E. corner and 1 foot above ground; marked U. S. B. M.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN CHILLICOTHE AND COLUMBUS, OHIO, ESTABLISHED BY THE UNITED STATES GEOLOGICAL SURVEY, 1906.

[From information furnished by the United States Geological Survey.]

Q.—*Chillicothe, Ohio*. (See App. 8, Report for 1899, p. 564.)

A.—*Chillicothe, Ross Co., Ohio*, in wall at side of entrance to court-house; bronze tablet stamped "643.67." (Note 50, p. 130.)

C.—0.5 mile N. of *Chillicothe, Ross Co., Ohio*, in top of W. side of S. abutment of Norfolk and Western Ry. bridge, 12 feet from center of track, and 5.75 feet below top of rail; aluminum tablet, not stamped. (Note 50, p. 130.)

D.—*Delano, Ross Co., Ohio*, 90 feet SW. of station, in SE. corner of crossroads, in bridge seat; bronze tablet, not stamped. (Note 50, p. 130.)

E.—*Delano, Ross Co., Ohio*, near station, in top of concrete bridge over small stream, on Scioto Valley Traction Line, at SE. corner of crossroads; aluminum tablet, not stamped. (Note 50, p. 130.)

F.—1 000 feet N. of *Kingston, Ross Co., Ohio*, in SW. corner of top step of arch culvert; bronze tablet stamped "774 Columbus 1899." (Note 50, p. 130.)

G.—In *Pickaway Co.*, 0.75 mile N. of *Kingston, Ross Co., Ohio*, in SW. corner of top of stone arch over branch on Norfolk and Western Ry.; aluminum tablet, not stamped. (Note 50, p. 130.)

H.—0.75 mile S. of *Haysville, Pickaway Co., Ohio*, W. end of top of coping of arch culvert over small draw on Norfolk and Western Ry.; aluminum tablet, not stamped. (Note 50, p. 130.)

I.—4 miles S. of *Circleville, Pickaway Co., Ohio*, on N. end of W. abutment of covered bridge over Sippo Creek; bronze tablet stamped "707 Columbus 1899." (Note 50, p. 130.)

J.—At *Gregg* station, 1.62 miles S. of *Circleville*, *Pickaway Co., Ohio*, top of E. side of S. end of culvert on Norfolk and Western Ry., at the S. end of the siding; an aluminum tablet, not stamped. (Note 50, p. 130.)

K.—*Circleville*, *Pickaway Co., Ohio*, at the NE. corner of the E. wing of the court-house; iron post, not stamped. (Note 51, p. 130.)

L.—4 miles N. of *Circleville*, *Pickaway Co., Ohio*, 60 feet S. of viaduct over Scioto Valley Traction Co. line and Norfolk and Western Ry.; about 500 feet N. of the elevator at siding, 12 feet W. of the center of track of Norfolk and Western Ry.; iron post, not stamped. (Note 51, p. 130.)

M.—0.25 mile S. of *Cromley*, *Pickaway Co., Ohio*, in E. side of small stone culvert on Norfolk and Western Ry., in cover stone; aluminum tablet, not stamped. (Note 50, p. 130.)

N.—90 feet S. of station at *Duvals*, *Pickaway Co., Ohio*, on W. side of small stone culvert on Norfolk and Western Ry.; in center of top of coping stone, about 30 feet SW. of road crossing; aluminum tablet, not stamped. (Note 50, p. 130.)

O.—0.75 mile N. of *Duvals*, *Pickaway Co., Ohio*, on E. side of small stone culvert on Norfolk and Western Ry., at milepost "C. 18;" aluminum tablet, not stamped. (Note 50, p. 130.)

P.—*Lockbourne*, *Franklin Co., Ohio*, in top of S. pier, W. end of Norfolk and Western Ry. bridge over Ohio Canal; aluminum tablet stamped "716 Columbus 1899." (Note 50, p. 130.)

Q.—0.33 mile S. of *Rees*, *Franklin Co., Ohio*, in W. end of bridge seat of N. pier of Norfolk and Western Ry. bridge over Walnut River, 10 feet from center of track, 4 feet below rail; aluminum tablet not stamped. (Note 50, p. 130.)

R.—1 mile S. of *Valley Crossing*, *Franklin Co., Ohio*, in E. end of bridge seat of N. abutment of plate girder viaduct on Norfolk and Western Ry. over Scioto Valley Traction Co. line; aluminum tablet, not stamped. (Note 50, p. 130.)

S=City.—*Columbus*, *Franklin Co., Ohio*, at NE. corner of state capitol, on water table; city bench mark.

T.—*Columbus*, *Franklin Co., Ohio*, in NW. corner of court-house, below corner stone; aluminum tablet stamped "778 Columbus 1899." (Note 50, p. 130.)

DESCRIPTIONS OF PERMANENT BENCH MARKS FROM VALLEY CROSSING TO UHRICHSVILLE AND STATION  
15 P. O., OHIO, ESTABLISHED BY THE UNITED STATES GEOLOGICAL SURVEY, 1906.

[From information furnished by the United States Geological Survey.]

R.—1 mile S. of *Valley Crossing*, *Franklin Co., Ohio*. (See above.)

A.—0.82 mile NE. of *Bannon*, *Franklin Co., Ohio*, SE. corner of abutment of R. R. bridge; aluminum tablet stamped "753." (Note 50, p. 130.)

T. B. M. 6.—0.89 mile SE. of *Truro*, *Franklin Co., Ohio*, SW. corner of abutment, W. side of R. R. bridge; a chiseled square.

T. B. M. 9.—1.33 miles SE. of *Brice*, *Franklin Co., Ohio*, SW. corner of W. abutment of R. R. bridge; a chiseled square.

C.—1.12 miles SE. of *Harley*, *Fairfield Co., Ohio*, SW. corner of W. abutment of R. R. bridge; aluminum tablet stamped "865." (Note 50, p. 130.)

D.—*Basil*, *Fairfield Co., Ohio*, at station, in top of stone platform; aluminum tablet stamped "867." (Note 50, p. 130.)

E.—*Thurston*, *Fairfield Co., Ohio*, NW. corner of front steps of schoolhouse; aluminum tablet stamped "886." (Note 50, p. 130.)

F.—2.1 miles E. of *Thurston*, *Fairfield Co., Ohio*, NE. corner of abutment of highway bridge over creek, 230 feet S. of track; aluminum tablet stamped "935." (Note 50, p. 130.)

G.—0.79 mile E. of *New Salem*, *Fairfield Co., Ohio*, 53 feet N. of track; SW. corner of abutment of highway bridge; aluminum tablet stamped "952." (Note 50, p. 130.)

H.—*Thornport*, *Perry Co., Ohio*, SW. corner of schoolhouse, in stone step; aluminum tablet stamped "900." (Note 50, p. 130.)

I.—2.27 miles E. of *Thornport*, *Perry Co., Ohio*, S. of track, NW. corner of retaining wall of highway bridge; aluminum tablet stamped "880." (Note 50, p. 130.)

J.—*Glenford*, *Perry Co., Ohio*, SE. side of schoolhouse, on stone step; aluminum tablet stamped "849." (Note 50, p. 130.)



844 Glenford.—*Glenford, Perry Co., Ohio*, 30 feet W. of R. R., SE. corner of abutment of small bridge; aluminum tablet stamped "844." (Note 50, p. 130.)

K.—1.20 miles E. of *Glassrock, Perry Co., Ohio*, SE. corner of stone abutment of bridge; aluminum tablet stamped "826." (Note 50, p. 130.)

L.—*Mount Perry, Perry Co., Ohio*, 254 feet W. of station, NE. corner of covered bridge, on abutment; aluminum tablet stamped "801." (Note 50, p. 130.)

M.—2.31 miles E. of *Mount Perry, Perry Co., Ohio*, 30 feet S. of R. R. on NW. corner of abutment of highway bridge; aluminum tablet stamped "797." (Note 50, p. 130.)

N.—0.1 mile W. of *Fultonham, Muskingum Co., Ohio*, NW. corner of foundation of water trough; aluminum tablet stamped "763." (Note 50, p. 130.)

O.—0.76 mile E. of *White Cottage, Muskingum Co., Ohio*, SE. corner of small bridge, on abutment; aluminum tablet stamped "717." (Note 50, p. 130.)

P.—0.36 mile SW. of *South Zanesville, Muskingum Co., Ohio*, on stone E. of R. R.; aluminum tablet stamped "709." (Note 50, p. 130.)

Q.—*Zanesville, Muskingum Co., Ohio*, S. side of court-house, in top step, 1 foot from building; aluminum tablet stamped "725." (Note 50, p. 130.)

725 Zanesville.—*Zanesville, Muskingum Co., Ohio*, S. side of court-house, 12 feet E. of doorstep, at SW. corner of pillar in top step of portico; aluminum tablet stamped "725." (Note 50, p. 130.)

U. S. E. 2.—*Zanesville, Muskingum Co., Ohio*, on upper wall of lock 10; U. S. Engineer B. M., marked "U. S. B. M. 699.92."

U. S. E. 1.—*Zanesville, Muskingum Co., Ohio*, on upper river wall on S. abutment of Lock No. 10; U. S. Engineer B. M., marked "U. S. B. M. 699.73."

R.—3.94 miles NE. of *Zanesville, Muskingum Co., Ohio*, E. side of concrete culvert, under R. R.; aluminum tablet stamped "778." (Note 50, p. 130.)

S.—*Sonora, Muskingum Co., Ohio*, 40 feet SE. of Baltimore and Ohio station; iron post stamped "808." (Note 51, p. 130.)

T.—1.99 miles NE. of *Sonora, Muskingum Co., Ohio*, on S. side of R. R. on top of concrete culvert, under R. R.; aluminum tablet stamped "778." (Note 50, p. 130.)

U.—4.13 miles NE. of *Sonora, Muskingum Co., Ohio*, on SW. corner of stone foundation of water tank; aluminum tablet stamped "770." (Note 50, p. 130.)

V.—0.02 mile W. of station at *Sundale, Muskingum Co., Ohio*, 30 feet N. of R. R.; iron post stamped "886." (Note 51, p. 130.)

W.—*New Concord, Muskingum Co., Ohio*, 60 feet N. of station; iron post stamped, "843." (Note 51, p. 130.)

X.—In *Guernsey Co.*, 2.70 miles NE. of *New Concord, Muskingum Co., Ohio*, 50 feet S. of R. R., in fence corner; iron post stamped "815." (Note 51, p. 130.)

Y.—*Cassells, Guernsey Co., Ohio*, 60 feet N. of R. R., NE. corner of stone abutment of highway bridge; aluminum tablet stamped "804." (Note 50, p. 130.)

Z.—1.83 miles NE. of *Cassells, Guernsey Co., Ohio*, S. side of R. R. on top of concrete culvert; aluminum tablet stamped "804." (Note 50, p. 130.)

A'.—*Cambridge, Guernsey Co., Ohio*, S. side of court-house, on stone step; aluminum tablet stamped "885." (Note 50, p. 130.)

B'.—2.83 miles N. of *Cambridge, Guernsey Co., Ohio*, NW. corner of stone abutment of R. R. bridge; aluminum tablet stamped "804." (Note 50, p. 130.)

C'.—6.33 miles N. of *Cambridge, Guernsey Co., Ohio*, 20 feet W. of R. R., 10 feet S. of highway; iron post stamped "783." (Note 51, p. 130.)

D'.—9.03 miles N. of *Cambridge, Guernsey Co., Ohio*, 15 feet W. of R. R.; iron post stamped "787." (Note 51, p. 130.)

E'.—*Kimbolton, Guernsey Co., Ohio*, at NW. corner of SW. Luscock barn, on stone; aluminum tablet stamped "787." (Note 50, p. 130.)

G'.—0.02 mile S. of *Birds Run, Guernsey Co., Ohio*, 30 feet W. of R. R., SE. corner of stone abutment of highway bridge; aluminum tablet stamped "770." (Note 50, p. 130.)

H'.—*Guernsey, Guernsey Co., Ohio*, 30 feet W. of R. R., in front of station; iron post stamped "780." (Note 51, p. 130.)

I'.—3.26 miles N. of *Guernsey, Guernsey Co., Ohio*, 25 feet W. of R. R., 10 feet from highway; iron post stamped "828." (Note 51, p. 130.)

J'.—*Newcomerstown, Tuscarawas Co., Ohio*, NW. corner of front steps of Fountain Hotel; aluminum tablet stamped "805." (Note 50, p. 130.)

K'.—3.69 miles E. of *Newcomerstown, Tuscarawas Co., Ohio*, 40 feet N. of R. R.; iron post stamped "804." (Note 51, p. 130.)

L'.—0.12 mile W. of *Port Washington, Tuscarawas Co., Ohio*, at road crossing, 20 feet W. of highway and 30 feet S. of R. R.; iron post stamped "817." (Note 51, p. 130.)

M'.—*Seventeen, Tuscarawas Co., Ohio*, 414 feet N. of R. R. at Lock No. 17, SE. corner of stone abutment; aluminum tablet stamped "834." (Note 50, p. 130.)

N'.—*Gnadenhuttlen, Tuscarawas Co., Ohio*, 35 feet N. of R. R. in front of station; iron post stamped "834." (Note 51, p. 130.)

O'.—0.24 mile E. of *Tuscarawas, Tuscarawas Co., Ohio*, NW. corner of abutment of bridge over highway; aluminum tablet stamped "844." (Note 50, p. 130.)

B. & O. 48.—*Uhrichsville, Tuscarawas Co., Ohio*. (See p. 236.)

P'.—0.52 mile E. of *Uhrichsville, Tuscarawas Co., Ohio*, 3 feet S. of R. R. track, in stone foundation of overhead highway bridge; aluminum tablet stamped "861." (Note 50, p. 130.)

P. R. R.—0.46 mile E. of *Dennison, Tuscarawas Co., Ohio*, on stone abutment of bridge.

868 Steubenville.—*Station 15 P. O., Harrison Co., Ohio*, Pittsburg, Cincinnati, Chicago and St. Louis R. R. (Pennsylvania R. R.) stone bridge No. 86; NE. wing wall, on NE. coping; aluminum tablet stamped "868 Steubenville." (Note 17, p. 127.)

#### DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN WASHINGTON, D. C., AND BALTIMORE, MD., 1903.

[These descriptions were furnished by the Chief Engineer of the Baltimore and Ohio Railroad. Where necessary, the names of town, county, and State have been added for the purpose of indexing, and in many cases certain information has been condensed into the form of notes. In accordance with railroad usage, the directions in the descriptions as furnished were given according to the general direction of the railroad line. These have been changed to true directions as far as could be determined. In other respects the wording of the original descriptions has not been changed.]

B. & O. 1.—*Washington, D. C.*, cross on top of vertical rail section set opposite milepost W. 2—Baltimore 38.

B. & O. 2.—*Washington, D. C.*, copper bolt set in NW. end of NE. abutment of culvert, SW. end of Trinidad yards, about 50 feet SW. of telegraph pole 37/13.

B. & O. 3.—0.2 mile SW. of *Winthrop Heights, D. C.*, copper bolt set in NE. end of SE. coping of arch culvert opposite telegraph pole 36/16.

B. & O. 4.—150 feet SW. of station at *Langdon, D. C.*, copper bolt set in SW. end of NW. coping of culvert.

B. & O. 5.—*Rives, Prince George Co., Md.*, copper bolt set in NE. end of coping of foundation for overhead bridge; on the SE. side of tracks, and 100 feet SW. of milepost 35.

B. & O. 6.—About  $\frac{1}{2}$  mile SW. of *Hyattsville, Prince George Co., Md.*, copper bolt set in W. corner of SE. cap stone, NE. abutment, bridge 34-A.

B. & O. 7.—*Alexandria Junction, Prince George Co., Md.*, opposite milepost 33. (Note 21, p. 127.)

B. & O. 7A.—About 600 feet N. of *Riverdale, Prince George Co., Md.*, copper bolt set in W. end of N. wall of culvert.

B. & O. 8.—Near *Riverdale, Prince George Co., Md.*, copper bolt set in N. end of E. coping of small culvert, about 400 feet N. of milepost 32.

B. & O. 9.—About  $\frac{1}{2}$  mile N. of *College Park, Prince George Co., Md.*, copper bolt set in W. end of N. abutment of bridge.

B. & O. 9A.—About  $\frac{1}{4}$  mile S. of *Berwyn, Prince George Co., Md.*, copper bolt set in W. end of bridge seat, N. abutment of small bridge at telegraph pole 30/17.

B. & O. 10.— $\frac{1}{4}$  mile N. of *Branchville, Prince George Co., Md.*, copper bolt set in S. end of E. coping of box culvert at telegraph pole 29/24.

B. & O. 11.—About  $\frac{3}{4}$  mile NE. of *Branchville, Prince George Co., Md.*, opposite milepost 29. (Note 21, p. 127.)

B. & O. 12.— $\frac{1}{2}$  mile N. of *Sunnyside, Prince George Co., Md.*, copper bolt set in middle of E. coping of culvert at telegraph pole 27/24.



B. & O. 13.— $\frac{5}{8}$  mile N. of *Beltsville*, *Prince George Co., Md.*, copper bolt set in W. end of bridge seat, N. abutment of bridge at telegraph pole 26/20.

B. & O. 14.—Near *Ammendale*, *Prince George Co., Md.*, opposite milepost 26. (Note 21, p. 127.)

B. & O. 14A.—Near *Muirkirk*, *Prince George Co., Md.*, copper bolt set in middle of S. coping of culvert opposite telegraph pole 25/7.

B. & O. 15.—0.1 mile SW. of *Muirkirk*, *Prince George Co., Md.*, copper bolt set in SW. end of foundation of SE. abutment to overhead bridge at *Muirkirk* furnace.

B. & O. 16.—About 0.4 mile SW. of *Contee*, *Prince George Co., Md.*, opposite milepost 24. (Note 21, p. 127.)

B. & O. 17.—About  $\frac{1}{3}$  mile NE. of *Contee*, *Prince George Co., Md.*, copper bolt set in NW. end of bridge seat, NE. abutment of bridge at telegraph pole 23/11.

B. & O. 17A.—0.2 mile NE. of *Oak Crest*, *Prince George Co., Md.*, copper bolt set in center of SE. coping of culvert at telegraph pole 22/24.

B. & O. 18.— $\frac{1}{2}$  mile SW. of *Laurel*, *Prince George Co., Md.*, copper bolt set in SE. end of NE. abutment of bridge 7, at telegraph pole 21/30.

B. & O. 19.—In *Anne Arundel Co.*, near *Laurel*, *Prince George Co., Md.*, copper bolt set in SE. end of bridge seat NE. abutment of bridge 6.

B. & O. 20.—Near *Savage Station*, about on the line between *Anne Arundel* and *Howard counties*, *Md.*, opposite milepost 20. (Note 21, p. 127.)

B. & O. 21.—0.1 mile E. of *Savage Station*, *Anne Arundel Co., Md.*, copper bolt set in S. end of E. abutment of bridge 5, telegraph pole 19/8.

B. & O. 22.— $\frac{1}{2}$  mile NE. of *Annapolis Junction*, *Howard Co., Md.*; copper bolt set in NE. end of foundation for NW. abutment for overhead bridge.

B. & O. 23.—About  $\frac{1}{2}$  mile S. of *Bridewell*, *Anne Arundel Co., Md.*, opposite milepost 17. (Note 21, p. 127.)

B. & O. 24.—0.1 mile E. of *Bridewell*, *Anne Arundel Co. Md.*, copper bolt set in W. end of N. coping of arch in front of State building.

B. & O. 25.—Near *Jessups*, *Howard Co., Md.*, vertical rail section set opposite milepost 15.

B. & O. 26.—Near *Montevideo*, *Howard Co., Md.*, opposite milepost 14. (Note 21, p. 127.)

B. & O. 27.—0.2 mile E. of *Dorsey*, *Howard Co., Md.*, copper bolt set in SW. end of NW. coping of culvert 400 feet SW. of milepost 13.

B. & O. 28.— $\frac{1}{3}$  mile E. of *Harwood*, *Howard Co., Md.*, copper bolt set in middle of S. coping of arch culvert about 450 feet E. of milepost 12.

B. & O. 29.— $\frac{1}{2}$  mile E. of *Hanover*, *Howard Co., Md.*, opposite milepost 11. (Note 21, p. 127.)

B. & O. 30.— $\frac{1}{4}$  mile SE. of *Elk Ridge*, *Howard Co., Md.*, copper bolt set in coping of retaining wall E. side of tracks, 30 feet S. of milepost 10.

B. & O. 31.—*Relay*, *Baltimore Co., Md.*, copper bolt set in center of top of stone post E. end of viaduct bridge on south side of tracks.

B. & O. 31A.—0.1 mile E. of *St. Denis*, *Baltimore Co., Md.*, copper bolt set in middle of S. coping of arch culvert.

B. & O. 32.—About  $\frac{3}{4}$  mile E. of *St. Denis*, *Baltimore Co., Md.*, copper bolt set in foundation of N. abutment of overhead public road bridge. It is on first course of stone and E. end of abutment of bridge.

B. & O. 33.—0.1 mile E. of *Halethorpe*, *Baltimore Co., Md.*, copper bolt set in S. end of W. wall of culvert, near telegraph pole 5/20.

P. R. R. 101.—780 feet S. of *Winans*, *Baltimore Co., Md.*, shelf cut in E. end of Baltimore and Ohio R. R. bridge.

B. & O. 34.—*Lansdowne*, *Baltimore Co., Md.*, cross on top of vertical rail section opposite milepost 4.

B. & O. 35.— $\frac{1}{2}$  mile N. of *Lansdowne*, *Baltimore Co., Md.*, copper bolt set in large coping stone of retaining wall, S. end of W. abutment of overhead bridge.

B. & O. 36.—*West Baltimore*, *Baltimore Co., Md.* (Note 21, p. 127.)

B. & O. 37.—*Mount Winans*, *Baltimore Co., Md.* (See p. 217.)

B. & O. 38.—Near *Mount Winans*, *Baltimore Co., Md.* (See p. 217.)

B. & O. 39.—*Baltimore, Md.*, corner of West Ostend and Sharp streets, copper bolt in the middle of the S. coping on the eastern one of two small culverts on the Locust Point line of the Baltimore and Ohio R. R., about 500 feet E. of the R. R. junction.

B. & O. 40.—*Baltimore, Md.* (See below.)

City 1288.—*Baltimore, Md.*, at the corner of Howard street and Fifth avenue, copper bolt in step at entrance to Fifth Regiment Armory.

B. & O. 41.—At the Mount Royal Station, *Baltimore, Md.*, copper bolt set on side of tracks in coping of retaining wall between third and fourth bents of train shed from Mount Royal entrance to tunnel.

B. & O. 42.— $\frac{1}{2}$  mile N. of Mount Royal Station, *Baltimore, Md.*, copper bolt in the end of the N. abutment of bridge over Pennsylvania tracks.

B. & O. 43.—*Baltimore, Md.*, copper bolt set in S. end of W. abutment of small bridge about 400 feet W. of milepost 3.

City 1240.—*Baltimore, Md.*, copper bolt set in S. bridge seat of E. abutment of Belt Line R. R. bridge over Jenkins Lane.

#### DESCRIPTIONS OF PERMANENT BENCH MARKS IN BALTIMORE, MD., 1905.

Tidal 1.—*Baltimore, Md.*, on the N. side of Fort McHenry; a cross cut on the top face of the sea wall, at the first angle in the wall, E. of the quartermaster's wharf. Same as Harbor Board's "B. M. Seawall Ft. McHenry."

Tidal 2.—*Baltimore, Md.*, on the N. side of Fort McHenry, a cross cut within a circle, on the top face of the sea wall, in the center of the fourth capstone W. from the quartermaster's wharf.

Tidal 3.—*Baltimore, Md.*, at the SE. corner of the storehouse, S. of the quartermaster's wharf; the highest point of the knob of an old cannon set in the ground with muzzle downward.

Tidal 4.—*Baltimore, Md.*, at Fort McHenry at the intersection of the roads leading to the fort entrance and the quartermaster's wharf; on the corner diagonally opposite the colonel's office; the highest point of the knob of an old cannon set in the ground with muzzle downward.

City 1181.—*Baltimore, Md.*, at the corner of Fort avenue and Towson street, at the Fort Avenue entrance to the Church of Our Lady of Good Counsel; the bottom of a square hole in the W. end of the top step.

L.—*Baltimore, Md.*, at the corner of Randall and Covington streets, at the NE. entrance to Riverside Park; in the top of a large granite gate post on the S. side of the path; the bottom of a square hole close to the corner of the post.

M.—*Baltimore, Md.*, at the corner of Sharp and Ostend streets, on the N. end of the W. one of the two small R. R. culverts; the bottom of a square hole in the top face of the first coping stone (granite) W. of the culvert.

B. & O. 40.—*Baltimore, Md.*, a copper bolt set in the extreme S. end of the eastern offset to the W. retaining wall for the elevated tracks at the approach to Camden Station, about 300 feet from the S. end of the Belt Line cut.

B. & O. 38.—About  $\frac{1}{3}$  of a mile NE. of *Mount Winans, Baltimore Co., Md.*, on the W. abutment of bridge 3A; a copper bolt set vertically in the S. capstone.

B. & O. 37.—*Mount Winans, Baltimore Co., Md.*, near the NE. end of the station platform. (Note 21, p. 127.)

#### DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN RELAY AND WASHINGTON JUNCTION, MD., 1903.

[These descriptions were furnished by the Chief Engineer of the Baltimore and Ohio Railroad. Where necessary, the names of town, county, and State have been added for the purpose of indexing, and in many cases certain information has been condensed into the form of notes. In accordance with railroad usage, the directions in the descriptions as furnished were given according to the general direction of the railroad line. These have been changed to true directions as far as could be determined. In other respects the wording of the original descriptions has not been changed.]

B. & O. 31.—*Relay, Md.* (See p. 216.)

B. & O. 100.— $\frac{1}{2}$  mile E. of *Relay, Baltimore Co., Md.*, copper bolt set in NW. corner of culvert.

B. & O. 101.—*Vineyard, Baltimore Co., Md.*, copper bolt set in E. end of S. coping of bridge 10.

B. & O. 102.—Near *Vineyard, Baltimore Co., Md.*, copper bolt set in E. end of W. offset of S. coping of bridge.

B. & O. 103.— $\frac{1}{4}$  mile NW. of *Orange Grove, Baltimore Co., Md.*, copper bolt set in native rock on N. side of tracks, 250 feet NW. of mile post 12, and near a large white poplar tree.

B. & O. 104.—*Ilchester, Howard Co., Md.*, copper bolt set between tracks in mud wall of W. abutment of bridge out of Ilchester tunnel.



B. & O. 105.—*Gray, Howard Co., Md.*, opposite milepost 14, on old line. (Note 21, p. 127.)

B. & O. 106.—About 600 feet W. of *Ellicott City, Howard Co., Md.*, copper bolt set in native rock on S. side of tracks.

B. & O. 106A.—About 400 feet E. of *Oella, Howard Co., Md.*, copper bolt set in center of N. coping of arch culvert.

B. & O. 107.— $\frac{3}{4}$  of a mile W. of *Oella, Howard Co., Md.*, copper bolt set in native rock on W. side of tracks, 40 feet S. of telegraph pole 16/10.

B. & O. 108.—About  $1\frac{1}{2}$  miles S. of *Hollofield, Howard Co., Md.*, copper bolt set in SE. corner of W. wing wall of Union dam.

U. S. G. S.— $2\frac{1}{2}$  miles N. of *Ellicott City, Howard Co., Md.*, and about  $1\frac{1}{2}$  miles S. of *Hollofield*; bronze tablet (marked 187) set in SE. corner of W. wing wall of Union dam. (Note 17, p. 127.)

B. & O. 109.—Near *Hollofield, Howard Co., Md.*, copper bolt set in E. coping of culvert, 125 feet N. of milepost 18, 6 feet from S. end of coping.

B. & O. 110.—*Hollofield, Howard Co., Md.*, copper bolt set in N. end of E. coping of culvert near target at tower.

B. & O. 111.—About  $\frac{3}{4}$  mile NW. of *Hollofield, Howard Co., Md.*, copper bolt set in large rock, S. side of tracks telegraph pole 19/34.

B. & O. 112.—In *Baltimore Co.*, about 0.2 mile west of *Alborton, Howard Co., Md.*, copper bolt set between tracks, W. abutment of bridge 17.

B. & O. 113.—Near *Alborton, Howard Co., Md.*, copper bolt set in center of SE. coping of arch culvert, at *Dorseys Run*.

B. & O. 114.—Near *Alborton, Howard Co., Md.*,  $\frac{3}{8}$  mile W. of *Dorseys Run*, copper bolt set in center of N. coping of arch culvert 21.

B. & O. 115.—Near *Davis, Howard Co., Md.*, 1 mile W. of *Dorseys Run*, copper bolt set in center of N. coping of arch culvert 22.

B. & O. 116.—*Davis, Howard Co., Md.*, copper bolt set in center of W. coping of arch culvert 23.

B. & O. 117.—About 500 feet E. of *Woodstock, Howard Co., Md.*, copper bolt set in S. end of small culvert.

B. & O. 118.—Near *Woodstock, Howard Co., Md.*, at milepost 26. (Note 21, p. 127.)

B. & O. 119.—Near *Marriottsville*, about 2 miles NW. of *Woodstock, Howard Co., Md.*, copper bolt set in retaining wall on E. side of tracks, 20 feet W. of telegraph pole 26/28.

B. & O. 120.—*Marriottsville, Howard Co., Md.*, copper bolt set in N. end of W. mud wall of bridge 25.

B. & O. 121.—Near *Henryton, Carroll Co., Md.*, 300 feet E. of *Henryton tunnel*, copper bolt set between tracks, bridge seat of W. abutment of bridge 26.

B. & O. 122.—Near *Gorsuch, Carroll Co., Md.*, copper bolt set in N. end of small box culvert, 100 feet W. of milepost 29.

B. & O. 123.—*Gorsuch, Carroll Co., Md.*, copper bolt set in N. end of W. abutment of culvert 27.

B. & O. 124.—Near *Sykesville, Carroll Co., Md.*, opposite milepost 31. (Note 21, p. 127.)

B. & O. 125.—100 feet W. of station at *Sykesville, Carroll Co., Md.*, copper bolt set in center of S. coping of culvert.

B. & O. 126.—Near *Gaither, Carroll Co., Md.*, copper bolt set between tracks in bridge seat of of bridge at W. end of *Sykesville tunnel*.

B. & O. 127.— $\frac{1}{4}$  mile SW. of *Gaither, Carroll Co., Md.*, copper bolt set in N. end of W. abutment of bridge 28.

B. & O. 128.—Near *Hoods Mill, Carroll Co., Md.*, copper bolt set in S. end of small culvert, 100 feet W. of milepost 34.

B. & O. 129.—At dam at *Hoods Mill, Carroll Co., Md.*, copper bolt set in large rock on S. side of tracks.

B. & O. 130.—Near *Morgan, Carroll Co., Md.*, opposite milepost 36. (Note 21, p. 127.)

B. & O. 131.—Near *Woodbine, Carroll Co., Md.*, opposite milepost 37. (Note 21, p. 127.)

B. & O. 131A.—About 300 feet W. of *Woodbine, Carroll Co., Md.*, copper bolt set in NE. corner small culvert.

B. & O. 132.—Near *Woodbine, Carroll Co., Md.*, opposite milepost 38. (Note 21, p. 127.)

B. & O. 133.—Near *Watersville, Carroll Co., Md.*, copper bolt set between tracks in bridge seat of E. abutment of bridge at E. end of *Mount Airy cut-off*.

B. & O. 134.—About  $\frac{1}{4}$  mile W. of *Watersville, Carroll Co., Md.*, copper bolt set in N. coping of culvert on Mount Airy cut-off.

B. & O. 135.—About 1 mile W. of *Watersville, Carroll Co., Md.*, copper bolt set in W. end of S. coping of culvert at E. end of cut on Mount Airy cut-off.

B. & O. 136.—Near *Watersville, Carroll Co., Md.*, at E. end of Mount Airy tunnel. (Note 21, p. 127.)

B. & O. 136A.—In *Frederick Co.*, near *Watersville, Carroll Co., Md.*, at W. end of Mount Airy tunnel. (Note 21, p. 127.)

B. & O. 137.—Near *Plane No. 4, Frederick Co., Md.*,  $\frac{1}{4}$  mile E. of *Mount Airy Junction*, copper bolt on E. end of S. coping of culvert,  $\frac{1}{2}$  mile W. of Mount Airy tunnel.

B. & O. 138.—250 feet E. of *Plane No. 4, Frederick Co., Md.*, copper bolt set in E. end of N. coping of arch.

B. & O. 139.— $\frac{1}{3}$  mile E. of *Bartholows, Frederick Co., Md.*, copper bolt set in E. end of small culvert on S. side of tracks, 500 feet W. of milepost 47.

B. & O. 140.—300 feet W. of *Bartholows, Frederick Co., Md.*, copper bolt set in W. end of N. coping of arch road crossing.

B. & O. 141.—Near *Monrovia, Frederick Co., Md.*, copper bolt set in N. end of small culvert, about 400 feet W. of crossing of old and new tracks.

B. & O. 142.—Near *Monrovia, Frederick Co., Md.*, opposite milepost 49. (Note 21, p. 127.)

B. & O. 143.—300 feet W. of *Monrovia, Frederick Co., Md.*, copper bolt set between tracks, E. bridge seat.

B. & O. 144.—Near *Monrovia, Frederick Co., Md.*, copper bolt in N. end of E. bridge seat of bridge, 40 feet E. of milepost 51.

B. & O. 145.—Near *Monrovia, Frederick Co., Md.*, copper bolt set in center of N. coping of arch culvert, telegraph pole 51/23.

B. & O. 146.—Near *Ijamsville, Frederick Co., Md.*, copper bolt N. end of small culvert, 20 feet E. of telegraph pole 52/19.

B. & O. 147.—Near *Ijamsville, Frederick Co., Md.*, opposite milepost 53. (Note 21, p. 127.)

B. & O. 148.—About  $\frac{3}{4}$  mile W. of *Ijamsville, Frederick Co., Md.*, copper bolt set between tracks, E. bridge seat of bridge near milepost 54.

B. & O. 149.—Near *Ijamsville, Frederick Co., Md.*, copper bolt set between tracks in W. bridge seat of new bridge at W. end of *Ijamsville* tunnel.

B. & O. 150.—1 mile E. of *Reels Mill, Frederick Co., Md.*, copper bolt set between tracks in W. bridge seat of bridge.

B. & O. 151.—*Reels Mill, Frederick Co., Md.*, copper bolt set in foundation stone, SW. corner coal chute.

B. & O. 152.—*Frederick Junction, Frederick Co., Md.*, copper bolt set in N. end of mud wall of E. abutment of *Monocacy River* bridge.

B. & O. 152A.—About 1 mile from *Frederick Junction, Frederick Co., Md.*, copper bolt S. end of W. coping of culvert.

B. & O. 152B.—About  $1\frac{3}{4}$  miles from *Frederick, Frederick Co., Md.*, copper bolt set in outcropping limestone, E. side of track, seven telegraph poles S. of milepost *Frederick 2*, at N. end of cut.

B. & O. 152C.—About 300 feet S. of station at *Frederick, Frederick Co., Md.*, copper bolt set in native rock W. of tracks.

B. & O. 153.—About 1 mile W. of *Frederick Junction, Frederick Co., Md.*, copper bolt set in W. end of S. coping of culvert, 50 feet E. of telegraph pole 58/34.

B. & O. 153A.— $1\frac{1}{2}$  miles W. of *Frederick Junction, Frederick Co., Md.*, copper bolt set in W. end of N. coping of culvert 36.

B. & O. 154.—Near *Lime Kiln, Frederick Co., Md.*, opposite milepost 60. (Note 21, p. 127.)

B. & O. 155.— $\frac{1}{2}$  mile W. of *Lime Kiln, Frederick Co., Md.*, opposite milepost 61. (Note 21, p. 127.)

B. & O. 156.— $\frac{1}{2}$  mile E. of *Buckeystown Station, Frederick Co., Md.*, opposite milepost 62. (Note 21, p. 127.)

B. & O. 156A.—*Buckeystown Station, Frederick Co., Md.*, copper bolt set in W. end of N. coping of culvert.

B. & O. 157.—Near *Buckeystown, Frederick Co., Md.*, opposite milepost 63. (Note 21, p. 127.)



- B. & O. 158.— $\frac{1}{4}$  mile E. of *Adamstown, Frederick Co., Md.*, opposite milepost 64. (Note 21, p. 127.)
- B. & O. 159.—500 feet E. of *Doubs, Frederick Co., Md.*, copper bolt set in center of N. coping of culvert  $36\frac{1}{2}$ , about 275 feet W. of milepost 65.
- B. & O. 160.—Near *Doubs, Frederick Co., Md.*, copper bolt set in W. cap stone of S. coping of arch culvert, about 300 feet W. of milepost 66.
- B. & O. 161.—Near *Washington Junction, Frederick Co., Md.*, opposite milepost 67. (Note 21, p. 127.)
- B. & O. 162.—About  $\frac{3}{4}$  mile E. of *Washington Junction, Frederick Co., Md.*, opposite milepost 68. (Note 21, p. 127.)
- B. & O. 163.—Near *Adamstown, Frederick Co., Md.*, copper bolt set in E. end of N. coping of culvert at E. end of first cut from Adamstown, on the Adamstown cut-off, not far from Doubs.
- B. & O. 164.—2 miles from *Doubs, Frederick Co., Md.*, on the Adamstown cut-off; copper bolt set in S. end of W. coping of small culvert, 1 000 feet S. of large arch culvert.
- B. & O. 165.—About  $1\frac{1}{2}$  miles from *Washington Junction, Frederick Co., Md.*, on the Adamstown cut-off; copper bolt set in N. end of W. coping of culvert at N. end of first large cut from Metropolitan branch.
- B. & O. 44.—*Washington Junction, Frederick Co., Md.*, vertical rail section set on S. side of tracks, about 150 feet E. of old signal tower.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN FOLEY, PA., AND STRUTHERS, OHIO, 1903.

[These descriptions were furnished by the Chief Engineer of the Baltimore and Ohio Railroad. Where necessary, the names of town, county, and State have been added for the purpose of indexing, and in many cases certain information has been condensed into the form of notes. In accordance with railroad usage, the directions in the descriptions as furnished were given according to the general direction of the railroad line. These have been changed to true directions as far as could be determined. In other respects the wording of the original descriptions has not been changed.]

- B. & O. 176.—*Foley, Pa.* (See App. 3, Report for 1903, p. 738.)
- B. & O. 177.—*Glencoe, Somerset Co., Pa.*, SW. corner of S. end of E. abutment of bridge 23.
- B. & O. 178.— $\frac{3}{5}$  mile W. of *Glencoe, Somerset Co., Pa.*, copper bolt set in native rock, S. side of tracks, 50 feet W. of telegraph pole 201/35.
- B. & O. 179.— $1\frac{1}{2}$  miles SW. of *Glencoe, Somerset Co., Pa.*, copper bolt set between tracks in mud wall of NE. abutment of bridge 25, 50 feet SW. of telegraph pole 202/25.
- B. & O. 180.—*Philson, Somerset Co., Pa.*, opposite W. end of station platform. (Note 28, p. 128.)
- B. & O. 181.— $1\frac{1}{4}$  miles NW. of *Philson, Somerset Co., Pa.*, copper bolt set in native rock, S. side of tracks, about 40 feet from tracks and about 40 feet W. of watch box.
- B. & O. 182.— $2\frac{1}{2}$  miles NW. of *Philson, Somerset Co., Pa.*, at telegraph pole 206/20. (Note 29, p. 128.)
- B. & O. 182A.—1 mile SE. of *Mance, Somerset Co., Pa.*, at telegraph pole 206/27. (Note 28, p. 128.)
- B. & O. 183.— $\frac{1}{5}$  mile SE. of *Mance, Somerset Co., Pa.*, opposite telegraph pole 207/26. (Note 29, p. 128.)
- B. & O. 184.— $\frac{2}{5}$  mile W. of *Mance, Somerset Co., Pa.*, near center of first cut W. of Mance Station, nearly opposite end of cut on S. side of tracks. (Note 28, p. 128.)
- B. & O. 185.—2 miles SW. of *Mance, Somerset Co., Pa.*, copper bolt set in rock in place on SE. side of tracks, 125 feet NE. of NE. portal of Sand Patch tunnel.
- B. & O. 186.—1 mile NE. of *Sand Patch, Somerset Co., Pa.*, at summit SW. end of Sand Patch tunnel. (Note 28, p. 128.)
- B. & O. 187.—*Sand Patch, Somerset Co., Pa.*, rail section set between first and second sidings, about 150 feet NE. of tower, 50 feet NE. of milepost 211.
- B. & O. 188.—375 feet NW. of *Keystone, Somerset Co., Pa.* (Note 28, p. 128.)
- B. & O. 189.—1 mile SE. of *Meyersdale, Somerset Co., Pa.*, 30 feet E. of telegraph pole 213/30. (Note 28, p. 128.)
- B. & O. 190.—*Meyersdale, Somerset Co., Pa.*, vertical rail section on NE. side of tracks at SE. end of platform.
- B. & O. 191.— $\frac{1}{4}$  mile SE. of *Salisbury Junction, Somerset Co., Pa.*, opposite milepost 216. (Note 21, p. 127.)
- B. & O. 192.— $\frac{3}{4}$  mile NW. of *Salisbury Junction, Somerset Co., Pa.*, copper bolt SW. end of mud wall, SE. abutment of bridge 26.
- B. & O. 193.—2 miles SE. of *Garrett, Somerset Co., Pa.*, opposite milepost 218. (Note 21, p. 127.)

- B. & O. 194.— $\frac{3}{4}$  mile SE. of *Garrett, Somerset Co., Pa.*, copper bolt set in SW. end of mud wall, SE. abutment of bridge 28.
- B. & O. 195.— $\frac{1}{4}$  mile SE. of *Garrett, Somerset Co., Pa.*, copper bolt set in SW. end of SE. abutment of bridge 29.
- B. & O. 196.— $\frac{3}{4}$  mile NW. of *Garrett, Somerset Co., Pa.*, on bridge 30. (Note 30, p. 128.)
- B. & O. 197.— $1\frac{1}{2}$  miles NW. of *Garrett, Somerset Co., Pa.*, on bridge 34. (Note 30, p. 128.)
- B. & O. 198.—*McSpadden, Somerset Co., Pa.*, opposite tower. (Note 21, p. 127.)
- B. & O. 199.— $\frac{3}{4}$  mile NW. of *McSpadden, Somerset Co., Pa.*, copper bolt set in large boulder on N. side of tracks.
- B. & O. 200.—2 miles SE. of *Rockwood, Somerset Co., Pa.*, copper bolt set in SW. end of bridge seat of SE. abutment of bridge 32.
- B. & O. 201.— $\frac{3}{4}$  mile SE. of *Rockwood, Somerset Co., Pa.*, opposite milepost 226. (Note 21, p. 127.)
- B. & O. 202.—*Rockwood, Somerset Co., Pa.*, copper bolt set in S. end of mud wall, E. abutment of bridge 34.
- B. & O. 203.— $1\frac{1}{4}$  miles SW. of *Rockwood, Somerset Co., Pa.*, copper bolt set in SE. end of mud wall of NE. abutment of bridge 35.
- B. & O. 204.— $2\frac{1}{4}$  miles SW. of *Rockwood, Somerset Co., Pa.*, 125 feet W. of milepost 229. (Note 28, p. 128.)
- B. & O. 205.—1 mile N. of *Casselman, Somerset Co., Pa.*, copper bolt set between tracks in mud wall of NE. abutment of bridge 36.
- B. & O. 206.—500 feet SW. of station at *Casselman, Somerset Co., Pa.*, copper bolt set in SE. corner of coping of culvert.
- B. & O. 207.— $1\frac{1}{4}$  miles SW. of station at *Casselman, Somerset Co., Pa.*, copper bolt set in SE. end of bridge seat of NE. abutment of bridge 38.
- B. & O. 208.— $\frac{3}{4}$  mile N. of *Markleton, Somerset Co., Pa.*, opposite milepost 233. (Note 21, p. 127.)
- B. & O. 209.—*Markleton, Somerset Co., Pa.* (Note 21, p. 127.)
- B. & O. 210.—*Pinkerton, Somerset Co., Pa.*, copper bolt set in NE. pedestal of water tank.
- B. & O. 211.— $1\frac{3}{5}$  miles SW. of *Pinkerton, Somerset Co., Pa.*, copper bolt set in foundation NE. portal Shoo Fly tunnel, SE. side of the tracks.
- B. & O. 212.—*Fort Hill, Somerset Co., Pa.*, shelf on E. end of S. coping of arch.
- B. & O. 213.— $1\frac{1}{4}$  miles SW. of *Fort Hill, Somerset Co., Pa.*, copper bolt set in water shelf, E. portal of Brook tunnel, S. side of tracks.
- B. & O. 214.— $2\frac{1}{4}$  miles W. of *Fort Hill, Somerset Co., Pa.*, at milepost 238. (Note 29, p. 128.)
- B. & O. 215.— $\frac{1}{5}$  mile NE. of station at *Ursina, Somerset Co., Pa.*, at milepost 239. (Note 28, p. 128.)
- B. & O. 216.— $1\frac{1}{4}$  miles E. of *Confluence, Somerset Co., Pa.*, at milepost 240. (Note 29, p. 128.)
- B. & O. 217.—*Confluence, Somerset Co., Pa.*, copper bolt set in S. end of E. abutment of bridge 42.
- B. & O. 218.— $1\frac{1}{2}$  miles NW. of *Confluence, Somerset Co., Pa.*, copper bolt set in SE. end of SW. coping of arch culvert 43.
- B. & O. 219.— $2\frac{3}{5}$  miles NW. of *Confluence, Somerset Co., Pa.*, on culvert 44 at tank 8. (Note 33, p. 128.)
- B. & O. 220.—In *Somerset Co.*,  $1\frac{1}{5}$  miles SE. of *Bidwell, Fayette Co., Pa.*, about 100 feet SE. of milepost 247. (Note 28, p. 128.)
- B. & O. 221.—*Bidwell, Fayette Co., Pa.*, copper bolt set in E. end of S. coping of arch culvert 45.
- B. & O. 222.—1 mile W. of *Bidwell, Fayette Co., Pa.*, at milepost 249. (Note 21, p. 127.)
- B. & O. 223.— $\frac{1}{4}$  mile E. of station at *Sipes, Fayette Co., Pa.*, near milepost 250. (Note 28, p. 128.)
- B. & O. 224.— $1\frac{1}{2}$  miles SW. of *Sipes, Fayette Co., Pa.*, copper bolt set in base of signal,  $\frac{1}{4}$  mile E. of H. K. tower.
- B. & O. 225.— $\frac{3}{4}$  mile S. of *Ohio pyle, Fayette Co., Pa.*, on small culvert  $\frac{3}{4}$  mile NW. of H. K. tower. (Note 32, p. 128.)
- B. & O. 226.— $\frac{1}{2}$  mile NE. of *Ohio pyle, Fayette Co., Pa.*, and 200 feet SW. of borrow pit. (Note 28, p. 128.)
- B. & O. 227.—1 mile SE. of *Bear Run, Fayette Co., Pa.*, copper bolt set in E. end of masonry over 36-inch pipe culvert,  $\frac{1}{2}$  mile N. of tank 9.
- B. & O. 228.—400 feet NW. of station at *Bear Run, Fayette Co., Pa.*, copper bolt set in large rock on SW. side of tracks.



B. & O. 229.— $1\frac{1}{4}$  miles NW. of *Bear Run, Fayette Co., Pa.*, copper bolt set in a small rock, W. side of tracks,  $\frac{1}{3}$  mile N. of milepost 257.

B. & O. 230.— $\frac{1}{2}$  mile S. of *Stewarton, Fayette Co., Pa.*, copper bolt set in rock on W. side of tracks,  $\frac{1}{5}$  mile N. of *Yough tower* and at beginning of first cut N. of same.

B. & O. 231.— $\frac{1}{2}$  mile N. of *Stewarton, Fayette Co., Pa.*, 50 feet N. of watch box. (Note 28, p. 128.)

B. & O. 232.— $1\frac{1}{2}$  miles N. of *Stewarton, Fayette Co., Pa.*, 500 feet N. of milepost 260. (Note 28, p. 128.)

B. & O. 233.— $1\frac{1}{2}$  miles SE. of *Indian Creek, Fayette Co., Pa.*, 8 telegraph poles NW. of watch box. (Note 28, p. 128.)

B. & O. 234.—*Indian Creek, Fayette Co., Pa.*, on bridge 46. (Note 33, p. 128.)

U. S. G. S.—*Indian Creek, Fayette Co., Pa.*, on S. bridge seat, W. abutment of Baltimore and Ohio R. R. bridge over *Indian Creek*. (Note 17, p. 127.)

B. & O. 235.— $1\frac{1}{5}$  miles W. of *Indian Creek, Fayette Co., Pa.*, opposite milepost 264. (Note 28, p. 128.)

B. & O. 236.— $2\frac{1}{5}$  miles W. of *Indian Creek, Fayette Co., Pa.*, 200 feet W. of milepost 265. (Note 28, p. 128.)

B. & O. 237.— $3\frac{1}{5}$  miles W. of *Indian Creek, Fayette Co., Pa.*, copper bolt set in small loose sandstone boulder, N. side of tracks, opposite milepost 266.

B. & O. 238.— $4\frac{1}{5}$  miles W. of *Indian Creek, Fayette Co., Pa.*, 1 telegraph pole SE. of milepost 267. (Note 28, p. 128.)

B. & O. 239.—Near *South Connellsville, Fayette Co., Pa.*, copper bolt set in S. end of E. abutment of new F. M. & P. R. R. bridge, S. of *Connellsville yards*.

B. & O. 240.—*Connellsville, Fayette Co., Pa.*, 0.2 mile N. of roundhouse, on bridge 49. (Note 33, p. 128.)

B. & O. 240A.—*Connellsville, Fayette Co., Pa.*, United States Geological Survey B. M. marked 885; bolt set in S. end of pier of highway bridge between R. R. tracks.

B. & O. 241.—0.3 mile NW. of *Connellsville, Fayette Co., Pa.*, copper bolt set in NE. end of NW. end of bridge 51.

B. & O. 242.—1 mile NW. of *Connellsville, Fayette Co., Pa.*, copper bolt set in the NE. end of cement pier to overhead main bridge, on NW. side of tracks.

B. & O. 243.— $\frac{1}{2}$  mile SE. of *Broad Ford Junction, Fayette Co., Pa.*, at the watch box. (Note 21, p. 127.)

B. & O. 244.—*Broad Ford, Fayette Co., Pa.*, copper bolt set in E. corner stone of S. abutment of overhead *Pittsburg and Lake Erie R. R.* bridge.

B. & O. 245.— $1\frac{1}{4}$  miles W. of *Broad Ford, Fayette Co., Pa.*, opposite milepost 274. (Note 21, p. 127.)

B. & O. 246.— $2\frac{1}{4}$  miles W. of *Broad Ford, Fayette Co., Pa.*, opposite milepost 275. (Note 21, p. 127.)

B. & O. 246A.— $\frac{1}{2}$  mile SE. of *Dawson, Fayette Co., Pa.*, copper bolt set in SW. end of bridge seat, SE. abutment of bridge 53.

B. & O. 247.— $\frac{1}{2}$  mile NW. of *Dawson, Fayette Co., Pa.*, copper bolt set in center of SW. coping of arch.

B. & O. 248.—About 2 miles NW. of *Dawson, Fayette Co., Pa.*, copper bolt set in S. end of bridge seat of W. abutment of bridge 54.

B. & O. 249.— $2\frac{1}{2}$  miles NW. of *Dawson, Fayette Co., Pa.*, at milepost 278. (Note 21, p. 127.)

B. & O. 250.— $\frac{3}{5}$  mile E. of station at *Lavenia, Fayette Co., Pa.*, opposite milepost 279. (Note 21, p. 127.)

B. & O. 251.—100 feet SE. of station at *Lavenia, Fayette Co., Pa.*, copper bolt set in large rock on the SW. side of the tracks.

B. & O. 253.—1 mile SE. of *Layton, Fayette Co., Pa.*, point on large rock on NW. side of the tracks at stone and sand works, 2 telegraph poles SW. of milepost 282.

B. & O. 254.—*Layton, Fayette Co., Pa.*, at milepost 283. (Note 21, p. 127.)

B. & O. 255.—1 mile NW. station at *Layton, Fayette Co., Pa.*, copper bolt set in SE. pedestal of water tank.

B. & O. 256.—2 miles NW. of *Layton, Fayette Co., Pa.*, opposite milepost 285. (Note 21, p. 127.)

B. & O. 257.— $\frac{1}{4}$  mile SW. of *Banning, Fayette Co., Pa.*, opposite milepost 286. (Note 21, p. 127.)

B. & O. 258.— $\frac{1}{4}$  mile S. of *Jacobs Creek*, *Westmoreland Co., Pa.*, copper bolt set in W. end of mud wall of S. abutment of bridge 55.

B. & O. 259.—About 1 000 feet S. of *Eureka*, *Westmoreland Co., Pa.*, opposite milepost 288. (Note 21, p. 127.)

B. & O. 260.—*Smithton*, *Westmoreland Co., Pa.*, copper bolt set in S. end of bridge seat of E. abutment of highway bridge.

B. & O. 261.— $\frac{3}{4}$  mile SE. of *Port Royal*, *Westmoreland Co., Pa.*, at milepost 290. (Note 21, p. 127.)

B. & O. 262.—0.2 mile N. of *Port Royal*, *Westmoreland Co., Pa.*, opposite milepost 291. (Note 21, p. 127.)

B. & O. 263.—0.3 mile SW. of *Reduction*, *Westmoreland Co., Pa.*, opposite milepost 292. (Note 21, p. 127.)

B. & O. 264.— $\frac{3}{4}$  mile NE. of *Reduction*, *Westmoreland Co., Pa.*, opposite milepost 293. (Note 21, p. 127.)

B. & O. 264A.—*Griffin*, *Westmoreland Co., Pa.*, copper bolt set in S. end of E. coping of arch culvert, 1 000 feet N. of tank 14.

B. & O. 265.— $\frac{3}{4}$  mile SE. of *West Newton*, *Westmoreland Co., Pa.*, opposite milepost 294. (Note 21, p. 127.)

B. & O. 266.—250 feet N. of station at *West Newton*, *Westmoreland Co., Pa.*, opposite milepost 295. (Note 21, p. 127.)

B. & O. 266A.—Near *West Newton*, *Westmoreland Co., Pa.*, copper bolt set in E. side of lower circle of masonry of turntable.

B. & O. 267.—1 mile N. of *West Newton*, *Westmoreland Co., Pa.*, opposite milepost 296. (Note 21, p. 127.)

B. & O. 268.—0.1 mile E. of *Gratztown*, *Westmoreland Co., Pa.*, copper bolt set in S. end of bridge seat of E. abutment of twin bridges at milepost 297.

B. & O. 269.—1 mile W. of *Gratztown*, *Westmoreland Co., Pa.*, at milepost 298. (Note 21, p. 127.)

B. & O. 270.—*Suter*, *Westmoreland Co., Pa.*, copper bolt set in SW. end of bridge seat of NW. abutment of bridge 57.

B. & O. 271.— $\frac{1}{4}$  mile SW. of *Scott Haven*, *Westmoreland Co., Pa.*, opposite milepost 300. (Note 21, p. 127.)

B. & O. 273.—*Vista*, *Westmoreland Co., Pa.*, opposite milepost 302. (Note 21, p. 127.)

B. & O. 274.—300 feet NE. of *Shaner*, *Westmoreland Co., Pa.*, opposite milepost 303. (Note 21, p. 127.)

B. & O. 275.—*Guffey*, *Westmoreland Co., Pa.*, copper bolt set in W. end of bridge seat of N. abutment of bridge 58.

B. & O. 276.— $\frac{3}{4}$  mile E. of *Coulter*, *Allegheny Co., Pa.*, opposite milepost 305. (Note 21, p. 127.)

B. & O. 277.— $\frac{1}{4}$  mile N. of *Coulter*, *Allegheny Co., Pa.*, opposite milepost 306. (Note 21, p. 127.)

B. & O. 278.— $1\frac{1}{4}$  miles NE. of *Coulter*, *Allegheny Co., Pa.*, opposite mile post 307. (Note 21, p. 127.)

B. & O. 279.— $2\frac{1}{4}$  miles N. of *Coulter*, *Allegheny Co., Pa.*, opposite section post 29/30. (Note 21, p. 127.)

B. & O. 280.— $1\frac{1}{4}$  miles E. of *Versailles*, *Allegheny Co., Pa.*, opposite milepost 309. (Note 21, p. 127.)

B. & O. 280A.— $\frac{1}{2}$  mile SE. of *Versailles*, *Allegheny Co., Pa.*, copper bolt set in E. end of bridge seat of pier S. of tracks of the overhead highway bridge.

B. & O. 281.—*Versailles*, *Allegheny Co., Pa.*, copper bolt set in lower circle of masonry of turntable, opposite E. approach.

B. & O. 282.— $\frac{1}{2}$  mile SE. of *Christy Park*, *Allegheny Co., Pa.*, opposite milepost 311. (Note 21, p. 127.)

B. & O. 283.— $1\frac{1}{3}$  miles S. of *McKeesport*, *Allegheny Co., Pa.*, opposite milepost 312. (Note 21, p. 127.)

B. & O. 284.— $\frac{1}{3}$  mile S. of *McKeesport*, *Allegheny Co., Pa.*, opposite milepost 313. (Note 21, p. 127.)

B. & O. 285.— $\frac{3}{4}$  mile E. of *McKeesport*, *Allegheny Co., Pa.*, copper bolt set in N. pedestal of the overhead street-car bridge, 200 feet E. of milepost 314.

B. & O. 286.—*Demmler*, *Allegheny Co., Pa.*, opposite milepost 315. (Note 21, p. 127.)



B. & O. 287.— $1\frac{1}{4}$  miles SE. of *Bessemer, Allegheny Co., Pa.*, at milepost 316, between main tracks. (Note 21, p. 127.)

B. & O. 287A.— $\frac{1}{3}$  mile SE. of *Bessemer, Allegheny Co., Pa.*, on bridge 63. (Note 30, p. 128.)

B. & O. 288.—100 feet SE. of *Bessemer, Allegheny Co., Pa.*, copper bolt set in W. pedestal of bent N. of tracks of Union R. R. overhead crossing.

B. & O. 289.— $\frac{1}{4}$  mile SE. of *Braddock, Allegheny Co., Pa.*, opposite milepost 318. (Note 21, p. 127.)

B. & O. 290.—100 feet NW. of *Rankin, Allegheny Co., Pa.*; copper bolt set in north pedestal of bent for overhead bridge, 50 feet SW. of tracks.

B. & O. 291.—0.9 mile NW. of *Rankin, Allegheny Co., Pa.*, opposite milepost 320. (Note 21, p. 127.)

B. & O. 292.— $\frac{1}{2}$  mile NE. of *Highland, Allegheny Co. Pa.*, opposite milepost 321. (Note 21, p. 127.)

B. & O. 292A.—*Highland, Allegheny Co., Pa.*; copper bolt set in NW. end of SW. pier of bridge 66.

B. & O. 293.—*Wheeling Junction, Allegheny Co., Pa.*; copper bolt set in the lower step of E. end of concrete abutment of overhead bridge.

B. & O. 294.—0.3 mile N. of *Glenwood, Allegheny Co., Pa.*; copper bolt set in N. pedestal of bent of overhead bridge.

B. & O. 295.—*Marion Junction, Allegheny Co., Pa.*; copper bolt set between main tracks in SE. wall of small culvert.

B. & O. 296.—*Laughlin Junction, Allegheny Co., Pa.*; copper bolt set in bridge seat of NW. abutment of bridge 67, just NE. of the tracks to Pittsburgh.

B. & O. 297.—*Pittsburg, Allegheny Co., Pa.*; copper bolt set in SE. corner of bridge over Maurice street, 1 000 feet W. of milepost 326.

B. & O. 298.—*Pittsburg, Allegheny Co., Pa.*, on pier of bridge directly under Brady Street river bridge. (Note 30, p. 128.)

B. & O. 299.—*Pittsburg, Allegheny Co., Pa.*; copper bolt set in bridge seat W. abutment of railroad bridge over Second avenue.

B. & O. 300.—*Pittsburg, Allegheny Co., Pa.*; copper bolt set in SW. end of the retaining wall, NW. side of the tracks at SW. end of train shed.

B. & O. 301.—0.3 mile N. of *Laughlin Junction, Allegheny Co. Pa.*, on viaduct bridge. (Note 31, p. 128.)

B. & O. 302.—1 mile N. of *Laughlin Junction, Allegheny Co., Pa.*, opposite milepost Laughlin Junction 1. (Note 21, p. 127.)

B. & O. 303.— $1\frac{3}{4}$  miles N. of *Laughlin Junction, Allegheny Co., Pa.*, copper bolt E. of tracks, set in foundation of portal of Pittsburgh Junction tunnel.

B. & O. 304.— $2\frac{1}{2}$  miles N. of *Laughlin Junction, Allegheny Co., Pa.*, copper bolt E. of tracks, set in foundation at end of Pittsburgh Junction tunnel.

B. & O. 305.— $2\frac{3}{4}$  miles N. of *Laughlin Junction, Allegheny Co., Pa.*, copper bolt set in S. end of W. abutment of Pennsylvania R. R. overhead bridge.

818 Pittsburgh.—*Benvenue, Allegheny Co., Pa.* (See App. 9, Report for 1899, p. 868.)

B. & O. 306.—*Pittsburg, Allegheny Co., Pa.*, about  $\frac{1}{2}$  mile from Allegheny River; copper bolt set in W. pedestal of first bent N. of pier N. of tracks of overhead highway bridge 33.

P. R. R.—*Lawrenceville, Allegheny Co., Pa.*, shelf W. end of S. abutment of Third Street bridge.

B. & O. 306A.—*Pittsburg, Allegheny Co., Pa.*, copper bolt set in S. end of E. shore pier of Allegheny River bridge.

B. & O. 307.—Near *Pittsburg, Allegheny Co., Pa.*, copper bolt set in NE. end of mud wall of SE. abutment of backwater bridge, Herrs Island.

B. & O. 308A.—*Allegheny, Allegheny Co., Pa.*,  $1\frac{3}{5}$  miles NE. of the P. & W. R. R. station; copper bolt set in SW. coping of NW. abutment of Thirtieth Street river bridge.

B. & O. 308B.—*Allegheny, Allegheny Co., Pa.*,  $\frac{1}{4}$  mile E. of the P. & W. R. R. station; copper bolt set in W. end of coping to retaining wall, Sixteenth Street river bridge.

B. & O. 308C.—*Allegheny, Allegheny Co., Pa.*, 600 feet W. of the P. & W. R. R. station; copper bolt set in NW. end of pier between railroad tracks of Eighth Street river bridge.

B. & O. 308D.—*Allegheny, Allegheny Co., Pa.*,  $\frac{3}{4}$  mile NW. of the P. & W. R. R. station; copper bolt set in E. end of N. abutment of Point bridge.

B. & O. 310.— $\frac{3}{4}$  mile SW. of *Sharpsburg, Allegheny Co., Pa.*, Pennsylvania R. R. B. M. 5, West Penn R. R.; copper bolt set in N. end of W. abutment Pennsylvania R. R. bridge over Pine Creek.

- B. & O. 310A.—0.3 mile W. of *Sharpsburg, Allegheny Co., Pa.*, copper bolt set between tracks in bridge seat of E. abutment of bridge.
- B. & O. 311.—*Sharpsburg, Allegheny Co., Pa.*, copper bolt set between tracks in bridge seat of E. abutment of bridge 316.
- B. & O. 311A.— $\frac{5}{8}$  mile NW. of *Sharpsburg, Allegheny Co., Pa.*, on bridge 318. (Note 31, p. 128.)
- B. & O. 312.—1 mile NW. of *Sharpsburg, Allegheny Co., Pa.*, 30 feet N. of N. portal of Etna tunnel. (Note 28, p. 128.)
- B. & O. 313.—*Wittmer, Allegheny Co., Pa.*, 400 feet N. of milepost 7. (Note 21, p. 127.)
- B. & O. 314.—*Glenshaw, Allegheny Co., Pa.*, on bridge 319. (Note 31, p. 128.)
- B. & O. 314A.—*Mount Royal, Allegheny Co., Pa.*, copper bolt set in W. end of bridge seat of N. abutment of bridge.
- B. & O. 315.—400 feet N. of *Elfinwild, Allegheny Co., Pa.* (Note 30, p. 128.)
- B. & O. 316.—*Allison Park, Allegheny Co., Pa.*, copper bolt set in W. end of bridge seat of N. abutment of the highway bridge opposite station.
- B. & O. 316A.— $\frac{5}{8}$  mile N. of *Allison Park, Allegheny Co., Pa.*, on bridge 323. (Note 31, p. 128.)
- B. & O. 317.— $1\frac{1}{2}$  miles N. W. of *Allison Park, Allegheny Co., Pa.*; on bridge at telegraph pole 11/30. copper bolt set in left end of bridge seat of abutment farther from Allison Park.
- B. & O. 318.— $\frac{1}{4}$  mile N. of *Bryant, Allegheny Co., Pa.*, copper bolt set between tracks in bridge seat of N. abutment of bridge at telegraph pole 12/36.
- B. & O. 318A.— $\frac{3}{4}$  mile N. of *Bryant, Allegheny Co., Pa.*, on bridge 327. (Note 31, p. 128.)
- B. & O. 319.—*Wildwood, Allegheny Co., Pa.* (Note 30, p. 128.)
- B. & O. 319A.— $\frac{1}{4}$  mile N. of *Wildwood, Allegheny Co., Pa.* (Note 30, p. 128.)
- B. & O. 320.—About 1 mile N. of *Wildwood, Allegheny Co., Pa.*, at telegraph pole 14/33. (Note 31, p. 128.)
- B. & O. 321.—2 miles N. of *Wildwood, Allegheny Co., Pa.*, 100 feet N. of milepost 16. (Note 33, p. 128.)
- B. & O. 322.—About  $\frac{1}{4}$  mile N. of *Gibsonia, Allegheny Co., Pa.*, opposite telegraph pole 17/00 (Note 21, p. 127.)
- U. S. G. S.—Just E. of *Gibsonia, Allegheny Co., Pa.*, tablet set in N. end of E. abutment of small bridge. (Note 17, p. 127.)
- B. & O. 323.— $\frac{1}{4}$  mile S. of *Bakerstown station, Allegheny Co., Pa.*, at telegraph pole 18/00. (Note 21, p. 127.)
- B. & O. 324.—1 mile NW. of *Bakerstown station, Allegheny Co., Pa.*, at telegraph pole 18/35, 800 feet NW. of NW. portal of Bakerstown tunnel. (Note 21, p. 127.)
- B. & O. 325.— $\frac{1}{4}$  mile NW. of *Valencia, Butler Co., Pa.*, at telegraph pole 20/00. (Note 21, p. 127.)
- B. & O. 326.— $\frac{1}{4}$  mile S. of *Downieville, Butler Co., Pa.*, opposite telegraph pole 21/00. (Note 21, p. 127.)
- B. & O. 326A.— $\frac{1}{4}$  mile N. of *Downieville, Butler Co., Pa.*, on small bridge near telegraph pole 21/16. (Note 32, p. 128.)
- B. & O. 327.—800 feet SE. of *Mars, Butler Co., Pa.*, at telegraph pole 22/6. (Note 33, p. 128.)
- B. & O. 328.— $\frac{3}{4}$  mile NW. of *Mars, Butler Co., Pa.*, copper bolt set in NW. wing wall of box culvert at telegraph pole 23/5, at county road crossing.
- B. & O. 329.— $1\frac{3}{4}$  miles W. of *Mars, Butler Co., Pa.*, opposite telegraph pole 24/00. (Note 21, p. 127.)
- B. & O. 330.— $\frac{1}{2}$  mile SE. of *Callery Junction, Butler Co., Pa.*, opposite telegraph pole 25/00. (Note 21, p. 127.)
- B. & O. 330A.—700 feet SE. of *Callery Junction, Butler Co., Pa.* (Note 31, p. 128.)
- B. & O. 331.— $\frac{1}{2}$  mile NW. of *Callery Junction, Butler Co., Pa.*, copper bolt set in SW. end of bridge seat SE. abutment of bridge 45.
- B. & O. 332.—About 1 mile SE. of *Evans City, Butler Co., Pa.*, copper bolt set between tracks in mud wall of SE. abutment of bridge 346.
- B. & O. 333.—*Evans City, Butler Co., Pa.*, copper bolt set in E. end of abutment of county road bridge.
- B. & O. 334.— $\frac{1}{2}$  mile NW. of *Evans City, Butler Co., Pa.*, at milepost 29. (Note 21, p. 127.)
- B. & O. 335.— $1\frac{1}{2}$  miles NW. of *Evans City, Butler Co., Pa.*, opposite milepost 30. (Note 21, p. 127.)
- B. & O. 335A.—2 miles NW. of *Evans City, Butler Co., Pa.*, copper bolt set between tracks in bridge seat of NW. abutment of bridge at telegraph pole 30/9.



B. & O. 336.— $\frac{1}{2}$  mile SE. of *Harmony Junction*, *Butler Co., Pa.*, opposite milepost 31. (Note 21, p. 127.)

B. & O. 337.— $\frac{3}{4}$  mile E. of *Harmony*, *Butler Co., Pa.*, opposite milepost 32. (Note 21, p. 127.)

B. & O. 338.—W. of *Harmony*, *Butler Co., Pa.*, copper bolt set in first course of masonry at W. end of N. retaining wall.

B. & O. 339.— $\frac{1}{4}$  mile E. of *Zelienople*, *Butler Co., Pa.*, at milepost 34. (Note 21, p. 127.)

B. & O. 340.— $\frac{3}{4}$  mile SW. of *Zelienople*, *Butler Co., Pa.*, on small bridge at telegraph pole 34/26. (Note 32, p. 128.)

B. & O. 341.—100 feet W. of *Old Furnace*, *Beaver Co., Pa.*, at milepost 36. (Note 21, p. 127.)

B. & O. 341A.— $\frac{1}{2}$  mile NW. of *Old Furnace*, *Beaver Co., Pa.*, on undergrade crossing bridge. (Note 32, p. 128.)

B. & O. 342.—1 mile E. of *Fombell*, *Beaver Co., Pa.*, copper bolt set in N. end of stone culvert at telegraph pole 36/33.

B. & O. 343.—*Fombell*, *Beaver Co., Pa.*, on bridge 358. (Note 32, p. 128.)

B. & O. 344.—*Gehrung*, *Beaver Co., Pa.*, at milepost 39. (Note 21, p. 127.)

B. & O. 345.—*Celia*, *Beaver Co., Pa.*, on bridge 360, telegraph pole 39/34. (Note 31, p. 128.)

B. & O. 346.— $\frac{1}{2}$  mile W. of *Hazen*, *Beaver Co., Pa.*, at milepost 41. (Note 21, p. 127.)

B. & O. 347.— $\frac{1}{2}$  mile SE. of *McKimms*, *Beaver Co., Pa.*, at milepost 42. (Note 21, p. 127.)

B. & O. 348.— $\frac{1}{2}$  mile NW. of *McKimms*, *Beaver Co., Pa.*, at milepost 43. (Note 21, p. 127.)

B. & O. 348A.—*North Sewickley*, *Beaver Co., Pa.*, on bridge 362. (Note 30, p. 128.)

B. & O. 349.—About  $\frac{3}{4}$  mile SE. of *Ellwood City*, *Lawrence Co., Pa.*, copper bolt set between tracks in bridge seat of N. abutment of bridge at S. portal of *Ellwood tunnel*.

B. & O. 349A.— $\frac{1}{2}$  mile E. of *Ellwood City*, *Lawrence Co., Pa.*, under overhead highway bridge. (Note 21, p. 127.)

B. & O. 350.— $\frac{1}{2}$  mile W. of *Ellwood City*, *Lawrence Co., Pa.*, copper bolt set in S. end of mud wall of W. abutment of highway bridge.

B. & O. 351.— $\frac{1}{5}$  mile N. of *Rock Point*, *Lawrence Co., Pa.*, copper bolt set in rock NE. of track SE. of cut.

B. & O. 352.—1 mile N. of *Rock Point*, *Lawrence Co., Pa.*, copper bolt set between tracks, mud wall of N. abutment of bridge 365.

B. & O. 353.—100 feet SE. of station at *Chewton*, *Lawrence Co., Pa.*, copper bolt set in NW. end of NE. coping of culvert.

B. & O. 354.— $1\frac{1}{2}$  miles NW. of *Chewton*, *Lawrence Co., Pa.*, at the old limekiln. (Note 21, p. 127.)

B. & O. 355.—About 2 miles NW. of *Chewton*, *Lawrence Co., Pa.*, undergrade crossing bridge 366. (Note 33, p. 128.)

B. & O. 356.—*West Pittsburg*, *Lawrence Co., Pa.*, copper bolt in S. end of bridge seat, E. abutment of highway bridge over the *Pittsburg* and *Lake Erie R. R.*

B. & O. 357.— $\frac{3}{4}$  mile N. of *West Pittsburg*, *Lawrence Co., Pa.*, on undergrade highway crossing bridge 369. (Note 31, p. 128.)

B. & O. 359.—About  $\frac{1}{4}$  mile NW. of *New Castle Junction*, *Lawrence Co., Pa.*, on *Pittsburg* and *Lake Erie R. R.* bridge over *Shenango River*. (Note 32, p. 128.)

B. & O. 359A.— $\frac{1}{2}$  mile NW. of *New Castle Junction*, *Lawrence Co., Pa.*, copper bolt set in concrete foundation of *Pittsburg* and *Lake Erie R. R.* signal bridge, in more easterly of two northern pedestals for first bridge E. of *Mahoningtown*.

U. S. G. S.—*Mahoningtown*, *Lawrence Co., Pa.*, chiseled square in wing wall S. abutment of highway bridge over *Mahoning River* near the *P. Y. & A. R. R.* tracks.

B. & O. 360.—About  $\frac{1}{2}$  mile NW. of *Mahoningtown*, *Lawrence Co., Pa.*, on first bridge signal W. of *Mahoningtown*. (Note 37, p. 128.)

B. & O. 361.— $1\frac{1}{4}$  miles NW. of *Mahoningtown*, *Lawrence Co., Pa.*, on second signal NW. of *Mahoningtown*. (Note 37, p. 128.)

B. & O. 362.—About 2 miles NW. of *Mahoningtown*, *Lawrence Co., Pa.*, NW. of *Pittsburg* and *Lake Erie R. R.* through line station 2720, third signal NW. of *Mahoningtown*. (Note 37, p. 128.)

B. & O. 363.— $2\frac{3}{4}$  miles NW. of *Mahoningtown*, *Lawrence Co., Pa.*, W. of *Pittsburg* and *Lake Erie R. R.* through line station 2760, fourth signal W. of *Mahoningtown*. (Note 37, p. 128.)

B. & O. 334.— $3\frac{1}{2}$  miles NW. of *Mahoningtown*, *Lawrence Co., Pa.*, NW. of through line station 2800, fifth signal NW. of *Mahoningtown*. (Note 37, p. 128.)

- B. & O. 365.— $\frac{1}{2}$  mile E. of *Edenburg, Lawrence Co., Pa.*, W. of through line station 2840. (Note 37, p. 128.)
- B. & O. 366.— $\frac{1}{2}$  mile W. of *Edenburg, Lawrence Co., Pa.*, at through line station 2880. (Note 37, p. 128.)
- B. & O. 367.— $1\frac{1}{4}$  miles W. of *Edenburg, Lawrence Co., Pa.*, near through line station 2920. (Note 37, p. 128.)
- B. & O. 368.—About 2 miles W. of *Edenburg, Lawrence Co., Pa.*, near through line station 2960. (Note 37, p. 128.)
- B. & O. 369.—About 3 miles W. of *Edenburg, Lawrence Co., Pa.*, near through line station 3000. (Note 37, p. 128.)
- B. & O. 370.—About  $3\frac{1}{2}$  miles W. of *Edenburg, Lawrence Co., Pa.*, about 2 miles E. of *Lowellville, Mahoning Co., Ohio*, near through line station 3040. (Note 37, p. 128.)
- B. & O. 371.—About  $4\frac{1}{4}$  miles W. of *Edenburg, Lawrence Co., Pa.*, and about 1 mile E. of *Lowellville, Mahoning Co., Ohio*, near through line station 3080. (Note 37, p. 128.)
- B. & O. 372.—500 feet E. of station at *Lowellville, Mahoning Co., Ohio*, at telegraph pole 67/30. (Note 21, p. 127.)
- B. & O. 373.—1 mile NW. of *Lowellville, Mahoning Co., Ohio*, 600 feet SE. of *Pittsburg and Lake Erie R. R.* water tanks, 100 feet SE. of *Baltimore and Ohio* culvert. (Note 21, p. 127.)
- B. & O. 374.—1 mile SE. of *Struthers, Mahoning Co., Ohio*, at telegraph pole 69/35. (Note 21, p. 127.)
- B. & O. 375.— $\frac{1}{2}$  mile SE. of *Struthers, Mahoning Co., Ohio*, copper bolt set in S. end of E. abutment of bridge 20.
- B. & O. 376.—*Struthers, Mahoning Co., Ohio.* (See p. 229.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN ELLWOOD CITY AND MONACA, PA., 1906.

- B. & O. 349.—About  $\frac{3}{4}$  mile E. of *Ellwood City, Lawrence Co., Pa.* (See p. 226.)
- B. & O. 349A.—*Ellwood City, Lawrence Co., Pa.* (See p. 226.)
- B. & O. 350.—Near *Ellwood City, Lawrence Co., Pa.* (See p. 226.)
- A<sub>2</sub>.—About  $\frac{1}{2}$  mile N. of *West Ellwood Junction, Beaver Co., Pa.*, on the spur line of the *Pittsburg and Lake Erie R. R.* running to *Ellwood City*; on the W. abutment to the bridge over the *Beaver River*; in the S. end of the back wall. (Note 13, p. 127.)
- Br. 40.—*Summit, Beaver Co., Pa.*, on the *Pennsylvania R. R.* right of way; the extreme NE. corner of the back wall to the E. abutment of bridge 40; the bridge number is anchored to the stone.
- Br. 39 (1906).—About  $\frac{1}{4}$  mile W. of *Homewood, Beaver Co., Pa.*, on the *Pennsylvania R. R.* right of way; the top of the NE. corner of the E. concrete bridge seat of bridge 39. Not marked.
- Br. 38 (1906).—*Homewood, Beaver Co., Pa.*, on the *Pennsylvania R. R.* right of way; the NE. corner of the E. stone of the N. coping of bridge 38. Not marked.
- Br. 34.—*Mayfield, Beaver Co., Pa.*, on the *Pennsylvania R. R.* right of way; on the N. end of the E. bridge seat for bridge 34; an outlined square.
- Geneva Depot (1906).—*Geneva, Beaver Co., Pa.*, on the N. side of the *Pennsylvania R. R.* tracks; on the SE. corner of the most eastern doorsill of the depot. (Note 13, p. 127.)
- Beaver Falls Depot (1906).—*Beaver Falls, Beaver Co., Pa.*, at the *Pennsylvania R. R.* depot; on the NE. corner of the doorsill of the main entrance to the waiting room. (Note 13, p. 127.)
- Br. 29.—*Kenwood, Beaver Co., Pa.*, about 1 mile E. of the *Beaver Falls* depot, on the NE. corner of the E. back wall to bridge 29; an outlined square marked "B M."
- New Brighton Depot.—*New Brighton, Beaver Co., Pa.*, on the SE. corner of the water table of the *Pennsylvania R. R.* depot; a seat cut in the beveled surface.
- Br. 27 $\frac{1}{2}$ .—About  $\frac{3}{4}$  mile E. of *New Brighton, Beaver Co., Pa.*, on the *Pennsylvania R. R.* right of way; at the N. end of the E. back wall of bridge 27 $\frac{1}{2}$ , over a public highway; an outlined square marked "B M."
- Br. 26.—About 1.8 miles E. of the depot at *New Brighton, Beaver Co., Pa.*, on the NW. corner of the E. bridge seat for bridge 26; an outlined square marked "B M."
- 25A.—*Monaca, Beaver Co., Pa.*, on the top step of the SW. wing wall of the *Pittsburg and Lake Erie R. R.* bridge over the *Ohio River*; a seat cut in the S. face of the stone, about 3 inches below the top surface, and marked "U. S. B. M." (The bridge is assumed to be N. and S.)
- 25C.—*Monaca, Beaver Co., Pa.* (See App. 3, Report for 1903, p. 763.) Not found, 1906.



## DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN ALLIANCE AND STRUTHERS, OHIO, 1906.

Br. 66.—About  $1\frac{1}{2}$  miles E. of *Alliance, Stark Co., Ohio*, on the Pennsylvania R. R. right of way; on the E. abutment of bridge 66; a square cut on the NW. corner.

Q<sub>6</sub>.—*Alliance, Stark Co., Ohio*, on West Main street, at the SE. corner of the Knights of Pythias Hall; in the S. face of the base stone and  $\frac{1}{2}$  meter above the cement walk. (Note 1, p. 126.)

City.—*Alliance, Stark Co., Ohio*, on the NE. corner of Freedom and Main streets, at the SW. corner of the Lewis Block; an iron bolt, anchored to the foundation and extending slightly above the level of the cement walk, about 5 centimeters from the N. wall.

R<sub>6</sub>.—*Alliance, Stark Co., Ohio*, at the SE. corner of Freedom and Court streets; in the front face of the city hall, about  $\frac{1}{3}$  meter from the S. side, on the horizontal surface of the water table. (Note 15, p. 127.)

Lunch room.—*Alliance, Stark Co., Ohio*, on the N. side of the Pennsylvania R. R. depot; on the NW. corner of the iron sill to the lunch-room door. (Note 13, p. 127.)

Br. 65 (1906).—1.5 miles E. of *Alliance, Stark Co., Ohio*, on the Pennsylvania R. R. right of way; on the NW. corner of the E. abutment to bridge 65. (Note 15, p. 127.)

Br. 64 (1906).—1.7 miles E. of *Alliance, Stark Co., Ohio*, on the Pennsylvania R. R. right of way; on the NE. corner of the E. back wall of bridge 64. (Note 13, p. 127.)

West Culvert.—About  $\frac{1}{2}$  mile W. of *Sebring, Mahoning Co., Ohio*, on Pennsylvania R. R. right of way; on the NW. corner of the E. abutment of an open culvert; a large square in outline, marked "B. M."

East Culvert.—About 0.5 mile W. of *Sebring, Mahoning Co., Ohio*, on the Pennsylvania R. R. right of way; in the NW. corner of the E. abutment of a box culvert; marked "B. M." (Note 13, p. 127.)

S<sub>6</sub>.—1 mile S. of *Snodes, Mahoning Co., Ohio*, on the Pennsylvania R. R. right of way, at milepost 22; in the middle of the E. coping of the concrete culvert. (Note 15, p. 127.)

T<sub>6</sub>.—About  $2\frac{1}{2}$  miles S. of *Berlin Center, Mahoning Co., Ohio*, on the Pennsylvania R. R. right of way, five telegraph poles N. of milepost 20; in the middle of the W. end of the N. concrete abutment to bridge 26. Character of mark not given by observer.

U<sub>6</sub>.—About 2 miles S. of *Berlin Center, Mahoning Co., Ohio*, 17 telegraph poles S. of milepost 24; at the SW. corner of the Western Reserve Line crossing, 15 meters W. of the track. (Note 2, p. 126.)

V<sub>6</sub>.—70 meters N. of the Pennsylvania R. R. depot, at *Berlin Center, Mahoning Co., Ohio*, and 15 meters E. of the tracks; on the base of the SW. support of the R. R. water tank. (Note 16, p. 127.)

W<sub>6</sub>.—*Ellsworth, Mahoning Co., Ohio*, about 90 meters S. of the Pennsylvania R. R. depot; in the NW. corner of the large stone step of the public-school building. (Note 5, p. 127.)

X<sub>6</sub>.—*Rosemont, Mahoning Co., Ohio*, at the SE. corner of the Pennsylvania R. R. depot; on the curbing of the platform, 5 centimeters from the building. (Note 13, p. 127.)

Y<sub>6</sub>.—*Rosemont, Mahoning Co., Ohio*, 100 meters W. of the Pennsylvania R. R. depot, on the public highway; in the middle of the N. coping of the stone culvert. (Note 5, p. 127.)

Z<sub>6</sub>.—*Rosemont, Mahoning Co., Ohio*, about 0.3 mile W. of the depot, at the public-road crossing; in the NW. corner of the public-school grounds. (Note 2, p. 126.)

A<sub>7</sub>.—*North Jackson, Mahoning Co., Ohio*, about  $\frac{1}{4}$  mile E. of the Pennsylvania R. R. depot; in the SW. corner of the E. abutment of the highway bridge. (Note 1, p. 126.)

B<sub>7</sub>.—At *North Jackson, Mahoning Co., Ohio*, 45 meters SE. of the depot; at a corner of the fence, 40 meters E. of the R. R. crossing. (Note 2, p. 126.)

C<sub>7</sub>.—1.4 miles N. of *North Jackson, Mahoning Co., Ohio*, on the Pennsylvania R. R. right of way, one telegraph pole from milepost 7; in the middle of the E. coping of the concrete arch bridge 10. (Note 14, p. 127.)

D<sub>7</sub>.—*Lordstown, Trumbull Co., Ohio*, at the NW. corner of the road crossing, four telegraph poles N. of milepost 5; in the corner of the fence, and on the land belonging to Ada Horn. (Note 2, p. 126.)

E<sub>7</sub>.—About 0.8 mile N. of *Lordstown, Trumbull Co., Ohio*, on the Pennsylvania R. R. right of way, at milepost 4; on the W. end of the N. abutment to bridge 6. (Note 13, p. 127.)

F<sub>7</sub>.—Near *Boenna Crossing*, 2 miles SW. of *Niles, Trumbull Co., Ohio*, on the Baltimore and Ohio R. R. right of way, 100 meters E. of the Pennsylvania R. R.; on the lower step of the undergrade crossing bridge 423. (Note 1, p. 126.)

G<sub>7</sub>.—About  $1\frac{1}{2}$  miles SE. of *Niles, Trumbull Co., Ohio*, and 2.8 miles E. of *Boenna Crossing*, at the SE. corner of the road crossing, 15 meters from the Baltimore and Ohio R. R. tracks; in the corner of the fence, on land owned by John Dove. (Note 2, p. 126.)

H<sub>7</sub>.—About 0.5 mile W. of *Girard, Trumbull Co., Ohio*, on the Baltimore and Ohio R. R. right of way; on the culvert at telegraph pole 81/28½; in the middle of the S. coping. (Note 13, p. 127, marked U. S. B. M.)

I<sub>7</sub>.—About 3½ miles NW. of the new Baltimore and Ohio station at *Youngstown, Mahoning Co., Ohio*, at telegraph pole 79/28½; at the W. end of the large cut, on the side of the hill; 25 meters S. of the Baltimore and Ohio R. R. tracks, at an offset in the right-of-way fence; set in clay. (Note 2, p. 126.)

J<sub>7</sub>.—1 mile W. of the new Baltimore and Ohio depot at *Youngstown, Mahoning Co., Ohio*, on the Baltimore and Ohio R. R. right of way; on the N. end of the top step of the E. abutment to bridge 410. (Note 5, p. 127.)

B. & O. 381.—1 mile W. of *Youngstown, Mahoning Co., Ohio*, at telegraph pole 76/23, on the old line E. of the river; directly beneath the semaphore bridge. (Note 21, p. 127.)

B. & O. 380.—*Youngstown, Mahoning Co., Ohio*, 200 feet E. of the old Baltimore and Ohio R. R. passenger station, on the old line E. of the river; a copper bolt in the second course of masonry at the W. end of the retaining wall.

B. & O. 379.—Near *Youngstown, Mahoning Co., Ohio*; probably lost.

Railroad.—*Youngstown, Mahoning Co., Ohio*, near the Lake Shore R. R. depot; on the foundation of the W. beam supporting the overhead highway bridge; between the Baltimore and Ohio, and Pittsburgh and Lake Erie tracks; a seat cut on the NW. corner.

B. & O. 378 (1906).—*Hazleton, Mahoning Co., Ohio*, at Andrew Bros. Crossing. At the time of this survey the top course of stone of bridge 24, S. coping, had been removed; this course was found and measured (0.470 meter); the point where the stone containing B. M. had rested, the W. end of the S. coping, is the present B. M.

837 ADJ.—*Hazleton, Mahoning Co., Ohio*, on the Baltimore and Ohio R. R. right of way, at Andrews Bros. crossing; on the top course of the N. wing wall of the E. abutment to bridge 24. (Note 17, p. 127.)

B. & O. 377.—1 mile W. of *Struthers, Mahoning Co., Ohio*, on Baltimore and Ohio R. R. right of way, and S. of tracks; on the W. abutment of bridge 22; a copper bolt in the concrete flume.

B. & O. 376.—*Struthers, Mahoning Co., Ohio*, at the N. end of the highway bridge over the Pittsburgh and Lake Erie R. R. tracks; a copper bolt in the SW. corner of the bridge seat.

#### DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN EAST AKRON JUNCTION AND SULLIVAN, OHIO, 1903.

[These descriptions were furnished by the Chief Engineer of the Baltimore and Ohio Railroad. Where necessary, the names of town, county, and State have been added for the purpose of indexing, and in many cases certain information has been condensed into the form of notes. In accordance with railroad usage, the directions in the descriptions as furnished were given according to the general direction of the railroad line. These have been changed to true directions as far as could be determined. In other respects the wording of the original descriptions has not been changed.]

Wall.—*East Akron Junction, Summit Co., Ohio*, United States Geological Survey B. M. (See App. 8, Report 1903, p. 762.)

B. & O. 441.—600 feet E. of Union Station, *Akron, Summit Co., Ohio*, copper bolt set in E. end of retaining wall on N. side of tracks.

B. & O. 442.—1 mile SW. of Union Station, *Akron, Summit Co., Ohio*, copper bolt set in SW. end of NW. coping of culvert along Cleveland, Akron and Columbus R. R. tracks.

B. & O. 443.—3½ miles SW. of *Akron, Summit Co., Ohio*, on Cleveland, Akron and Columbus bridge over old canal. (Note 33, p. 128.)

B. & O. 444.—P. R. R.—*Barberton, Summit Co., Ohio*, SE. corner of stone doorsill at entrance to ladies' waiting room.

B. & O. 445.—¾ mile S. of *Barberton, Summit Co., Ohio*, on bridge 18, Cleveland, Akron and Columbus R. R. (Note 33, p. 128.)

B. & O. 446.—2½ miles W. of *Barberton, Summit Co., Ohio*, copper bolt set in E. end of small culvert, ½ mile S. of milepost H. 22.

B. & O. 447.—Near *Turkeyfoot Junction, Summit Co., Ohio*, copper bolt set in W. end of small Cleveland, Akron and Columbus culvert, 300 feet S. of milepost H. 24.

P. R. R.—*Messenger, Summit Co., Ohio*, about 2 miles E. of Warwick, NE. corner of S. pier of water tank.

B. & O. 448.—¼ mile NE. of *Clinton, Summit Co., Ohio*, copper bolt set in NW. end of small Cleveland, Akron and Columbus culvert, ¾ mile SW. of Clinton coaling station.



B. & O. 449.— $\frac{1}{4}$  mile NE. of *Warwick, Summit Co., Ohio*, copper bolt set in SE. corner of small Cleveland, Akron and Columbus culvert.

B. & O. 450.—In *Wayne Co.,  $\frac{3}{4}$  mile NW. of Warwick, Summit Co., Ohio*, copper bolt set in NE. corner of old part of culvert.

B. & O. 451.—In *Wayne Co.*, about  $1\frac{1}{2}$  miles NW. of *Warwick, Summit Co., Ohio*, copper bolt set in W. end of N. coping of culvert, 500 feet W. of milepost 59, on eastbound track.

B. & O. 452.—In *Wayne Co.*,  $2\frac{3}{4}$  miles SE. of *Easton, Wayne Co., Ohio*, copper bolt set in W. end of N. coping of culvert, 100 feet E. of milepost 58, on eastbound track.

B. & O. 453.— $1\frac{3}{4}$  miles SE. of *Easton, Wayne Co., Ohio*, opposite milepost 57. (Note 29, p. 128.)

B. & O. 454.—0.7 mile SE. of *Easton, Wayne Co., Ohio*, opposite milepost 56. (Note 29, p. 128.)

B. & O. 455.—300 feet NW. of station at *Easton, Wayne Co., Ohio*, copper bolt set in N. wing wall of SE. abutment of bridge, on westbound track.

B. & O. 456.— $1\frac{1}{4}$  miles NW. of *Easton, Wayne Co., Ohio*, at milepost 54. (Note 29, p. 128.)

B. & O. 457.— $\frac{1}{2}$  mile E. of *Rittman, Wayne Co., Ohio*, at milepost 53. (Note 29, p. 128.)

B. & O. 458.— $\frac{1}{2}$  mile SW. of *Rittman, Wayne Co., Ohio*, at milepost 52. (Note 29, p. 128.)

B. & O. 459.— $1\frac{1}{2}$  miles W. of *Rittman, Wayne Co., Ohio*, on bridge 94, 500 feet W. of milepost 51. (Note 33, p. 128.)

B. & O. 460.— $2\frac{1}{2}$  miles W. of *Rittman, Wayne Co., Ohio*, at milepost 50. (Note 29, p. 128.)

B. & O. 460A.—1 mile E. of *Sterling, Wayne Co., Ohio*, United States Geological Survey B. M.; in the bridge seat at S. end of E. abutment of Erie R. R. bridge. (Note 17, p. 127.) Probably moved since being set on account of double tracking.

B. & O. 461.— $\frac{1}{4}$  mile E. of *Sterling, Wayne Co., Ohio*, vertical rail section set on N. side of tracks opposite milepost 49.

B. & O. 462.— $\frac{3}{4}$  mile NW. of *Sterling, Wayne Co., Ohio*, at milepost 48. (Note 29, p. 128.)

B. & O. 463.— $\frac{3}{4}$  mile SE. of *Sterling, Wayne Co., Ohio*, at milepost 47. (Note 29, p. 128.)

B. & O. 464.— $\frac{1}{4}$  mile NW. of *Creston, Wayne Co., Ohio*, at milepost 46. (Note 29, p. 128.)

B. & O. 465.—In *Medina Co.*  $1\frac{1}{4}$  miles NW. of *Creston, Wayne Co., Ohio*, at milepost 45. (Note 29, p. 128.)

B. & O. 466.—In *Medina Co.*,  $2\frac{1}{4}$  miles NW. of *Creston, Wayne Co., Ohio*, at milepost 44. (Note 29, p. 128.)

B. & O. 467.—In *Medina Co.*,  $3\frac{1}{4}$  miles NW. of *Creston, Wayne Co., Ohio*, at milepost 43. (Note 29, p. 128.)

B. & O. 468.—3 miles SE. of *Lodi, Medina Co., Ohio*, at milepost 42. (Note 29, p. 128.)

B. & O. 469.— $2\frac{1}{2}$  miles SE. of *Lodi, Medina Co., Ohio*, copper bolt set in N. end of small culvert at telegraph pole 34/17.

B. & O. 470.—1 mile SE. of *Lodi, Medina Co., Ohio*, at milepost 40. (Note 29, p. 128.)

B. & O. 471.—800 feet E. of *Lodi, Medina Co., Ohio*, in unstable ground. (Note 29, p. 128.)

B. & O. 472.—1 mile SW. of *Lodi, Medina Co., Ohio*, at milepost 38. (Note 29, p. 128.)

B. & O. 473.—2 miles SW. of *Lodi, Medina Co., Ohio*, copper bolt set in NW. end of small culvert at telegraph pole 38/25 $\frac{1}{2}$ .

B. & O. 474.—3 miles SW. of *Lodi, Medina Co., Ohio*, on bridge 118, telegraph pole 33/24 $\frac{1}{2}$ . (Note 32, p. 128.)

B. & O. 475.—4 miles W. of *Lodi, Medina Co., Ohio*, on bridge 120, telegraph pole 40/27. (Note 32, p. 128.)

B. & O. 476.— $1\frac{3}{4}$  miles E. of *Homer, Medina Co., Ohio*, copper bolt set in S. end of small culvert at telegraph pole 41/18.

B. & O. 477.— $\frac{1}{4}$  mile E. of *Homer, Medina Co., Ohio*, at milepost 33. (Note 29, p. 128.)

B. & O. 478.—500 feet W. of *Newtons, Medina Co.*, at telegraph pole 44/10. (Note 29, p. 128.)

B. & O. 479.—1 mile W. of *Newtons, Medina Co., Ohio*, copper bolt set in S. end of small culvert at telegraph pole 45/10.

B. & O. 480.— $1\frac{3}{4}$  miles W. of *Newtons, Medina Co., Ohio*, copper bolt set in N. end of small culvert at milepost 30.

B. & O. 481.—Near *Sullivan, Ashland Co., Ohio*. (See p. 231.)

## DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN GREENWICH AND SULLIVAN, OHIO.

B. & O. 495.—About  $\frac{3}{4}$  mile E. of *Greenwich, Huron Co., Ohio*, on the arch culvert at telegraph pole 62/23 $\frac{1}{2}$ ; a copper bolt in the E. end of N. coping.

B. & O. 494.—About 1.8 miles E. of *Greenwich, Huron Co., Ohio*, on the arch culvert at telegraph pole 62/21 $\frac{1}{2}$ ; a copper bolt in the W. end of the N. coping.

B. & O. 493.—About 2.8 miles E. of *Greenwich, Huron Co., Ohio*, on the arch culvert at telegraph pole 61/21 $\frac{1}{2}$ ; a copper bolt in the E. end of the N. coping.

B. & O. 492.—In *Huron Co., Ohio*, about  $\frac{1}{4}$  mile W. of *Ramey, Ashland Co., Ohio*, on the large arch bridge at telegraph pole 60/18; a copper bolt in the E. end of the N. coping.

B. & O. 491.—About 1.5 miles W. of *Hereford, Ashland Co., Ohio*, on a large arch bridge; a copper bolt in the E. end of the N. coping.

B. & O. 490.—Near *Hereford, Ashland Co., Ohio*, on a steel-girder bridge, about 800 feet W. of the R. R. station. (Note 32, p. 128).

B. & O. 489.—About 0.9 mile E. of *Hereford, Ashland Co., Ohio*, on the bridge at telegraph pole 57/5; a copper bolt in the S. end of the E. abutment.

B. & O. 488.—About 1.9 miles E. of *Hereford, Ashland Co., Ohio*, on a small culvert at telegraph pole 56/6; a copper bolt in the W. end of the S. coping.

B. & O. 487.—About 2 miles NW. of *Nova, Ashland Co., Ohio*, on the large arch bridge at telegraph pole 55/1 $\frac{1}{2}$ ; a copper bolt in the E. end of the N. coping.

B. & O. 486.—About 0.6 mile W. of *Nova, Ashland Co., Ohio*, on the culvert at telegraph pole 53/17 $\frac{1}{2}$ ; a copper bolt in the W. end of the N. coping.

1127 ADJ.—*Nova, Ashland Co., Ohio*; T. 1 N., R. 19 W., in the foundation wall of the United Brethren Church, on the S. face of the SE. corner; marked "1127 ADJ 1903." (Note 17, p. 127.)

B. & O. 485A.—*Nova, Ashland Co., Ohio*, about 325 feet E. of the station on a small culvert; the NE. corner of the N. coping, at the top of the beveled surface.

B. & O. 485.—About 0.5 mile E. of *Nova, Ashland Co., Ohio*, on the small culvert at telegraph pole 52/15; a copper bolt in the N. end.

B. & O. 484.—About 1.5 miles E. of *Nova, Ashland Co., Ohio*, on the culvert at telegraph pole 51/14; a copper bolt in the W. end of the S. coping.

B. & O. 483.—About 1.5 miles W. of *Sullivan, Ashland Co., Ohio*, at milepost 26. (Note 29, p. 128.)

B. & O. 482.—*Sullivan, Ashland Co., Ohio*, about 300 feet E. of the station, on the culvert at telegraph pole 48/14; a copper bolt in the W. end of the N. coping.

1136 Canton.—*Sullivan, Ashland Co., Ohio*, at the SW. corner of the schoolhouse, in the vertical surface of the water table, marked "1136 Canton ADJ 1903." (Note 17, p. 127.)

B. & O. 481.—About 1.5 miles E. of *Sullivan, Ashland Co., Ohio*, at milepost 29. (Note 29, p. 128.)

## DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN GREENWICH AND CHICAGO JUNCTION, OHIO, 1903.

[These descriptions were furnished by the Chief Engineer of the Baltimore and Ohio Railroad. Where necessary, the names of town, county, and State have been added for the purpose of indexing, and in many cases certain information has been condensed into the form of notes. In accordance with railroad usage the directions in the descriptions as furnished were given according to the general direction of the railroad line. These have been changed to true directions as far as could be determined. In other respects the wording of the original descriptions has not been changed.]

B. & O. 495.—Near *Greenwich, Ohio*. (See above.)

B. & O. 496.— $\frac{1}{4}$  mile W. of *Greenwich, Huron Co., Ohio*, copper bolt set in S. end of E. abutment of bridge for undergrade street crossing.

B. & O. 497.—1 mile W. of *Greenwich, Huron Co., Ohio*, copper bolt set in E. end of N. coping of large arch at telegraph pole 65/17 $\frac{1}{2}$ .

B. & O. 498.—1 $\frac{1}{3}$  miles W. of *Greenwich, Huron Co., Ohio*, vertical rail section set 20 feet N. of tracks, by telegraph pole 65/5.

B. & O. 499.—2 $\frac{3}{4}$  miles W. of *Greenwich, Huron Co., Ohio*, copper bolt set in E. end of N. coping of small culvert at telegraph pole 67/7 $\frac{1}{2}$ .

B. & O. 500.—1 $\frac{1}{2}$  miles E. of *Boughtonville, Huron Co., Ohio*, copper bolt set in E. pedestal of highway bridge at telegraph pole 69/10, S. of tracks.

B. & O. 501.—300 feet E. of *Boughtonville, Huron Co., Ohio*, copper bolt set in W. end of S. coping of arch bridge.



B. & O. 502.— $\frac{3}{4}$  mile W. of *Boughtonville, Huron Co., Ohio*, copper bolt set in E. end of S. coping of culvert at telegraph pole 70/18.

B. & O. 503.— $1\frac{3}{4}$  miles W. of *Boughtonville, Huron Co., Ohio*. (See below.)

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN CHICAGO JUNCTION AND DESHLER, OHIO, 1905.

B. & O. 503.—About  $1\frac{3}{4}$  miles W. of *Boughtonville, Huron Co., Ohio*, at telegraph pole 71/18; a copper bolt set in the S. end of the E. abutment of an undergrade crossing bridge.

B. & O. 504.—About 3 miles E. of *Chicago Junction, Huron Co., Ohio*, 700 feet E. of milepost 3; originally a copper bolt set in the S. end of the E. abutment of an undergrade crossing bridge. In 1905 it was found that the copper bolt had been removed and the top surface of the stone close to the hole on the S. side was used as the B. M.

B. & O. 505.—2 miles E. of *Chicago Junction, Huron Co., Ohio*, opposite milepost 2. (Note 21, p. 127.)

B. & O. 506.—About 1 mile E. of *Chicago Junction, Huron Co., Ohio*, 500 feet W. of milepost 1; a copper bolt set in the E. end of the S. coping of a culvert.

B. & O. 507.—*Chicago Junction, Huron Co., Ohio*, 600 feet E. of the Lake Branch R. R. crossing. (Note 21, p. 127.)

F<sub>5</sub>.—*Chicago Junction, Huron Co., Ohio*, at the corner of Washington and First streets; a cross cut in the top surface of the E. end of the top step of St. Francis Xavier Church.

G<sub>5</sub>.—*Chicago Junction, Huron Co., Ohio*, at the corner of Myrtle avenue and Pearl street, at the SW. corner of the Sheidley Hotel block, on the side facing Myrtle avenue; in the second course of brick above the water table. (Note 4, p. 127.)

H<sub>5</sub>.—*Chicago Junction, Huron Co., Ohio*, about 200 meters S. of the Baltimore and Ohio R. R. tracks, on the W. side of Myrtle avenue; in the E. end of the sandstone sill of the Home Savings and Banking Co.'s building. (Note 1, p. 126.)

I<sub>5</sub>.—About  $2\frac{1}{2}$  miles W. of *Chicago Junction, Huron Co., Ohio*, on the Baltimore and Ohio R. R. right of way, at the second telegraph pole W. of milepost 269 (C) and on a knoll 12 meters S. of the track. (Note 2, p. 126.)

J<sub>5</sub>.—About 3 miles W. of *Chicago Junction, Huron Co., Ohio*, on the Baltimore and Ohio R. R. right of way,  $3\frac{1}{2}$  telegraph poles E. of milepost 268, and 5 meters N. of the track; in the top surface of the coping of a culvert. (Note 5, p. 127.)

K<sub>5</sub>.—About 5 miles W. of *Chicago Junction, Huron Co., Ohio*, on the Baltimore and Ohio R. R. right of way, 8 telegraph poles E. of milepost 266; in the center of the top surface of the gray sandstone coping of a culvert. (Note 4, p. 127.)

L<sub>5</sub>.—*Siam, Seneca Co., Ohio*; on the Baltimore and Ohio R. R. right of way, 75 meters W. of the Pennsylvania R. R. crossing; about 2 meters S. of the track, in the center of a concrete block, about 3 by 4 feet on the top surface, set level with the grade. (Note 1, p. 126.)

M<sub>5</sub>.—*Siam, Seneca Co., Ohio*; on the Baltimore and Ohio R. R. right of way; 375 meters W. of the Pennsylvania R. R. crossing, about 15 meters N. of the track, in a corner of the fence at a road crossing. (Note 2, p. 126.)

N<sub>5</sub>.—About 3 miles W. of *Siam, Seneca Co., Ohio*; on the Baltimore and Ohio R. R. right of way, in the N. end of the W. abutment of an undergrade crossing bridge. (Note 5, p. 127.)

O<sub>5</sub>.—About 1 mile W. of *Scipio (siding), Seneca Co., Ohio*, on the Baltimore and Ohio R. R. right of way, 3 telegraph poles E. of the signboard "1 mile to Scipio;" in the center of the top surface of the N. end of a concrete culvert. (Note 4, p. 127.)

859 Republic.—A B. M. of the United States Geological Survey about  $\frac{1}{4}$  mile E. of *Republic, Seneca Co., Ohio*, on the Baltimore and Ohio R. R. undergrade crossing bridge, over Marion state road; a square cut in outline on the top surface of the southernmost stone in the lower course.

883 Col.—*Republic, Seneca Co., Ohio*, in the SW. corner of the town hall; on the W. side, in the vertical face of the water table. (Note 17, p. 127.)

P<sub>5</sub>.—Near *Republic, Seneca Co., Ohio*; 12 telegraph poles west of milepost 255; on a knoll in the Baltimore and Ohio R. R. right of way, 12 meters S. of the track. (Note 11, p. 127.)

Q<sub>5</sub>.— $\frac{1}{2}$  mile W. of the signboard at *Seneca, Seneca Co., Ohio*, on the Baltimore and Ohio R. R. right of way, 15 meters S. of the track, at an offset in the right-of-way fence. (Note 2, p. 126.)

R<sub>5</sub>.—About 3 miles E. of *Tiffin, Seneca Co., Ohio*, on the Baltimore and Ohio R. R. right of way, in the center of the S. coping to stone arch bridge 58. (Note 4, p. 127.)

S<sub>5</sub>.—About 1 mile E. of *Tiffin, Seneca Co., Ohio*, on the Baltimore and Ohio R. R. right of way,  $\frac{1}{4}$  mile W. of milepost 248, and 300 meters E. of the junction of the Baltimore and Ohio and Pennsylvania R. Rs.; in the center of the S. girder (concrete) of bridge 61. (Note 1, p. 126.)

757 Col.—*Tiffin, Seneca Co., Ohio*, in the SW. corner of the court-house, W. face, in a window sill. (Note 17, p. 127.)

775 Tiffin.—*Tiffin, Seneca Co., Ohio*, at the corner of Washington and Welmore streets, at the front entrance to the Catholic church; a chiseled square cut in the E. end of the lower step.

T<sub>5</sub>.—*Tiffin, Seneca Co., Ohio*, on the Munroe Street bridge over Sandusky River, in the E. side of the N. abutment, about 2 feet from the guard rail, on the second course of stone. (Note 4, p. 127.)

U<sub>5</sub>.—About  $2\frac{1}{2}$  miles W. of *Tiffin, Seneca Co., Ohio*, on the Baltimore and Ohio R. R. right of way, 400 meters W. of milepost 245; in the N. end of the W. abutment of a bridge over a creek. (Note 1, p. 126.)

V<sub>5</sub>.—About 2 miles E. of *Bascom, Seneca Co., Ohio*, on the Baltimore and Ohio R. R. right of way, 150 meters W. of milepost 243; in the N. end of the W. abutment of bridge 68 over Wolf Creek. (Note 5, p. 127.)

W<sub>5</sub>.—About 1 mile E. of *Bascom, Seneca Co., Ohio*, 90 meters W. of milepost 242 and 25 meters S. of the Baltimore and Ohio R. R. tracks; on the farm of Joseph Leonard, at the NE. corner of the junction of the roads. (Note 2, p. 126.)

776 Bascom.—*Bascom, Seneca Co., Ohio*, near Crumm's store; at the NW. corner of the cross-roads; a cross cut in the bottom of a round hole in a stone used for the crossing.

766 Tol.—0.2 mile S. of *Bascom, Seneca Co., Ohio*, S. of the cemetery; in the SW. abutment of an iron highway bridge over a creek. (Note 17, p. 127.)

X<sub>5</sub>.—About 2 miles W. of *Bascom, Seneca Co., Ohio*, on the Baltimore and Ohio R. R. right of way, at a road crossing, at milepost 239.5 meters N. of the track, on the top step of the E. side of a sandstone culvert. (Note 1, p. 126.)

Y<sub>5</sub>.—About 3 miles E. of *Fostoria, Seneca Co., Ohio*, on the Baltimore and Ohio R. R. right of way, in the N. end of the W. abutment of a steel girder bridge over Raccoon Creek. (Note 5, p. 127.)

Z<sub>5</sub>.—About 2 miles E. of *Fostoria, Seneca Co., Ohio*, on the Baltimore and Ohio R. R. right of way, on the N. side of the track; in the center of the capstone of a culvert. (Note 4, p. 127.)

778 Fostoria.—*Fostoria, Seneca Co., Ohio*, at the NW. corner of Jones and Main streets; the top surface of the check valve of the city water plug.

A<sub>6</sub>.—*Fostoria, Seneca Co., Ohio*, at the corner of Main and Center streets, in the SW. corner of the First National Bank building; on the E. side of the Center Street entrance, in the vertical surface of the water table. (Note 1, p. 126.)

B<sub>6</sub>.—*Fostoria, Seneca Co., Ohio*, at the SE. corner of Tiffin and Union streets, 1 meter from the curb. (Note 11, p. 127.)

C<sub>6</sub>.—In *Hancock Co., Ohio*,  $2\frac{1}{2}$  miles W. of *Fostoria, Seneca Co., Ohio*, at a crossing; 50 meters N. of the Baltimore and Ohio R. R. tracks, in the W. end of the S. abutment of a small highway bridge over a creek. (Note 4, p. 127.)

D<sub>6</sub>.—Near *Godsend, Hancock Co., Ohio*, on the Baltimore and Ohio R. R. right of way, 150 meters W. of the water tank; on the steel girder bridge over a small creek at the N. end of the W. abutment. (Note 4, p. 127.)

740 Tol.—1.5 miles E. of *Bloomdale, Wood Co., Ohio*, T. 3 N., R. 12 E., sec. 31, in the S. end of the E. abutment of an iron highway bridge. (Note 17, p. 127.)

E<sub>6</sub>.— $\frac{3}{4}$  mile E. of *Bloomdale, Wood Co., Ohio*, at the corporation limits, at the NE. corner of the road junction and close to a rail fence. (Note 11, p. 127.)

749 Bloomdale.—*Bloomdale, Wood Co., Ohio*, at the SW. corner of Main and the second street N. of the Baltimore and Ohio R. R. tracks; in a brick building used as a hardware store; a square cut in outline in the N. end of the stone sill.

F<sub>6</sub>.—*Bloomdale, Wood Co., Ohio*, at the corner of Garfield and Mulberry streets, at the main entrance of Trinity Methodist Episcopal Church; in the top face of the second step. (Note 1, p. 126.)

H<sub>6</sub>.—*Bairdstown, Wood Co., Ohio*, on Randolph avenue, 100 meters S. of the Baltimore and Ohio R. R. station; a square cut in the S. doorstep of a double house belonging to E. Knodle.



I<sub>6</sub>.—*Galatea, Wood Co., Ohio*, in the Baltimore and Ohio R. R. right of way, 150 meters E. of the Toledo and Ohio Central R. R. crossing; on the upper step of the NW. abutment of a large culvert. (Note 5, p. 127.)

J<sub>6</sub>.—*North Baltimore, Wood Co., Ohio*, on the W. side of Main street, 40 meters N. of the Baltimore and Ohio R. R. tracks; in the N. end of the sill of the S. part of the double store marked "A. J. Steele, 1900." (Note 1, p. 126.)

726 Tol.— $\frac{1}{2}$  mile S. of *North Baltimore, Wood Co., Ohio*, in the SW. abutment of an iron bridge over a creek. (Note 17, p. 127.)

K<sub>6</sub>.— $\frac{1}{2}$  mile W. of *North Baltimore, Wood Co., Ohio*, at the NE. corner of the intersection of Broadway and the street at the city limits. (Note 2, p. 126.)

L<sub>6</sub>.—About  $1\frac{1}{2}$  miles W. of *North Baltimore, Wood Co., Ohio*, at a road crossing; in the S. end of a culvert, in the center of the top. (Note 4, p. 127, marked "U. S. B. M.")

M<sub>6</sub>.—About  $2\frac{1}{2}$  miles W. of *North Baltimore, Wood Co., Ohio*, on the Baltimore and Ohio R. R. right of way, at a road crossing; in the S. end of a concrete culvert. (Note 5, p. 127.)

N<sub>6</sub>.—About 1 mile E. of *Hoytville, Wood Co., Ohio*, at a road crossing 50 meters S. of the Baltimore and Ohio R. R. tracks, 10 meters S. of the junction of highway; on the W. end of the N. abutment of a small iron bridge. (Note 1, p. 126.)

O<sub>6</sub>.—About 1 mile W. of *Hoytville, Wood Co., Ohio*, at a road crossing, 10 meters S. of the Baltimore and Ohio R. R. tracks, on the W. end of a small highway culvert; in the middle stone, 8 centimeters from the W. face. (Note 4, p. 127.)

P<sub>6</sub>.—About 1 mile E. of *Deshler, Henry Co., Ohio*, on the Baltimore and Ohio R. R. right of way, at a road crossing; in the N. end of a concrete culvert, in the center of the top surface. (Note 1, p. 126.)

I<sub>1</sub>.—*Deshler, Henry Co., Ohio*. (See App. 8, Report for 1899, p. 656.)

H<sub>1</sub>.—*Deshler, Henry Co., Ohio*. (See App. 8, Report for 1899, p. 656.)

J<sub>1</sub>.—*Belmore, Putnam Co., Ohio*. (See App. 8, Report for 1899, p. 656.)

#### DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN WARWICK AND UHRICHSVILLE, OHIO, 1903.

[These descriptions were furnished by the Chief Engineer of the Baltimore and Ohio Railroad. Where necessary, the names of the town, county, and State have been added for the purpose of indexing and in many cases certain information has been condensed into the form of notes. In accordance with railroad usage, the directions in the descriptions as furnished were given according to the general direction of the railroad line. These have been changed to true directions as far as could be determined. In other respects the wording of the original descriptions has not been changed.]

B. & O. 449.— $\frac{1}{4}$  mile NE. of *Warwick, Summit Co., Ohio*. (See p. 230.)e

B. & O. 1.— $\frac{1}{2}$  mile S. of *Warwick, Summit Co., Ohio*, chiseled point between tracks on mud wall of S. abutment of bridge.

B. & O. 2.—In *Stark Co.*,  $1\frac{3}{4}$  miles SE. of *Warwick, Summit Co., Ohio*, at milepost 107. (Note 22, p. 127.)

B. & O. 3.—In *Stark Co.*,  $2\frac{3}{4}$  miles SE. of *Warwick, Summit Co., Ohio*, at milepost 106. (Note 22, p. 127.)

B. & O. 4.—500 feet SE. of station at *Canal Fulton, Stark Co., Ohio*, rail section set between east-bound track and siding at milepost 105.

B. & O. 5.—1 mile SE. of *Canal Fulton, Stark Co., Ohio*, at milepost 104. (Note 22, p. 127.)e

B. & O. 6.—2 miles SE. of *Canal Fulton, Stark Co., Ohio*, at milepost 103. (Note 22, p. 127.)e

B. & O. 7.—About 1 mile NW. of *Pauls, Stark Co., Ohio*, at milepost 102. (Note 22, p. 127.)e

B. & O. 8.—About 1 mile W. of *Crystal Spring, Stark Co., Ohio*, near *Pauls*, chiseled point on NW. end of retaining wall on NE. side of tracks at milepost 101, near Coxey's white sand works.

B. & O. 9.—About  $\frac{1}{4}$  mile W. of *Crystal Spring, Stark Co., Ohio*, at milepost 100. (Note 22, p. 127.)e

B. & O. 10.—About  $\frac{3}{4}$  mile SE. of *Crystal Spring, Stark Co., Ohio*, at milepost 99. (Note 22, p. 127.)e

B. & O. 11.—About 2 miles N. of *Massillon, Stark Co., Ohio*, square cut in S. end of W. coping of box culvert on westbound tracks, 250 feet E. of milepost 98.

B. & O. 12.—About 1 mile N. of *Massillon, Stark Co., Ohio*, at milepost 97. (Note 22, p. 127.)e

P. R. R.—*Massillon, Stark Co., Ohio*, cut on NE. corner coping Pennsylvania R. R. arch bridge, 300 feet E. of bridge 4.

B. & O. 13.— $\frac{1}{4}$  mile NW. of *Massillon, Stark Co., Ohio*, copper bolt set in N. end of mud wall of E. abutment of bridge at telegraph pole 96/10.e

- P. R. R.—*Massillon, Stark Co., Ohio*, cut on the N. end of E. back wall Pennsylvania R. R. bridge 5.
- B. & O. 14.— $\frac{1}{2}$  mile SE. of *Massillon, Stark Co., Ohio*, copper bolt set in N. end of W. abutment of highway bridge over river.
- B. & O. 15.—About  $1\frac{1}{2}$  miles S. of *Massillon, Stark Co., Ohio*, copper bolt set in SE. pedestal of water tank at Columbia, telegraph pole 94/4.
- B. & O. 16.—About  $2\frac{1}{2}$  miles S. of *Massillon, Stark Co., Ohio*, copper bolt set in NE. end of NW. coping of culvert for pipe drain at telegraph pole 93/7.
- B. & O. 17.—About  $4\frac{1}{4}$  miles S. of *Massillon, Stark Co., Ohio*, copper bolt set in N. end of W. coping of large concrete arch culvert near where old line is crossed by present line.
- B. & O. 18.—About  $\frac{3}{4}$  mile NE. of *Navarre, Stark Co., Ohio*, copper bolt set in SW. end of SE. coping of large stone arch 450 feet SW. of first Wheeling and Lake Erie crossing.
- B. & O. 19.— $\frac{3}{4}$  mile SW. of *Navarre, Stark Co., Ohio*, at milepost 89. (Note 22, p. 127.).
- B. & O. 20.— $\frac{1}{2}$  mile N. of *Justus, Stark Co., Ohio*, 300 feet S. of Wheeling and Lake Erie crossing, copper bolt set in N. end of W. coping of small culvert at telegraph pole 88/5.
- B. & O. 21.— $\frac{1}{2}$  mile S. of *Justus, Stark Co., Ohio*, copper bolt set in W. end of S. abutment of arch culvert near milepost 87.
- B. & O. 22.— $1\frac{1}{2}$  miles S. of *Justus, Stark Co., Ohio*, copper bolt set in W. end of S. abutment of arch culvert at telegraph pole 86.
- B. & O. 23.—1 mile N. of *Beach City, Stark Co., Ohio*, copper bolt set in S. end of W. coping of stone culvert for traction line near R. R.
- B. & O. 24.—800 feet N. of station at *Beach City, Stark Co., Ohio*, copper bolt set in W. end of S. abutment of bridge over creek.
- B. & O. 25.— $\frac{3}{4}$  mile SE. of *Beach City, Stark Co., Ohio*, copper bolt in SW. end of SE. abutment of bridge.
- B. & O. 26.—2 miles SE. of *Beach City, Stark Co., Ohio*, copper bolt set in SW. end of back wall, NW. abutment of bridge.
- B. & O. 27.—2 miles NW. of *Strasburg, Tuscarawas Co., Ohio*, at milepost 81. (Note 22, p. 127.).
- B. & O. 28.—1 mile NW. of *Strasburg, Tuscarawas Co., Ohio*, at milepost 80. (Note 22, p. 127.).
- B. & O. 29.—*Strasburg, Tuscarawas Co., Ohio*, at milepost 79. (Note 22, p. 127.).
- B. & O. 30.—About  $\frac{3}{4}$  mile SE. of *Strasburg, Tuscarawas Co., Ohio*, copper bolt set in SW. end of back wall of SE. abutment of bridge.
- B. & O. 31.—About 1 mile SE. of *Strasburg, Tuscarawas Co., Ohio*, copper bolt set in first course of masonry SE. end of SW. abutment of trolley overhead bridge, near milepost 78.
- B. & O. 32.—About 2 miles SE. of *Strasburg, Tuscarawas Co., Ohio*, copper bolt set in SE. end of SW. coping of culvert, 500 feet NW. of milepost 77.
- B. & O. 33.—3 miles SE. of *Strasburg, Tuscarawas Co., Ohio*, copper bolt set in S. end of W. coping of culvert, telegraph pole 76/6.
- B. & O. 34.—2 miles NW. of *Canal Dover, Tuscarawas Co., Ohio*, at milepost 75. (Note 22, p. 127.).
- B. & O. 35.—1 mile NW. of *Canal Dover, Tuscarawas Co., Ohio*, copper bolt set in SW. end of bridge seat of SE. abutment of culvert at telegraph pole 74/4.
- B. & O. 36.— $\frac{1}{4}$  mile W. of station at *Canal Dover, Tuscarawas Co., Ohio*, copper bolt set in easterly pedestal of water tank, telegraph pole 73/11.
- B. & O. 37.— $\frac{1}{2}$  mile SE. of *Canal Dover, Tuscarawas Co., Ohio*, copper bolt set in NE. end of mud wall of NW. abutment of Tuscarawas River bridge.
- B. & O. 38.— $1\frac{1}{4}$  miles SE. of *Canal Dover, Tuscarawas Co., Ohio*, at telegraph pole 72/1. (Note 21, p. 127.).
- B. & O. 38A.—About  $1\frac{1}{4}$  miles SE. of *Canal Dover, Tuscarawas Co., Ohio*, 200 feet SE. of telegraph pole 72/1. (Note 21, p. 127.).
- B. & O. 39.—1 mile NW. of *New Philadelphia, Tuscarawas Co., Ohio*, at milepost 71. (Note 21, p. 127.).
- B. & O. 40.—*New Philadelphia, Tuscarawas Co., Ohio*, at milepost 70. (Note 21, p. 127.).
- B. & O. 41.—About  $\frac{1}{2}$  mile SE. of *New Philadelphia, Tuscarawas Co., Ohio*, copper bolt set in NW. end of SW. coping of culvert.
- B. & O. 42.—About 2 miles SE. of *New Philadelphia, Tuscarawas Co., Ohio*, rail section set on NE. side of tracks at milepost 68.
- B. & O. 43.—About 3 miles SE. of *New Philadelphia, Tuscarawas Co., Ohio*, copper bolt set in SW. end of SE. abutment of bridge at telegraph pole 67/1.



B. & O. 44.—About  $\frac{3}{4}$  mile NW. of *Goshen, Tuscarawas Co., Ohio*, copper bolt set in center of mude wall of SE. abutment of bridge at telegraph pole 66/18, NE. of present tracks.

B. & O. 45.— $\frac{1}{2}$  mile SE. of *Goshen, Tuscarawas Co., Ohio*, rail section set on NE. side of trackse at telegraph pole 65/15.

B. & O. 46.— $\frac{1}{4}$  mile W. of *Midvale, Tuscarawas Co., Ohio*, copper bolt set in S. end of E. abutmente of bridge at telegraph pole 64/15.

B. & O. 47.— $\frac{1}{2}$  mile SE. of *Midvale, Tuscarawas Co., Ohio*, copper bolt set SW. of track in mude wall of SE. abutment of bridge at telegraph pole 63/20.

B. & O. 48.—About 1 mile N. of *Uhrichsville, Tuscarawas Co., Ohio*, copper bolt set in W. end of mud wall of S. abutment of undergrade highway crossing bridge near milepost 62.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN CUMBERLAND, MD., AND BENWOOD, W. VA., 1904.

[These descriptions were furnished by the Chief Engineer of the Baltimore and Ohio Railroad. Where necessary, the names of the town, county, and State have been added for the purpose of indexing, and in many cases certain information has been condensed into the form of notes. In accordance with railroad usage, the directions in the descriptions as furnished were given according to the general direction of the railroad line. These have been changed to true directions as far as could be determined. In other respects the wording of the original descriptions has not been changed.]

B. & O. 154.—Near *Cumberland, Md.* (See App. 3, Report for 1903, p. 737.)e

B. & O. 155.—Near *Cumberland, Md.* (See App. 3, Report for 1903, p. 737.)e

B. & O. 1.—*Cumberland, Allegany Co., Md.*, copper bolt set in N. end of extension of W. abutmente of overhead bridge 180C, near Green Street station.

B. & O. 3.—Near *Robert Station, Allegany Co., Md.*, copper bolt set in W. end of S. wall of small culvert about 700 feet S. of milepost 181.

B. & O. 4.— $\frac{1}{8}$  mile S. of *Robert Station, Allegany Co., Md.*, on small arch culvert at telegraph polee 182/7. (Note 26, p. 128.)

B. & O. 5.—Near *Cedar Cliff, Allegany Co., Md.*, on culvert at telegraph pole 183/11. (Note 26, p. 128.)

B. & O. 6.—Near *Cedar Cliff, Allegany Co., Md.*, square cut in N. end of W. coping of stone culvert at telegraph pole 184/6.

B. & O. 6A.—Near *Brady, Allegany Co., Md.*, bridge 71, telegraph pole 184/22. (Note 23, p. 128.)

B. & O. 7.— $\frac{1}{8}$  mile SW. of *Brady, Allegany Co., Md.*, copper bolt set in E. end of N. coping of culverte at telegraph pole 185/10.

B. & O. 7A.—1 mile SW. of *Brady, Allegany Co., Md.*, copper bolt set in native rock W. of trackse at telegraph pole 186/2.

B. & O. 8.— $\frac{1}{2}$  mile E. of *McKenzie Station, Allegany Co., Md.*, on undergrade highway bridgee crossing at telegraph pole 186/37. (Note 23, p. 128.)

B. & O. 9.—*Potomac Station, Allegany Co., Md.*, on undergrade highway bridge. (Note 23, p. 128.)

B. & O. 10.—Near *Pinto, Allegany Co., Md.*, on arch culvert about 500 feet NE. of milepost 189.e (Note 26, p. 128.)

B. & O. 11.—Near *Lowndes, Allegany Co., Md.*, on culvert, 150 feet SW. of milepost 190. (Notee 26, p. 128.)e

B. & O. 12.—Near *Cresap, Allegany Co., Md.*, on culvert at telegraph pole 190/23. (Note 23, p. 128.)e

B. & O. 13.—800 feet SW. of *Rawlings, Allegany Co., Md.*, on bridge 75, opposite telegraph polee 191/23. (Note 24, p. 128.)

B. & O. 14.—Near *Rawlings, Allegany Co., Md.*, opposite milepost 193. (Note 21, p. 127.)e

B. & O. 15.—Near *Black Oak, Allegany Co., Md.*, opposite milepost 194. (Note 21, p. 127.)e

B. & O. 16.—200 feet SW. of *Black Oak, Allegany Co., Md.*, opposite milepost 195. (Note 21, p. 127.)e

B. & O. 17.—About 0.9 mile SW. of *Black Oak, Allegany Co., Md.*, copper bolt set in NW. end of NE. abutment of West Virginia Central R. R. bridge at telegraph pole 195/30.

B. & O. 18.— $\frac{1}{2}$  mile NE. of *Dawson, Allegany Co., Md.*, at telegraph pole 196/24 $\frac{1}{2}$ . (Note 27, p. 128.)

B. & O. 19.—Near *Dawson, Allegany Co., Md.*, copper bolt set in native rock W. of tracks, 30 feet N. of telegraph pole 197/30.

B. & O. 20.—Near *Dawson, Allegany Co., Md.*, on arch 76, telegraph pole 198/11 $\frac{1}{2}$ . (Note 26, p. 128.)

B. & O. 21.—Near *Dawson, Allegany Co., Md.*, copper bolt set in bridge seat between tracks NW.e abutment of bridge 77, opposite telegraph pole 199/17, near twenty-first bridge station.

B. & O. 22.—Near *Krysar, Mineral Co., W. Va.*, copper bolt set between tracks in S. abutment of bridge, opposite telegraph pole 201/8.

B. & O. 23.—*Keyser, Mineral Co., W. Va.*, opposite milepost 202, near center of Keyser yards. (Note 21, p. 127.)

B. & O. 24.—Near *Keyser, Mineral Co., W. Va.*, opposite milepost 203, at NW. end of Keyser yards. (Note 21, p. 127.)

B. & O. 25.—Near *Keyser, Mineral Co., W. Va.*, opposite milepost 204. (Note 21, p. 127.)

B. & O. 26.—Near *Piedmont, Mineral Co., W. Va.*, on bridge at telegraph pole 204/30. (Note 24, p. 128.)

B. & O. 26A.—Near *Piedmont, Mineral Co., W. Va.*, on bridge at telegraph pole 205/21. (Note 23, p. 128.)

B. & O. 27.— $\frac{1}{2}$  mile SE. of *Piedmont, Mineral Co., W. Va.*, opposite milepost 206. (Note 21, p. 127.)

B. & O. 28.— $\frac{1}{2}$  mile SW. of *Piedmont, Mineral Co., W. Va.*, opposite milepost 207. (Note 21, p. 127.)

B. & O. 28A.—400 feet W. of *West Virginia Central Junction, Mineral Co., W. Va.*, copper bolt set in SW. end of bridge seat, NW. abutment of bridge for siding over Potomac River.

B. & O. 29.— $\frac{1}{4}$  mile E. of *Bloomington, Garrett Co., Md.*, on bridge 79, over Potomac River, second step from top. (Note 23, p. 128.)

B. & O. 30.—Near *Bloomington, Garrett Co., Md.*, opposite milepost 209. (Note 21, p. 127.)

B. & O. 31.—Near *Black Bear, Garrett Co., Md.*, opposite milepost 210. (Note 21, p. 127.)

B. & O. 31A.—Near *Black Bear, Garrett Co., Md.*, square cut in foundation, SW. side of SE. portal of Everetts tunnel.

B. & O. 32.—Near *Black Bear, Garrett Co., Md.*, copper bolt set in foundation, NE. side of NW. portal of Everetts tunnel, telegraph pole 210/30.

1380 C.—About  $1\frac{1}{4}$  miles E. of *Bond Station, Garrett Co., Md.*, 2.6 miles E. of *Frankville*; 100 feet E. of signal station, S. side of Baltimore and Ohio R. R.; a B. M. of the United States Geological Survey consisting of a bronze tablet set in rock. (Note 17, p. 127.)

B. & O. 33.— $\frac{1}{2}$  mile E. of *Bond Station, Garrett Co., Md.*, opposite milepost 212. (Note 21, p. 127.)

B. & O. 34.—*Crabtree, Garrett Co., Md.*, opposite milepost 213. (Note 21, p. 127.)

B. & O. 35.—Near *Frankville, Garrett Co., Md.*, 45 feet E. of telegraph pole 213/39. (Note 27, p. 128.)

B. & O. 36.—Near *Frankville, Garrett Co., Md.*, 30 feet NE. of telegraph pole 215/03(?). (Note 27, p. 128.)

B. & O. 37.— $1\frac{1}{2}$  miles SW. of *Frankville, Garrett Co., Md.*, copper bolt set in SW. end of retaining wall, NW. of tracks, near milepost 216, 500 feet NE. of Hitchcock tunnel.

B. & O. 38.— $2\frac{1}{2}$  miles SW. of *Frankville, Garrett Co., Md.*, opposite milepost 217. (Note 21, p. 127.)

B. & O. 39.—1 mile NE. of *Swanton, Garrett Co., Md.*, on bridge 80, at telegraph pole 218/13 $\frac{1}{2}$ . (Note 26, p. 128.)

B. & O. 40.— $\frac{1}{4}$  mile NE. of *Swanton, Garrett Co., Md.*, copper bolt set in NW. end of bridge seat of NE. abutment of bridge 83, telegraph pole 219/5 $\frac{1}{2}$ .

B. & O. 40A.— $\frac{1}{4}$  mile SW. of *Swanton, Garrett Co., Md.*, on bridge 84, telegraph pole 219/21. (Note 24, p. 128.)

B. & O. 41.— $1\frac{1}{4}$  miles SW. of *Swanton, Garrett Co., Md.*, on bridge at telegraph pole 220/19. (Note 24, p. 128.)

B. & O. 42.— $1\frac{3}{4}$  miles SW. of *Swanton, Garrett Co., Md.*, opposite milepost 221. (Note 21, p. 127.)

B. & O. 43.— $1\frac{1}{4}$  miles NE. of *Altamont, Garrett Co., Md.*, opposite milepost 222. (Note 21, p. 127.)

B. & O. 44.— $\frac{1}{4}$  mile E. of *Altamont, Garrett Co., Md.*, opposite milepost 223, about at summit. (Note 21, p. 127.)

B. & O. 45.— $\frac{3}{4}$  mile W. of *Altamont, Garrett Co., Md.*, opposite milepost 224. (Note 21, p. 127.)

B. & O. 46.—1 mile E. of *Deer Park, Garrett Co., Md.*, opposite milepost 225. (Note 21, p. 127.)

B. & O. 47.—200 feet E. of the station at *Deer Park, Garrett Co., Md.*, opposite milepost 226. (Note 21, p. 127.)

B. & O. 47A.—*Deer Park, Garrett Co., Md.*, 500 feet NE. of the station for Deer Park Hotel; copper bolt set in the SW. corner of the culvert at telegraph pole 226/14 $\frac{1}{2}$ .

2447C.—*Deer Park, Garrett Co., Md.*, between two Baltimore and Ohio stations, 725 feet NE. of the station for Deer Park Hotel; on SW. wing wall of abutment of stone culvert; a B. M. of the United States Geological Survey, consisting of an aluminum tablet. (Note 17, p. 127.)

B. & O. 48.—Near *Deer Park, Garrett Co., Md.*, 0.6 mile SW. of the station for Deer Park Hotel, opposite milepost 227. (Note 21, p. 127.)

B. & O. 49.— $1\frac{1}{4}$  miles E. of *Mountain Lake Park, Garrett Co., Md.*, opposite milepost 228. (Note 21, p. 127.)



B. & O. 50.— $\frac{1}{4}$  mile E. of *Mountain Lake Park, Garrett Co., Md.*, copper bolt set in W. end of N. wing of W. abutment of bridge 86, telegraph pole 229/6 $\frac{1}{2}$ .

B. & O. 51.—0.3 mile W. of *Mountain Lake Park, Garrett Co., Md.*, on bridge, at telegraph pole 229/29. (Note 23, p. 128.)

B. & O. 52.—1 mile S. of *Oakland, Garrett Co., Md.*, opposite milepost 231. (Note 21, p. 127.)

B. & O. 53.—300 feet SE. of the station at *Oakland, Garrett Co., Md.*, on bridge, 7 feet below grade. (Note 23, p. 128.)

B. & O. 53A.— $\frac{1}{2}$  mile NW. of *Oakland, Garrett Co., Md.*, copper bolt set in NE. end of SE. wing of NE. abutment of highway bridge, opposite telegraph pole 232/22.

B. & O. 54.—1 $\frac{1}{2}$  miles NW. of *Oakland, Garrett Co., Md.*, on bridge 88 over *Youghiogheny River*. (Note 24, p. 128.)

B. & O. 55.—2 miles NW. of *Oakland, Garrett Co., Md.*, opposite milepost 234. (Note 21, p. 127.)

B. & O. 56.—3 miles W. of *Oakland, Garrett Co., Md.*, opposite milepost 235. (Note 21, p. 127.)

B. & O. 57.—Near *Skipnish, Garrett Co., Md.*, opposite milepost 236. (Note 21, p. 127.)

B. & O. 58.— $\frac{1}{2}$  mile SE. of *Hutton, Garrett Co., Md.*, opposite milepost 237. (Note 21, p. 127.)

B. & O. 59.— $\frac{1}{2}$  mile NW. of *Hutton, Garrett Co., Md.*, opposite milepost 238. (Note 21, p. 127.)

B. & O. 59A.— $\frac{1}{4}$  mile NW. of *Corinth, Preston Co., W. Va.*, on bridge, telegraph pole 238/20. (Note 26, p. 128.)

B. & O. 60.—Near *Rinard, Preston Co., W. Va.*, opposite milepost 239. (Note 21, p. 127.)

B. & O. 61.— $\frac{1}{2}$  mile E. of *Riggs, Preston Co., W. Va.*, on arch culvert, 250 feet W. of milepost 240. (Note 26, p. 128.)

B. & O. 62.—1 mile SE. of *Terra Alta, Preston Co., W. Va.*, opposite milepost 241. (Note 21, p. 127.)

B. & O. 63.—500 feet E. of the station at *Terra Alta, Preston Co., W. Va.*, opposite milepost 242. (Note 21, p. 127.)

B. & O. 64.—0.8 mile NW. of *Terra Alta, Preston Co., W. Va.*, on small bridge at telegraph pole 242/35. (Note 23, p. 128.)

B. & O. 65.—1 $\frac{1}{2}$  miles W. of *Terra Alta, Preston Co., W. Va.*, copper bolt set in foundation of S. side of E. portal of tunnel.

B. & O. 66.—3 miles SW. of *Terra Alta, Preston Co., W. Va.*, opposite milepost 245. (Note 21, p. 127.)

B. & O. 67.—4 miles SW. of *Terra Alta, Preston Co., W. Va.*, opposite milepost 246. (Note 21, p. 127.)

B. & O. 68.—1 mile SW. of *Rodamers, Preston Co., W. Va.*, copper bolt set in foundation, S. side of W. portal of *Rodamers tunnel*, telegraph pole 246/26.

B. & O. 69.—2 $\frac{1}{2}$  miles NE. of *Amblersburg, Preston Co., W. Va.*, opposite milepost 248. (Note 21, p. 127.)

B. & O. 70.—1 $\frac{1}{2}$  miles NE. of *Amblersburg, Preston Co., W. Va.*, opposite milepost 249. (Note 21, p. 127.)

B. & O. 71.— $\frac{1}{2}$  mile NE. of *Amblersburg, Preston Co., W. Va.*, opposite milepost 250. (Note 21, p. 127.)

B. & O. 72.—*Amblersburg, Preston Co., W. Va.*, on bridge, telegraph pole 250/27. (Note 26, p. 128.)

L.—*Amblersburg, Preston Co., W. Va.* (See App. 8, Report for 1899, p. 562.)

B. & O. 73.—About 1 mile SW. of *Amblersburg, Preston Co., W. Va.*, copper bolt set 15 feet from N. end of retaining wall, W. of tracks at telegraph pole 251/30.

B. & O. 74.—1 $\frac{3}{4}$  miles NE. of *Rowlesburg, Preston Co., W. Va.*, on bridge 91, telegraph pole 252/17 $\frac{1}{2}$ . (Note 24, p. 128.)

B. & O. 74A.—1 $\frac{1}{4}$  miles NE. of *Rowlesburg, Preston Co., W. Va.*, opposite milepost 253. (Note 21, p. 127.)

B. & O. 75.—Near *Rowlesburg, Preston Co., W. Va.*, copper bolt set N. of tracks in mud wall of E. abutment of *Cheat River bridge*.

B. & O. 76.—1 mile W. of *Rowlesburg, Preston Co., W. Va.*, 40 feet E. of telegraph pole 255/14. (Note 27, p. 128.)

B. & O. 76A.—1 $\frac{1}{2}$  miles W. of *Rowlesburg, Preston Co., W. Va.*, copper bolt set in center of capstone N. end of long retaining wall E. of tracks, telegraph pole 255/25.

B. & O. 77.—2 miles NW. of *Rowlesburg, Preston Co., W. Va.*, copper bolt set in E. wing wall of N. abutment of viaduct at telegraph pole 256/5.

- B. & O. 78—B. & O. 84. (See page 245.)
- B. & O. 85.— $\frac{1}{4}$  mile E. of *Austen*, *Preston Co., W. Va.*, 50 feet W. of Murray tunnel. (Note 27, p. 128.)
- B. & O. 86.— $\frac{3}{4}$  mile W. of *Austen*, *Preston Co., W. Va.*, at milepost 265. (Note 21, p. 127.)
- B. & O. 87.—Near *Newburg*, *Preston Co., W. Va.*, at milepost 266. (Note 21, p. 127.)
- B. & O. 88.—Near *Newburg*, *Preston Co., W. Va.*, on bridge 95. (Note 24, p. 128.)
- B. & O. 90.—1 mile SW. of *Independence*, *Preston Co., W. Va.*, at milepost 269. (Note 21, p. 127.)
- B. & O. 91.—Near *Hardman*, *Preston Co., W. Va.*, on bridge 97. (Note 24, p. 128.)
- B. & O. 92.—1 mile NE. of *Ironton*, *Taylor Co., W. Va.*, copper bolt set in large rock about 100 feet SE. of tracks, nearly opposite milepost 271.
- B. & O. 93.—Near *Ironton*, *Taylor Co., W. Va.*, copper plug in rock 50 feet SE. of tracks, at telegraph pole 271/37.
- B. & O. 94.— $\frac{3}{4}$  mile SW. of *Ironton*, *Taylor Co., W. Va.*, on pipe culvert at telegraph pole 272/26. (Note 23, p. 128.)
- B. & O. 95.—1 mile NE. of *Thornton*, *Taylor Co., W. Va.*, at telegraph pole 273/25. (Note 21, p. 127.)
- B. & O. 96.—*Thornton*, *Taylor Co., W. Va.*, on bridge 99. (Note 23, p. 128.)
- B. & O. 97.— $\frac{3}{4}$  mile SW. of *Thornton*, *Taylor Co., W. Va.*, opposite telegraph pole 275/15. (Note 21, p. 127.)
- B. & O. 98.—1.6 miles W. of *Thornton*, *Taylor Co., W. Va.*, copper bolt set in SW. end of bridge seat of SE. abutment of bridge at telegraph pole 276/8.
- B. & O. 99.—2.5 miles W. of *Thornton*, *Taylor Co., W. Va.*, nearly opposite telegraph pole 277/5. (Note 27, p. 128.)
- B. & O. 100.—About 2 miles E. of *Grafton*, *Taylor Co., W. Va.*, copper bolt set between tracks in bridge seat, E. abutment of bridge 100.
- B. & O. 101.— $1\frac{1}{4}$  miles E. of *Grafton*, *Taylor Co., W. Va.*, at milepost 279. (Note 21, p. 127.)
- B. & O. 102.—*Grafton*, *Taylor Co., W. Va.*, copper bolt set in N. end of bridge seat of E. abutment of bridge over Tygart River, on Parkersburg branch.
- M.—*Grafton*, *Taylor Co., W. Va.*, (See App. 8, Report for 1899, p. 562.)
- B. & O. 103.—1 mile W. of *Grafton*, *Taylor Co., W. Va.*, near milepost 281. (Note 21, p. 127.)
- B. & O. 103A.—*Fetterman*, *Taylor Co., W. Va.*, on bridge 102. (Note 23, p. 128.)
- B. & O. 104.— $\frac{1}{2}$  mile N. of *Fetterman*, *Taylor Co., W. Va.*, copper bolt set in NW. end of NE. wing wall, NW. abutment of bridge 103.
- B. & O. 105.— $1\frac{1}{4}$  miles NW. of *Fetterman*, *Taylor Co., W. Va.*, at milepost 283. (Note 21, p. 127.)
- B. & O. 105A.— $1\frac{3}{4}$  miles NW. of *Fetterman*, *Preston Co., W. Va.*, on culvert at telegraph pole 283/20. (Note 26, p. 128.)
- B. & O. 106.— $2\frac{1}{2}$  miles N. of *Fetterman*, *Taylor Co., W. Va.*, on culvert at telegraph pole 284/11. (Note 26, p. 128.)
- B. & O. 107.—986 Pittsburg 1899.—Near *Bush*, *Taylor Co., W. Va.*, and 3 miles SE. of *Valley Falls*, *W. Va.* (See App. 8, Report for 1899, p. 866.)
- B. & O. 107A.—Near *Bush*, *Taylor Co., W. Va.*, on bridge at telegraph pole 285/28. (Note 23, p. 128.)
- B. & O. 108.— $\frac{1}{2}$  mile NW. of *Bush*, *Taylor Co., W. Va.*, on culvert at telegraph pole 286/10. (Note 26, p. 128.)
- B. & O. 109.—In *Taylor Co.*, about 1 mile E. of *Valley Falls*, *Marion Co., W. Va.*, at milepost 287. (Note 21, p. 127.)
- B. & O. 110.—*Valley Falls*, *Marion Co., W. Va.*, copper bolt set in native rock N. of track, 50 feet W. of milepost 288.
- B. & O. 111.—1 mile NW. of *Valley Falls*, *Marion Co., W. Va.*, copper bolt set in NW. end of SW. coping of arch bridge 105, near milepost 289.
- B. & O. 112.— $\frac{1}{4}$  mile NW. of *Hammond*, *Marion Co., W. Va.*, on arch bridge 107. (Note 26, p. 128.)
- B. & O. 113.—1 mile W. of *Hammond*, *Marion Co., W. Va.*, rail section set NW. of tracks at telegraph pole 290/20.
- B. & O. 114.— $\frac{1}{2}$  mile NW. of *Powells*, *Marion Co., W. Va.*, on bridge 108, telegraph pole 291/28. (Note 26, p. 128.)
- B. & O. 115.— $1\frac{1}{2}$  miles NW. of *Powells*, *Marion Co., W. Va.*, copper bolt set in native rock, 35 feet W. of telegraph pole 292/14.
- B. & O. 116.—1.2 miles SE. of *Colfax*, *Marion Co., W. Va.*, on arch culvert at telegraph pole 293/11. (Note 26, p. 128.)



B. & O. 117.—*Colfax, Marion Co., W. Va.*, copper bolt set in center of N. capstone of W. coping of bridge 109.

B. & O. 118.—1 mile NW. of *Colfax, Marion Co., W. Va.*, copper bolt set near SW. end of NW. coping of arch culvert at telegraph pole 295/17.

B. & O. 119.—1 mile E. of *Bentons Ferry, Marion Co., W. Va.*, on arch culvert at telegraph pole 296/20. (Note 26, p. 128.)

B. & O. 120.—*Bentons Ferry, Marion Co., W. Va.*, copper bolt set in N. end of E. wing wall of N. abutment of bridge 111, telegraph pole 297/22.

885 Pittsburg 1899.—*Bentons Ferry, Marion Co., W. Va.* (See App. 8, Report for 1899, p. 866.)

B. & O. 121.—*Kingmont, Marion Co., W. Va.*, rail section set N. of tracks at telegraph pole 298/20.

B. & O. 122.—1 mile NE. of *Kingmont, Marion Co., W. Va.*, on large arch culvert at telegraph pole 299/21. (Note 26, p. 128.)

B. & O. 122A.—1½ miles NE. of *Kingmont, Marion Co., W. Va.*, on arch culvert at telegraph pole 299/37. (Note 26, p. 128.)

B. & O. 123.—*Gaston Junction, Marion Co., W. Va.*, copper bolt set in W. end of bridge seat, N. abutment of bridge 112, over Monongahela River.

B. & O. 124.—*Fairmont, Marion Co., W. Va.*, copper bolt set between tracks in SW. end of pier for overhead highway bridge.

B. & O. 125.—1 mile W. of *Fairmont, Marion Co., W. Va.*, copper bolt set in NW. end of bridge seat SW. abutment of Fairmont, Morgantown, and Pittsburg bridge over Monongahela River.

B. & O. 125A.—Near *Fairmont, Marion Co., W. Va.*, copper bolt set in S. end of bridge seat of E. abutment of bridge to Fairmont roundhouse.

B. & O. 126.—½ mile E. of *Barnesville, Marion Co., W. Va.*, copper bolt set in S. end of small culvert at telegraph pole 304/5.

B. & O. 127.—½ mile NW. of *Barnesville, Marion Co., W. Va.*, copper bolt set in stone pier, E. of tracks at Fairmont Coal Co. shaft mine.

B. & O. 128.—1½ miles E. of *Barrackville, Marion Co., W. Va.*, rail section set SE. of track at telegraph pole 305/30.

B. & O. 129.—¾ mile SE. of *Barrackville, Marion Co., W. Va.*, copper bolt set in bridge seat, W. abutment of bridge 114, close to N. truss of bridge at telegraph pole 306/24.

B. & O. 130.—*Barrackville Station, Marion Co., W. Va.*, copper bolt set in S. end of bridge seat, W. abutment of bridge 115.

B. & O. 131.—1 mile SW. of *Barrackville, Marion Co., W. Va.*, on bridge at telegraph pole 308/18. (Note 24, p. 128.)

B. & O. 132.—1¾ miles W. of *Barrackville, Marion Co., W. Va.*, on pipe culvert at telegraph pole 309/10. (Note 23, p. 128.)

B. & O. 133.—Near *Katy, Marion Co., W. Va.*, copper bolt set in bridge seat, NW. abutment of bridge at telegraph pole 310/22, just NE. of tracks.

B. & O. 134.—1¾ miles E. of *Underwood Station (Farmington), Marion Co., W. Va.*, on bridge 116, telegraph pole 311/5. (Note 24, p. 128.)

B. & O. 135.—¾ mile E. of *Underwood Station (Farmington), Marion Co., W. Va.*, rail section set on SW. side of tracks at milepost 312.

B. & O. 136.—*Underwood Station (Farmington), Marion Co., W. Va.*, on bridge 116¼. (Note 23, p. 128.)

B. & O. 137.—0.6 mile W. of *Underwood Station (Farmington), Marion Co., W. Va.*, on bridge 116½, at telegraph pole 313/15. (Note 23, p. 128.)

B. & O. 138.—1½ miles W. of *Underwood Station (Farmington), Marion Co., W. Va.*, copper bolt set in SE. end of NE. abutment of small bridge at telegraph pole 314/9.

B. & O. 139.—1¼ miles SE. of *Downs (Broomfield P. O.), Marion Co., W. Va.*, on bridge 117, at telegraph pole 315/12. (Note 24, p. 128.)

B. & O. 139A.—1 mile SE. of *Downs (Broomfield P. O.), Marion Co., W. Va.*, on bridge 118, telegraph pole 315/23. (Note 24, p. 128.)

953 Downs.—1 mile SE. of *Downs, Marion Co., W. Va.*, 2.8 miles W. of *Farmington, W. Va.*, on abutment of bridge, a B. M. of the United States Geological Survey, a chiseled square, marked 953.

B. & O. 140.—Near station of *Downs, Marion Co., W. Va.*, on bridge 118½. (Note 24, p. 128.)

B. & O. 141.— $\frac{3}{4}$  mile W. of *Downs*, *Marion Co., W. Va.*, on bridge at telegraph pole 317/11. (Note 24, p. 128.)

B. & O. 142.— $1\frac{3}{4}$  miles SE. of *Mannington*, *Marion Co., W. Va.*, copper bolt set in E. end of bridge seat, N. abutment of highway bridge near milepost 318.

B. & O. 143.— $\frac{3}{4}$  mile SE. of *Mannington*, *Marion Co., W. Va.*, on bridge at telegraph pole 319/9. (Note 24, p. 128.)

B. & O. 144.—*Mannington*, *Marion Co., W. Va.*, NE. corner of front step of Exchange Bank.

975 Grafton.—*Mannington*, *Marion Co., W. Va.*, a B. M. of the United States Geological Survey, consisting of a bronze tablet set in pillar N. of door of Exchange Bank, marked "975 Grafton 1902." (Note 17, p. 127.)

B. & O. 145.—1 mile N. of *Mannington*, *Marion Co., W. Va.*, on bridge 119. (Note 24, p. 128.)i

B. & O. 146.— $1\frac{1}{2}$  miles NW. of *Mannington*, *Marion Co., W. Va.*, on bridge 120, near telegraph pole 321/23. (Note 24, p. 128.)

B. & O. 147.— $2\frac{1}{4}$  miles NW. of *Mannington*, *Marion Co., W. Va.*, on bridge 121. (Note 24, p. 128.)i

B. & O. 148.— $2\frac{3}{4}$  miles NW. of *Mannington*, *Marion Co., W. Va.*, copper bolt set between track and E. truss in bridge seat N. abutment bridge 123.

B. & O. 149.— $\frac{3}{4}$  mile S. of *Metz*, *Marion Co., W. Va.*, rail section set E. of tracks, at telegraph pole 323/30.

B. & O. 150.— $\frac{1}{4}$  mile N. of *Metz*, *Marion Co., W. Va.*, on bridge at telegraph pole 324/25. (Note 24, p. 128.)

B. & O. 151.— $1\frac{1}{2}$  miles NW. of *Metz*, *Marion Co., W. Va.*, on bridge at milepost 326. (Note 24, p. 128.)

B. & O. 152.— $\frac{1}{4}$  mile SE. of *Glover Gap*, *Marion Co., W. Va.*, rail section set S. of tracks, at milepost 327.

B. & O. 153.— $\frac{3}{4}$  mile NW. of *Glover Gap*, *Marion Co., W. Va.*, rail section set S. of tracks, at milepost 328.

B. & O. 153A.— $1\frac{1}{4}$  miles NW. of *Glover Gap*, *Marion Co., W. Va.*, copper bolt set in N. corner of small culvert at telegraph pole 328/24.

B. & O. 154.—2 miles NW. of *Glover Gap*, *Marion Co., W. Va.*, on bridge at telegraph pole 329/10.i (Note 24, p. 128.)

B. & O. 155.— $\frac{3}{4}$  mile S. of *Cottontown*, *Wetzel Co., W. Va.*, on large arch bridge 126,  $\frac{1}{2}$  mile N. of *Burton* tunnel. (Note 26, p. 128.)

B. & O. 156.—*Cottontown*, *Wetzel Co., W. Va.*, on bridge near telegraph pole 331/5. (Note 24, p. 128.)i

B. & O. 157.—*Burton*, *Wetzel Co., W. Va.*, copper bolt set in bridge seat NW. abutment bridge at telegraph pole 331/27, between main track and eastbound siding.

B. & O. 158.—0.9 mile NW. of *Burton*, *Wetzel Co., W. Va.*, copper bolt set in W. wing of S. end stone face for pipe culvert at telegraph pole 332/23.

B. & O. 159.— $\frac{3}{4}$  mile SE. of *Hundred*, *Wetzel Co., W. Va.*, copper bolt set in NW. end of SW. i coping of box culvert at telegraph pole 333/5.

B. & O. 160=1013 Grafton.—Just W. of *Hundred*, *Wetzel Co., W. Va.*, United States Geological Survey B. M.; a tablet marked "1013 Grafton 1902" set in NE. end of NW. bridge seat, bridge 128. (Note 17, p. 127.)

B. & O. 161.— $1\frac{1}{4}$  miles NW. of *Hundred*, *Wetzel Co., W. Va.*, copper bolt set in N. end of W. bridge seat of bridge at telegraph pole 335/7.

B. & O. 161A.— $1\frac{3}{4}$  miles NW. of *Hundred*, *Wetzel Co., W. Va.*, on bridge 130, at telegraph pole 335/23. (Note 23, p. 128.)

B. & O. 162.— $1\frac{3}{4}$  miles E. of *Littleton*, *Wetzel Co., W. Va.*, on bridge 131, at telegraph pole 336/21.i (Note 23, p. 128.)

B. & O. 163.— $\frac{3}{4}$  mile E. of *Littleton*, *Wetzel Co., W. Va.*, on bridge 133, telegraph pole 337/3. (Note 23, p. 128.)

B. & O. 163A.— $\frac{1}{2}$  mile E. of *Littleton*, *Wetzel Co., W. Va.*, on bridge 135. (Note 23, p. 128.)i

B. & O. 164.—*Littleton*, *Wetzel Co., W. Va.*, rail section set between main track and siding at milepost 338.



- B. & O. 165.— $\frac{3}{4}$  mile NW. of *Littleton*, *Wetzel Co.*, *W. Va.*, rail section set S. of track at milepost 339.
- B. & O. 166.— $\frac{3}{4}$  mile S. of *Board Tree*, *Marshall Co.*, *W. Va.*, center line pin at S. end of Board Tree tunnel.
- B. & O. 167.— $\frac{1}{4}$  mile S. of *Board Tree*, *Marshall Co.*, *W. Va.*, copper bolt set in rock projecting from under W. end of first course of retaining wall at N. end of Board Tree tunnel E. of track.
- B. & O. 168.— $\frac{1}{2}$  mile NW. of *Board Tree*, *Marshall Co.*, *W. Va.*, rail section set N. of tracks at telegraph pole 341/30.
- B. & O. 169.—1.4 miles SE. of *Bellton*, *Marshall Co.*, *W. Va.*, rail section set N. of tracks at telegraph pole 343/4.
- B. & O. 170.— $\frac{1}{2}$  mile S. of *Bellton*, *Marshall Co.*, *W. Va.*, rail section set between main track and siding at milepost 344.
- B. & O. 170A.—Near *Denver Station* (*Bellton*), *Marshall Co.*, *W. Va.*, on bridge 136. (Note 23, p. 128.)
- B. & O. 171.— $\frac{3}{4}$  mile N. of *Bellton*, *Marshall Co.*, *W. Va.*, copper bolt set in bridge seat of E. abutment of bridge 137, just S. of present track.
- B. & O. 172.— $\frac{1}{8}$  mile S. of *Woodruff*, *Marshall Co.*, *W. Va.*, rail section set E. of tracks at milepost 346.
- B. & O. 173.— $\frac{7}{8}$  mile N. of *Woodruff*, *Marshall Co.*, *W. Va.*, rail section set E. of track at milepost 347.
- B. & O. 174.— $\frac{1}{2}$  mile S. of *Cogley*, *Marshall Co.*, *W. Va.*, rail section set between main track and siding at milepost 348.
- B. & O. 175.— $\frac{1}{2}$  mile N. of *Cogley*, *Marshall Co.*, *W. Va.*, rail section set E. of tracks at milepost 349. e
- B. & O. 176.—2 miles SE. of *Cameron*, *Marshall Co.*, *W. Va.*, rail section set E. of tracks at N. end of *Welling* tunnel.
- B. & O. 177.—1 mile E. of *Cameron*, *Marshall Co.*, *W. Va.*, rail section set N. of tracks at telegraph pole 350/30.
- B. & O. 178.— $\frac{1}{4}$  mile E. of *Cameron*, *Marshall Co.*, *W. Va.*, copper bolt set in S. end of S. wing wall, E. abutment of bridge 138. e
- B. & O. 179.—1 mile W. of *Cameron*, *Marshall Co.*, *W. Va.*, rail section set between main track and siding at telegraph pole 352/30.
- B. & O. 180.—*Loudenville*, *Marshall Co.*, *W. Va.*, copper bolt set in NE. end of NW. bridge seat of e bridge 139.
- B. & O. 181.— $\frac{3}{4}$  mile W. of *Loudenville*, *Marshall Co.*, *W. Va.*, copper bolt set in N. end of W. e bridge seat of bridge at telegraph pole 354/27.
- B. & O. 182.— $1\frac{1}{8}$  miles E. of *Glen Easton*, *Marshall Co.*, *W. Va.*, on culvert at telegraph pole 355/10. (Note 26, p. 128.)
- B. & O. 183.— $\frac{1}{4}$  mile E. of *Glen Easton*, *Marshall Co.*, *W. Va.*, copper bolt set in S. end of bridge seat of W. abutment of bridge 141.
- B. & O. 184.— $\frac{3}{4}$  mile NW. of *Glen Easton*, *Marshall Co.*, *W. Va.*, copper bolt set in NE. end of NW. e bridge seat of bridge at telegraph pole 357/12.
- B. & O. 184A.— $1\frac{1}{8}$  miles NW. of *Glen Easton*, *Marshall Co.*, *W. Va.*, on bridge at telegraph pole 357/27. (Note 23, p. 128.)
- B. & O. 185.— $2\frac{1}{8}$  miles NW. of *Glen Easton*, *Marshall Co.*, *W. Va.*, copper bolt set in S. end of W. e bridge seat of bridge 143, telegraph pole 358/26.
- B. & O. 186.— $2\frac{1}{2}$  miles E. of *Rosbys Rock*, *Marshall Co.*, *W. Va.*, copper bolt set in S. capstone of W. abutment of bridge 145, telegraph pole 359/30. e
- B. & O. 187.—2 miles E. of *Rosbys Rock*, *Marshall Co.*, *W. Va.*, copper bolt set in SE. corner of small culvert just E. of *Shepherds* tunnel.
- B. & O. 188.—1 mile E. of *Rosbys Rock*, *Marshall Co.*, *W. Va.*, copper bolt set in E. end of S. bridge seat at telegraph pole 361/9.
- B. & O. 189.— $\frac{1}{2}$  mile E. of *Rosbys Rock*, *Marshall Co.*, *W. Va.*, copper bolt set in N. end of E. bridge seat of bridge at telegraph pole 361/25.
- B. & O. 190.— $\frac{1}{2}$  mile NW. of *Rosbys Rock*, *Marshall Co.*, *W. Va.*, rail section set E. of track at telegraph pole 362/25.
- B. & O. 191.— $1\frac{1}{2}$  miles NW. of *Rosbys Rock*, *Marshall Co.*, *W. Va.*, rail section set NE. of the track at telegraph pole 363/25.

B. & O. 192.—2½ miles NW. of *Rosbys Rock*, *Marshall Co.*, *W. Va.*, copper bolt set in N. end of W. wing of N. abutment of bridge at telegraph pole 364/25.

B. & O. 193.—U.S.G.S.—4 miles NW. of *Rosbys Rock*, *Marshall Co.*, *W. Va.*, United States Geological Survey B. M., a square cut in N. end of SE. abutment of bridge 146, at telegraph pole 365/40.

B. & O. 194.—1½ miles SE. of *Moundsville*, *Marshall Co.*, *W. Va.*, rail section set W. of tracks at telegraph pole 367/4.

B. & O. 195.—U.S.G.S.—1 mile SE. of *Moundsville*, *Marshall Co.*, *W. Va.*, United States Geological Survey B. M., a square cut in SW. end of NW. abutment of bridge 148.

B. & O. 196.—¼ mile NW. of *Moundsville*, *Marshall Co.*, *W. Va.*, square cut on N. pedestal of water tank 54.

B. & O. 197.—1¾ miles NW. of *Moundsville*, *Marshall Co.*, *W. Va.*, rail section set SW. of tracks at milepost 370.

B. & O. 198.—2¾ miles NW. of *Moundsville*, *Marshall Co.*, *W. Va.*, rail section set W. of tracks at milepost 371.

B. & O. 199.—3½ miles N. of *Moundsville*, *Marshall Co.*, *W. Va.*, copper bolt set in E. end of coping of arch over spring at telegraph pole 371/39.

B. & O. 200.—2 miles S. of *Benwood Junction*, *Marshall Co.*, *W. Va.*, rail section set between main track and siding at milepost 373.

B. & O. 200A.—1½ miles S. of *Benwood Junction*, *Marshall Co.*, *W. Va.*, on large arch culvert at telegraph pole 373/20. (Note 26, p. 128.)

B. & O. 201.—1 mile S. of *Benwood Junction*, *Marshall Co.*, *W. Va.*, at milepost 374. (Note 21, p. 127.)

B. & O. 202.—Near *Benwood Junction*, *Marshall Co.*, *W. Va.*, at milepost 375. (Note 21, p. 127.)

B. & O. 114.—Near *Benwood*, *Marshall Co.*, *W. Va.*, square cut on W. end of N. coping at E. end of E. approach to Ohio River bridge.

U.S.E. 94A.—*Benwood*, *Marshall Co.*, *W. Va.*, a cut on E. face of West Virginia shore pier of Baltimore and Ohio R. R. bridge over the Ohio River, 9.5 feet N. of SE. angle of pier, and about level with Ohio River R. R. track.

#### DESCRIPTIONS OF MISCELLANEOUS ADDITIONAL BENCH MARKS.

B. M. 39.—A triangle cut on crossing stone, corner of Vernon avenue and Ninth street, *Hunters Point*, *Long Island*, *N. Y.* Recovered in 1900.

II.—*Washington*, *D. C.*, at the N. entrance to the building of the Department of Agriculture; on the base of a lamp-post at the E. side of the entrance, 11 inches from the ground; a cross, close to the edge of the nick or place where a fragment of stone has been broken off.

I.—*Washington*, *D. C.*, just E. of the Washington Monument, at the N. side of the E. entrance to the small lodge; on the top surface of the stone steps, 3 inches from the E. edge and 3 inches from the S. side of the base of the column at the N. side of the entrance; the SW. quadrant of a cross made by intersecting lines 2 centimeters in length.

Russell NW. Base.—About 2 miles E. of *Russell*, *Russell Co.*, *Kans.*, in the NE. ¼ of sec. 25, T. 13, R. 14, in a pasture belonging to Mr. Long, of Russell, Kans.; a point marked by a ⅜-inch drill hole in the top of a sandstone post 1.5 feet long by 4 inches square.

U. S. E. 171B.—*Marietta*, *Washington Co.*, *Ohio*; on the Muskingum River lock at the mouth of the Muskingum River, on the N. corner of the top of the N. (or land) lock wall, on the W. (or

U S  
upstream) end. Marked B □ M  
591.88

#### CORRECTIONS TO DESCRIPTIONS AND ELEVATIONS OF BENCH MARKS PUBLISHED IN APPENDIX 8, REPORT FOR 1899.

Pages 472 and 555. It was reported on September 21, 1904, that "Tidal," at *Locust Grove*, *Bath Beach*, *Long Island*, *N. Y.*, was lost.

Pages 472 and 556. It was reported on December 16, 1903, by Mr. John H. Frazee, that No. 6, at *Astoria*, *Long Island*, *N. Y.*, had probably been destroyed by repairs.

Pages 557 and 558. It was reported in November, 1900, by Mr. Edmund P. Ramsey that the following B. Ms. could not be found: No. 10 at *Flushing*, *N. Y.*, and No. 12 at *College Point*, *N. Y.*



Page 562. Mr. O. E. Carr, levelman for the Baltimore and Ohio R. R., reported in 1904 that the following B. Ms. were not found: J, at *Keyser, W. Va.*; XX, at *Bloomington, Md.*; XXI, at *Oakland, Md.*; and XXVIII, at *Rowlesburg, W. Va.*

Page 654. Mr. C. H. Judson, assistant engineer, New York Central Lines, stated in a letter dated August 11, 1908, that B. M. U., at Alexis, Ohio, was about to be destroyed by improvements, and that the resident engineer had established a new B. M. which is 2.77 feet higher than the B. M. U., and is described as follows: On the top of a concrete box culvert under the Ann Arbor R. R., just W. of the crossing of the Ann Arbor R. R. over the Lake Shore and Michigan Southern Ry.; the top of the SW. corner, marked with a chiseled B. M.

Page 655. A letter from Mr. H. A. Twining, at Haskins, Ohio, on April 26, 1906, stated that B. M. A<sub>1</sub>, at *Hull Prairie, Ohio*, was about to be destroyed by repairs.

Page 670. For a later description of P. B. M. 45, at *Shreveport, La.*, see page 134 of this publication.

CORRECTIONS TO DESCRIPTIONS AND ELEVATIONS OF BENCH MARKS PUBLISHED IN APPENDIX 3, REPORT FOR 1903.

Page 469. Leveling in 1905 by Mr. C. P. Burgwyn indicates that City B. M., at *Richmond, Va.*, has probably been disturbed in elevation since 1892, when the leveling was done which gave the elevation printed in 1903.

Page 550. The elevation of D. W. Leggets Crossing near *Coopersville, N. Y.*, should be 40.4591 instead of 40.7591.

Page 554. The elevation of R. R. 60 near *Ossining, N. Y.*, should be 2.3875 instead of 2.2875.

Page 554. The elevation of E<sub>1</sub>, at *Cold Spring, N. Y.*, should be 3.9737 meters instead of 2.3410 meters.

Page 580. The elevations of the six B. Ms. at Fort Hamilton, given on this page, are based on tidal observations at Fort Hamilton and are not connected with the precise level net.

Pages 527 and 627. Mr. G. B. Nicholson, chief engineer of the Chicago, New Orleans and Texas Pacific R. R., on June 20, 1904, stated that B. M. Y<sub>1</sub>, near Kings Mountain, Ky., would probably be destroyed soon by improvements.

Pages 722 and 723. The following additional notes and corrections to bench marks along the Hudson River were furnished by J. B. Miller, Assistant, Coast and Geodetic Survey.

V. to O. 9.—*Cold Spring, N. Y.*, just at the N. end of a rock cut and 6 feet E. of E. main track and 0.4 foot above the rails.

Ik'.—Near *Fishkill Landing, Dutchess Co., N. Y.*, 37½ rods S. of milepost 59, at the S. end of a rock cut, 20 feet W. of the W. main track, 55 feet N. of a block signal, 4 feet above the rails; a step cut in a broad sloping rock.

R. R. 118.—*Fishkill, N. Y.*, 6 feet E. of E. main track.

Ii'.—*New Hamburgh, Dutchess Co., N. Y.*, 37 meters N. of the station, 64 meters N. of Main street, 2 meters W. of the center of the W. track, on an irregular rock 12 meters S. of the entrance to a rock cut leading to a tunnel, 0.2 meter above the rails; the E. edge of a shallow drill hole surrounded by a rude triangle.

Ig'.—*Poughkeepsie, N. Y.*, on the N. face instead of the E. face and 4 meters W. of the W. main track.

Vose.—*Poughkeepsie, N. Y.*, the northern and higher one of the similar crosses near together.

R. R. 162.—Near *Hyde Park, N. Y.* Not found in 1905.

Pages 722, 723. Mr. R. E. Dougherty, engineer of the New York Central and Hudson River R. R., on September 25, 1906, stated that B. Ms. Ih', Ig', Vose, and I<sub>1</sub>, at *Poughkeepsie, N. Y.*, would soon be destroyed on account of railroad improvements.

Pages 564 and 751. It was reported in 1907 that 17 MC. at *Morehead City, N. C.*, was destroyed.

Pages 568 and 763. B. M. 25C, at *Monaca, Pa.*, was not found in 1906.

Page 774. Mr. R. B. Burchfield, on July 13, 1905, reported that B. M. F<sub>3</sub>, at *Anthony, Kans.*, would probably soon be exposed to injury as the Poorman Co. were building a new office and would remove the old one.

CORRECTIONS TO DESCRIPTIONS AND ELEVATIONS PUBLISHED IN APPENDIX 4 OF THE COAST AND  
GEODETIC SURVEY REPORT FOR 1905.

Page 233. Mr. A. R. Cook, Division Engineer, Northern Pacific R. R., on June 1, 1907, reported that B<sub>1</sub>, near *Hot Springs, Wash.*, was about to be destroyed by raising abutments.

Page 234. I<sub>1</sub>.—*Easton, Kittitas Co., Wash.* The stone was originally set in the NE. corner of the yard surrounding A. J. Adams's residence, about 14 meters N. of the house, 0.74 meter from the N. fence, and 0.62 meter W. of the E. fence inclosing the yard: about 100 meters S. of the Northern Pacific Ry. main track. In 1907 the stone was moved to a position 44.6 feet S. 48° 33' W. of the original position. It is now 2 feet from the right-of-way fence and 48.0 feet from the track of the Chicago, Milwaukee and St. Paul Ry. (Note 2, p. 126, of this publication, except the cap is marked with a cross for the placing of the rod.)

## DESCRIPTIONS OF ADDITIONAL BENCH MARKS ON LINE FROM CUMBERLAND, MD., TO BENWOOD, W. VA.

B. & O. 78.—3 miles W. of *Rowlesburg, Preston Co., W. Va.*; at telegraph pole 257/9. Note 27, p. 128.

B. & O. 78A.— $\frac{1}{4}$  mile NW. of *Buckhorn, Preston Co., W. Va.*; copper bolt set in NW. end of retaining wall, NE. of tracks, 40 feet SE. of telegraph pole 257/20.

B. & O. 79.—1 mile NW. of *Buckhorn, Preston Co., W. Va.*; 40 feet NW. of telegraph pole 258/7. Note 27, p. 128.

B. & O. 80.—About  $\frac{1}{4}$  mile W. of *Anderson, Preston Co., W. Va.*; at milepost Baltimore 259. Note 21, p. 127.

B. & O. 81.—About  $\frac{3}{4}$  mile SE. of *Tunnelton, Preston Co., W. Va.*; at milepost Baltimore 260. Note 21, p. 127.

B. & O. 82.—About  $\frac{1}{4}$  mile W. of *Tunnelton, Preston Co., W. Va.*; copper bolt set in first step of retaining wall N. of tracks at E. portal of Kingwood tunnel.

B. & O. 83.—About 1 mile W. of *Tunnelton, Preston Co., W. Va.*; at W. end of Kingwood tunnel. Note 21, p. 127.

B. & O. 83A.—300 feet W. of *West End, Preston Co., W. Va.*; on bridge. Note 23, p. 128.

B. & O. 84.—About 1 mile E. of *Austen, Preston Co., W. Va.*; 40 feet S. of tracks, near telegraph pole 263/12. Note 27, p. 128.



## Index to elevations and descriptions of bench marks.

[Alphabetical under each State and the States arranged in alphabetical order.]

## ALABAMA.

Elevation..		Description.			Elevation.		Description.			
Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.
Akron.....	478				712	Jonesboro.....	478			710
Bainbridge.....	5 30				703	Kimbrel.....	478			710
Barton.....	530				701	Lambs Ferry.....	531			705
Baylor.....	478				710	Larkinsville.....	529		637	
Belle Mina.....	529			639		Leesdale.....	529		640	
Bess emer.....	477, 478				710	Leighton.....	5 32		642	
Bibbville.....	478				710	Linn Rock.....	5 29		636	
Birmingham.....	477			809	709	Livingston.....	478			713
Birmingham to Decatur.....	5 29530			639-641		Locks A and B, Elk River Canal.....	5 31			706
Birmingham to York.....	477, 478				709, 713	Locks I to 9, Muscle Shoals Canal.....	530, 531			703, 705
Blount Springs.....	5 0			640		Madison.....	5 29		639	
Boligee.....	478				712	Margerum.....	5 305 32		643	701
Bolivar.....	529			636		McCalla.....	478			710
Boyles.....	530			641		McDowell.....	479			714
Bridgeport.....	5 29			635, 6 3, 6		Miller.....	478			712
Brownboro.....	5 29			6 38, 6 39		Miltons Bluff.....	5 31			706
Browns Ferry.....	5 31				706	Mobile.....	46 3			592, 5 93
Carpenter.....	5 29			6 8		Mobile to Biloxi, Miss.....	463			5 91, 5 92
Cedar Grove.....	5 29			6 36		Mobile to Meridian, Miss.....	463			5 93, 549
Cherokee.....	5 30532			643	701	Morris.....	5 0		641	
Citronel E.....	463				5 93	Moundville.....	478			711, 712
Coaling Station.....	478				710	Newcastle.....	530		641	
Coatopa.....	479				714	Olmstead.....	478		808	
Cottdale.....	478				711	Paint Rock.....	5 29		638	
Courtauld.....	532			642		Parker.....	478			713
Cuba.....	478, 479				714	Paynes Landing.....	5 31			708
Cullman.....	530			640		Pegram.....	530			700
Cunningham.....	530			641		Powderly.....	477			709
Decatur.....	5 295 31			641, 808	706, 707	Powers.....	478			712
Decatur to Birmingham.....	5 295 30			639-641		Prides.....	5 0, 532		643	701
Decatur to Chattanooga, Tenn.....	5 28, 5 29			634-639		Reids.....	530		640	
Decatur to Tusculumbia.....	530, 531			641, 642	702-707	Riverton.....	531			707
Deer Park.....	463				593	Riverton Junction.....	530, 5 32		643	701
Demopolis.....	479				714	Riverton Junction to Pittsburg Landing, Tenn.....	531, 5 32			707-709
East Florence.....	530				702, 703	St. Elmo.....	463			592
Elyton.....	477				709	Scottsboro.....	529		637	
Englewood.....	478				711	Standiford.....	478			710
Epes.....	478				712, 713	Stevenson.....	5 29		636	
Escatawpa.....	46 3				5 93	Swearengin.....	5 29		637	
Eutaw.....	478				712	Sycamore Landing.....	5 31			705
Fackler.....	5 29			636		Town Creek.....	5 32		642	
Falkville.....	5 29			640		Trinity.....	532		642	
Fearns.....	529			639		Turpin.....	477			709
Finaleys Landing.....	531				706	Tuscaloosa.....	478			711
Flint.....	5 29			639		Tusculumbia.....	5 30532		642	701, 702
Florence.....	5 30				702	Tusculumbia to Corinth, Miss.....	530, 5 3		642-644	700-702
Garden City.....	463			640		Tusculumbia to Decatur.....	530, 531		641, 642	702-707
Grand Bay.....	5 29			639	5 92	Vance.....	532			710
Greenbrier.....	529			638		Warrior.....	530		641	
Gurley.....	478				712	Warrior River.....	478			712
Hairston.....	5 0			640		West End.....	477			709
Hanceville.....	5 29			639, 640		Wilhite.....	5 0		640	
Hartsells.....	477				709	Woodstock.....	478			710
Hillman.....	532			642		Woodville.....	5 29		636, 638	
Hillsboro.....	5 29			636		York.....	478			713
Hollywood.....	478				711	York to Birmingham.....	477, 478			709-713
Huntsville.....	5 29			639		York to Demopolis.....	479			714
Johnson, Cullman County.....	5 0			640		York to Meridian, Miss.....	478, 479			713, 714
Johnson, Tuscaloosa County.....	478				710					

## Index to elevations and descriptions of bench marks—Continued.

## ARKANSAS.

Place.	Elevation.		Description.		Rept. 1899, App. 8.	Place.	Elevation.		Description.		Rept. 1899, App. 8.
	This publi- cation.	Rept. 1903, App. 3.	This publi- cation.	Rept. 1903, App. 3.			This publi- cation.	Rept. 1903, App. 3.	This publi- cation.	Rept. 1903, App. 3.	
	pages.		pages.	pages.	pages.		pages.		pages.	pages.	
Alexander.....	89				688	Jordan Landing.....	89		133		690
Alma.....	86				618	Kidds Spur.....	90				616
Altus.....	86				617	Knoxville.....	86				684
Argenta.....	86				614	Lake Landing.....	89				616
Arkadelphia.....	89				687, 688	Lamar.....	86				619
Arkansas City.....	86, 90				612, 691	Lancaster.....	86				686
Arkansas City to Little Rock.....	86				612-614	Leppards Camp.....	89				686
Atkins.....	86				615	Lester.....	89		133		619
Avoca.....	86				621	Lewisville.....	89				686
Baxter.....	90				691	Little.....	86				619
Bayou Bartholo- mew.....	90				690	Little Bay.....	89				686
Bayou Lapile.....	89				684	Little Missouri River.....	89				687
Beech Hill.....	89				686	Little Rock.....	86, 89		130		614, 689
Bell Point Landing.....	89				684	Little Rock to Arkansas City.....	86				612-614
Benton.....	89				688	Little Rock to Camden.....	89				686-689
Berlin.....	86				616	Little Rock to Van Buren.....	86				614-618
Blackville.....	86				615	London.....	86				616
Brentwood.....	86				620	Lowell.....	86				621
Bradley.....	89		134		621	McGehee.....	90				613, 691
Brightwater.....	86				621	McNeil.....	89		133		688
Bucna Vista.....	89		133			Malvale.....	89				688
Buckner.....	89		133			Malvern.....	89				614
Camden.....	89				686	Murche.....	86				614
Camden to Little Rock.....	89				686-689	May Flower.....	86				615
Camden to Park- ville, La.....	89				683-686	Menifee.....	86				616
Camden to Shreve- port, La.....	89, 90		133, 134			Mill Creek.....	86				690
Canfield.....	89		134			Morrell.....	90				615
Careyville Landing.....	89				685	Morrilton.....	86				615
Champagnolle.....	89				685	Mountainburg.....	86				618
Champagnolle Landing.....	89				685	Mulberry.....	86		133		613
Chester.....	86				619	New Lewisville.....	89				613
Chester to Boston, Mo.....	86				619-623	Noble Lake.....	86		133		615
Chester to Van Buren.....	86				618, 619	Ozark.....	89				684
Chidester.....	89				687	Palarm.....	86				614
Clarksville.....	86				616	Parkale.....	90				690
Coal Hill.....	86				617	Pigeon Hill Landing.....	89				685
Conway.....	86				615	Pine Bluff.....	86				613
Curtis.....	89				687	Plumerville.....	86				615
Daleville.....	89				688	Pocopping.....	86				617
Dermott.....	90				691	Porter.....	86				619
Donaldson.....	89				688	Portland.....	90				690
Dyer.....	86				618	Preston.....	86				615
Eldorado Landing.....	89				685	Redfield.....	86				613
Elliott.....	89				686	Rogers.....	86				621
Ensign.....	89				688	Rudy.....	86				619
Eutaw Shoals.....	89				684	Russellville.....	86				615
Fayetteville.....	86				620	Saline River.....	89				688
Fletchers Landing.....	89				685	Smackover Creek.....	89				685
Fort Smith.....	86				618	Smithton.....	89				687
Fort Smith to Van Buren.....	86				618	Spadra.....	86				617
Franklin Bayou.....	89				685	Springdale.....	86				620
Frenchport.....	89				686	Stamps.....	89		133		
Galia Creek.....	86				615	Stephens.....	89		133		
Garfield.....	86				621	Sunshine.....	90				690
Garland.....	89		433			Tillar.....	86				613
Germantown.....	86				615	Traskwood.....	89				688
Greenland.....	86				620	Tripp Junction.....	90				691
Gum Springs.....	89				687	Van Buren.....	86				618
Gurdon.....	89				687	Van Buren to Chester.....	86				618, 619
Hartman.....	86				617	Van Buren to Fort Smith.....	86				618
Helena.....	90				690	Van Buren to Little Rock.....	86				614-618
Hudspeth.....	90				691	Varner.....	86				613
Jacks Island.....	89				684						
Johnson.....	86				620						
Jordan Ferry.....	89		133								



*Index to elevations and descriptions of bench marks—Continued.*

## ARKANSAS—Continued.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	<i>pages.</i>	<i>pages.</i>	<i>pages.</i>	<i>pages.</i>	<i>pages.</i>		<i>pages.</i>	<i>pages.</i>	<i>pages.</i>	<i>pages.</i>	<i>pages.</i>
Waldo.....	89		133			White Oak.....	86				617
Walnut Hill.....	89				686	Wilmot.....	90				690
Walnut Lake.....	86				613	Winslow.....	86				619, 620
West Fork.....	86				620	Woolseys.....	86				620
Whelen.....	89				687	Wrightsville.....	86				613, 614

## COLORADO.

Acequia.....	86			589	Hugo to Ellis, Kans.....	85			583, 585
Agate.....	86			591	Hugo to Limon.....	85			585, 586
Arapahoe.....	85			585	Husted.....	85			588
Aroya.....	85			585	Jersey.....	86			590
Bennett.....	86			591	Kit Carson.....	85			585
Bovero.....	85			585	Lake.....	85			585, 586
Brighton.....	110			644	Larkspur.....	85			589
Byers.....	86			591	La Salle.....	110			644
Calhan.....	85			586	Limon.....	85			586
Carr.....	110			645	Limon to Colorado Springs.....	85			586-588
Castle Rock.....	85			589	Limon to Denver.....	86			590, 591
Cheyenne Wells.....	85			585	Limon to Hugo.....	85			585, 586
Colorado Springs.....	85			587, 588	Littleton.....	86			589
Colorado Springs to Denver.....	85, 86			588-590	Lowland.....	86			591
Colorado Springs to Limon.....	85			586-588	Lucerne.....	110			645
Deer Trail.....	86			591	Lupton.....	110			644
Denver.....	86, 110			590, 591	Magnolia.....	86			591
Denver to Cheyenne, Wyo.....	110			643	Mattison.....	85			586
Denver to Colorado Springs.....	85, 86			588-590	Mirage.....	85			585
Denver to Limon.....	86			590, 591	Monument.....	85			588
Douglas.....	85			589	Nantes.....	110			644
Dover.....	110			645	Palmer Lake.....	85			588, 589
Eaton.....	110			645	Petersburg.....	86			589
Edgerton.....	85			588	Peyton.....	85			586
Elsmere.....	85			587	Pierce.....	110			645
Falcon.....	85			586	Pike View.....	85			588
First View.....	85			585	Plateau.....	85			589
Godfrey.....	86			590	Platteville.....	110			644
Greeley.....	110			645	Ramah.....	85			586
Greenland.....	85			589	Resolis.....	85			586
Hazeltine.....	110			643	River Bend.....	86			590
Henderson.....	110			644	Roswell.....	85			587
Hugo.....	85			585	Sedalia.....	86			589
					Toluca.....	86			589
					Watkins.....	86			581
					Wildhorse.....	85			585
					Wolhurst.....	86			589

## DISTRICT OF COLUMBIA.

Brookland.....	106			728	Washington.....	106, 107	468, 470	215, 243	728, 805	627, 643
Eckington.....	106			728	Washington to Annapolis, Md.....	121	471	243	806, 807	
Georgetown.....	87			809	Washington to Georgetown.....		470, 471			642, 643
Georgetown to Hagerstown, Md.....	87			627, 628	Washington to Relay, Md.....		468			627
Georgetown to Richmond, Va.....		468		628-630.	Washington to Washington Junction, Md.....	121		215, 216		
Georgetown to Washington.....		468		627	Winthrop Heights.....	106, 107			728-730	
Langdon.....	121		215			121				
Stotts.....	106			729						
Tacoma Park.....	106			729						

## Index to elevations and descriptions of bench marks—Continued.

## FLORIDA.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Rept. 19 03, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Albion.....	469				635	Hawthorn.....	469				634
Archer.....	469			808	635	Hollister.....	469				633
Arredonda.....	469				634	Interlachen.....	469				634
Bronson.....	469				635	McMeekin.....	469				634
Buena Vista.....	469				633	Middleton.....	469				633
Cedar Keys.....	469				635, 636	Otter Creek.....	469				635
Cedar Keys to St. Augustine.....	469				632-636	Palatka.....	469				633
East Palatka.....	469				633	Palmer.....	469				635
Ellzey.....	469				635	Rochelle.....	469				634
Francis.....	469				633	Rosewood.....	469				635
Gainesville.....	469				634	St. Augustine.....	469			632, 633	
Grove Park.....	469				634	St. Augustine to Cedar Keys.....	469			632-636	
Hastings.....	469				633	Tocoi Junction.....	469				633

## GEORGIA.

Adams Park.....	567		758			Jenkinsburg.....	566		758		
Achord.....	567		759			Jesup.....	567		760		
Atlanta.....	566		758			Juliette.....	566		758		
Austell.....	566		757			Lenox.....	566		758		
Baxley.....	567		759			Locust Grove.....	566		758		
Braswell.....	566		757			Lumber City.....	567		759		
Brunswick.....	567		760, 761			McDonough.....	566		758		
Brunswick to Cleveland, Tenn.....	566, 567		756-761			McGriff.....	567		759		
Bullard.....	567		758			Macon.....	566		758		
Brentwood.....	567		760			McRae.....	567		759		
Chambers.....	566		757			McPherson.....	566		757		
Chauncey.....	567		759			Miller.....	566		757		
Cochran.....	567		759			Mount Pleasant.....	567		760		
Cohutta.....	566		757			Odum.....	567		760		
Constitution.....	566		758			Oostanaula.....	566		757		
Cork.....	566		758			Pendarvis.....	567		760		
Dallas.....	566		757			Peyton.....	566		758		
Dalton.....	566		757			Phelps.....	566		757		
Dames Ferry.....	566		758			Pine Grove.....	567		759		
Dock Junction.....	567		760			Pinson.....	566		757		
Eastman.....	567		759			Powder Springs.....	566		757		
Ellenwood.....	566		758			Reid.....	567		758		
Empire.....	567		759			Rome.....	566		757		
Everett.....	567		760			Rockmart.....	566		757		
Gardl.....	567		760			Sapps Still.....	567		760		
Godwinsville.....	567		759			Scotland.....	567		759		
Graham.....	567		759			Seney.....	566		757		
Gresston.....	567		759			Stockbridge.....	566		758		
Hazlehurst.....	567		759			Surrency.....	567		760		
Holton.....	566		758			Towns.....	567		759		
Hooker.....	529		635			Waring.....	566		757		
Jackson.....	566		758			Westlake.....	567		758		
						Wheaton.....	567		760		

## IDAHO.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1905, App. 4.	Rept. 1904, App. 6.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 19 04, App. 4.	Rept. 1904, App. 6.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
American Falls.....	111				427	Dayton.....	111				425
Bannock.....	111				427	Dietrich.....	111				428
Bliss.....	111				429	Downey.....	111				426
Caldwell.....	112			219, 220		Eaton.....	112			222	
Chalk Spur.....	111				429	Fuller.....	111				428
Cleft.....	111				429	Garner.....	111				425
Colburne.....	111				428	Glenns Ferry.....	111				429
Crystal.....	112			221		Gooding.....	111				428



## Index to elevations and descriptions of bench marks—Continued.

## IDAHO—Continued.

Place.		Elevation.		Description.			Place.		Elevation.		Description.		
		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1905, App. 4.	Rept. 1904, App. 6.			This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1905, App. 4.	Rept. 1904, App. 6.
		pages.	pages.	pages.	pages.	pages.			pages.	pages.	pages.	pages.	pages.
Inkom	111					426	Owyhee to Seattle,	111-113				218-241	
Kinama	111					428	Wash						425
King Hill	111					429	Oxford	111					
Kuna	111				218		Parma	112				220	
Marsh Valley	111					426	Payette	112				221	
McCammon	111					426	Pocatello	111					426, 427
Medbury	111					429	Pocatello to Red						
Michaud	111					427	Desert, Wyo.	110, 111					420-426
Minidoka	111					427, 428	Pocatello to Owy-						
Mora	111				218		hee.	111					426-430
Mountain Home	111					429	Portneuf	111					426
Nampa	111, 112				218, 219		Santer	111					428
Napati	111					427	Shoshone	111					428
Nobus	112				220		Swan Lake	111					426
Olds Ferry	112				222, 223		Tieska	111					429
Onyx	111					426	Tunupa	111					428
Orchard	111					430	Wapi	111					427
Owinza	111					428	Weiser	112				222	
Owyhee	111					430	Weston	111					425
Owyhee to Poca-	111					426-430	Yale	111					427
tello													

## ILLINOIS.

Place.		Elevation.		Description.			Place.		Elevation.		Description.		
		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.			This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
		pages.	pages.	pages.	pages.	pages.			pages.	pages.	pages.	pages.	pages.
Adeline	94					734	Champaign	120			209		
Albany	94					733	Champaign to Olney	120			209-211		
Albany to Fulton	94					732, 733	Champaign to Pekin	120			208, 209		
Albany to Grafton	93, 94					724-732	Chandlerville	118			180		
Alton			480			719	Channahon	119			193, 194		
Anna	86					600	Charleston	120			210		
Arnold Landing	97					773	Chester			480			721
Arsenal Island	94					731	Chicago	94, 119, 120			204-208		726, 736, 737
Ashley	86					600	Chicago to Pekin	118, 119			183-208		
Averyville	118			184			Chicago to Savanna	94					733-737
Aviston	84				807	567	Chillicothe	118			185		
Bartlett	94					736	Clarksburg, Mo.,						
Bath	118			181			opposite	93					726
Beardstown	117, 118			180			Clay City	84				807	566
Bensenville	94					736	Collins	84				807	567
Bloomfield	117			179			Cordova	94					732
Bloomington	120			208, 209			Cragin	94					736
Bluffs	117			179			Danvers	120			208		
Boos	120			210			Davis Junction	94					735
Bradbury	120			210			Deers	120			211		
Bridgewater	117			178			Deque	118			187		
Brockton	120			211			De Soto	86					600
Bureau	118			186, 187			Dixons Landing	93					728
Bushton	120			210			Downs	120			209		
Byron	94					734	Dumser	94					735
Cairo	86, 93		464, 479, 481			598, 599, 718, 724	Dundas	120			209		
Cairo to Corinth,			463, 464			596-599	Duquoin	86					600
Miss							East Dubuque	96					768
Cairo to Memphis,							East Elgin	94					736
Tenn.	93					715-718	East St. Louis	84					567
Cairo to Odin	86					599-601	Eldred	117			178		
Cairo to St. Louis,							Elgin	120					736
Mo.			480, 481			720-724	Emmure	120			209		
Carbonate	86					600	Fairgrange	120			210		
Carlyle	84				807	567	Fairmount	120					
Caseyville	84				807	567	Fairmount Junction	120			211		
Catlin	120			211			Falmouth	120			210		
Centralia	86					601	Farmer City	120			209		

*Index to elevations and descriptions of bench marks—Continued.*

## ILLINOIS—Continued.

Elevation.		Description.			Elevation.		Description.				
Place.	This publication.	Rept. 1903, App. 3	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Fielding.....	94				735	Mira.....	120		211		
Flora.....	84				566	Moline.....	94				732
Ford Woods.....	120		209			Monroe.....	94				735
Forreston Junction.	94				734	Morris.....	119		192, 193		
Fulton.....	94				733	Mossville.....	118		185		
Fulton to Savanna.	94				733	Mound City Junction.	86				599
Fulton to Albany.	94				732-733	Mount Carroll.....	94				734
Gales Landing.....	118		182			Mount Forest.....	119		202		
Genoa.....	94				735	New Boston.....	93				730
Gillum.....	120		209			Newtown.....	120		210		
Glasgow.....	117		179			Nutwood.....	117		178		
Grafton.....	117	480	177		719	Oakland.....	120		210-211		
Grafton to Albany.	93, 94				724-732	Odin.....	84, 86				566, 601
Grafton to Pekin.	117, 118		177-183			Odin to Cairo.....	86				599-601
Grafton to 12 miles above St. Louis, Mo.		480			719	Odin to Olney.....	84				566
Greenup.....	120		210			Odin to St. Louis, Mo.	84				566-570
Hamburg.....	93				727	Olney.....	84, 120	459	209		566
Hampshire.....	94				735	Olney to Champaign.	120		209-211		
Hampton.....	94				732	Olney to Lawrenceburg, Ind.	84				565, 566
Harris.....	120		209			Olney to Odin.....	84				566
Harris Landing.....	97				773	Oquawka.....	93				729, 730
Hastings Landing.	93				728	Ottawa.....	118		190, 191		
Havana.....	118		181, 182			Oxville.....	117		179		
Henry.....	118		186			Pegram.....	117		179		
Hickory Grove.....	94				734	Pekin.....	118, 120		183, 208		
Hidalgo.....	120		210			Pekin to Champaign.	120		208, 209		
Hildreth.....	120		211			Pekin to Chicago.....	118, 119		183-208		
Hillview.....	117		179		727	Pekin to Grafton.....	117, 118		177-183		
Hogville Landing.	93					Peoria.....	118		183, 184		
Honor.....	120		211			Peru.....	118		188, 189		
Hume.....	120		211		773	Piasa Creek.....		480			719
Island 256, opposite foot of.	97				736	Pingree Grove.....	94				735
Itasca.....	94				566	Point Landing.....	93				728
Iuka.....	84			807		Port Byron.....	94				732
Jamaica.....	120		211			Putnam.....	118		186		
Janesville.....	120		210		719	Radom.....	86				600
Jersey Landing.....		450				Rapids City.....	94				732
Joliet.....	119		195, 196			Rardin.....	86, 120		210		
Keithsburg.....	93				730	Reds Landing.....	93				727
Kingston.....	94				735	Richview.....	86				600
Kirkland.....	94				734	Rising.....	120		209		
Lake Michigan, in.	94				737	Rockdale.....	119		195		
Lanark.....	94				734	Rock Island.....	94				731
Lanark Junction.	94					Rome.....	118		185		
Lasalle.....	118		189		567	Romero.....	119		198		
Leaf River.....	94				734	Rosedale.....	117, 119		177, 178		
Lebanon.....	84					Rosehill.....	120		210		
Lemont.....	119		198-200			Roselle.....	94				736
Lerna.....	120		210			Sag Bridge Station.	119		200		
Le Roy.....	120		209			Saidora.....	118		181		
Leslie.....	120		208			Salem.....	84				566
Lilly.....	120		208			Sandoval.....	84				567
Liverpool.....	118		182			Savanna.....	94, 97				733, 774
Lockport.....	119		196, 197			Savanna to Chicago.	94				733-737
Lydda.....	117		180			Savanna to Fulton.	94				733
Mackinaw.....	120		208			Savanna to St. Paul, Minn.	94-97				737-774
Mahomet.....	120		209			Seneca.....	119		192		
Makanda.....	86				600	Sidell.....	120		211		
Manheim.....	94				736	Sidney.....	120		211		
Manito.....	118		182			Spankey.....	117		178		
Mansfield.....	120		209			Sparland.....	118		185, 186		
Marcus.....	97				774	Spring Valley.....	118		188		
Marquette.....	118		187			Sterling Island.....	93				727
Marseilles.....	118, 119		191			Stillman Valley.....	94				735
Martins Landing.	118		182			Stoehrs.....	118		182		
Matanzas.....	93				728	Summit.....	119		{ 202, 203, 204 }		
Matanzas.....	118		181			Thomas Landing.....	93				728
Menert.....	120		208								
Mercedosa.....	117		180								
Millers Landing.	93				728						
Millsdale.....	119		194								



## Index to elevations and descriptions of bench marks—Continued.

## ILLINOIS—Continued.

Place.	Elevation.					Description.	Elevation.					Description.
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	
Thomson.....	pages. 94		pages. 210		pages. 733	Watertown.....	pages. 94		pages. 183		pages. 732	
Toledo.....	120		182			Wesley.....	118		183			
Topeka.....	118		208			Wesley Junction.....	118		183			
Tremont.....	120					West Elgin.....	94					735
Turners Landing.....	93				727	West Liberty.....	120		210			
Twin Grove.....	120		208			West Point.....	93					728
Ullin.....	86				600	Willow Springs.....	119		200, 201			
Urbana.....	120		211			Wilsons Island No. 5.....		48 0				719
Utica.....	118		189, 190			Woodruff.....	120		208			
Villa Ridge.....	86				599							

## INDIANA.

Cochran.....	84			807	565	Mitchell.....	84				566	
Delaware.....	84			807	565	North Vernon.....	84			807	565	
Fort Ritner.....	84			807	565	Scottville.....	84			807	566	
Lawrenceburg.....	84			807	667	Vincennes.....	84				566	
Lawrenceburg to Olney, Ill.....	84				565, 566	Washington.....	84				566	
Medora.....	84			807	565	West Shoals.....	84				566	

## IOWA.

Akron.....	115		166			Missouri Valley.....	104				838, 839	
Austin.....	115		165			Modale.....	104				839	
Bartlett.....	103				836	Mondamin.....	104				839	
Beloit.....	115		164			Montpelier.....	94				731	
Bellevue.....	97			809	771, 772	Montrose.....	93				728	
Blencoe.....	104				839, 840	Muscataine.....	93				730, 731	
Buena Vista.....	96				764	Nashville.....	93				728	
Buffalo.....	94				731	Nebraska City.....						
Burlington.....	93				739	Junction.....	103				836	
California Junction.....	104				839	Nine Mile Island.....	97				770	
Chattanooga.....	95, 97		165		709	North Bellevue.....	97				771	
Chatsworth.....	115		165, 166		762	North McGregor.....	96			809	761	
Clayton.....	104				762	Onawa.....	104				840	
Council Bluffs.....	104				837, 838	Pacific Junction.....	103				837	
Crescent.....	104				838	Perdical.....	103				836	
Dubuque.....	96				767	Port Louisa.....	93				730	
Eagle Point.....	96				767	River Sioux.....	104				839	
Eckard.....	96				762, 763	Salix.....	104				841	
Edmore.....	96				766	Sargents Bluff.....	104				841	
Elm Springs.....	115		164		731	Shawondasee Club Grounds.....	97				769	
Fairport.....	94				765	Sioux City.....	104, 115		167		841, 842	
Finley Landing.....	96				729	Sioux City to Norfolk, Nebr.....	109			792, 793		
Fort Madison.....	93				765	Sioux City to St. Joseph, Mo.....	103, 104				833, 842	
Frenchtown Landing.....	96				771	Sioux City to Watertown, S. Dak.....	114, 115		158-167			
Gordon's Ferry.....	97				770, 771	Sloan.....	104				840	
Guttenberg.....	96				763	Smiths Station.....	97				771	
Hamburg.....	103				835, 836	Snyders.....	97				770	
Hawarden.....	115		165			Sny McGill.....	96				762	
Haynes.....	103				836	South McGregor.....	96				761	
Hentons.....	104				837	Spechts Ferry.....	96				766	
Honey Creek.....	104				838	Turkey River Junction.....	96					
Island 176.....	96				762	tion.....	96				764	
Island 207.....	96				765	Viele Station.....	93				728, 729	
Island Park.....	1 04				827	Waupeton.....	96				765	
Keokuk.....	93				724, 728	West Davenport.....	94				731	
Little Maquoketa River.....	96				760	Westfield.....	115		166			
Loveland.....	104				838	Whiting.....	104				840	
McPaul.....	103				839							
Massey.....	97				770							

*Index to elevations and descriptions of bench marks—Continued.*

KANSAS.

Elevation.		Description.				Elevation.		Description.			
Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Abilene.	109				579	Lashmet.	108			773	
Abileneto Norfolk,						Lawrence.	85				577
Nebr.	109				647, 653	Leavenworth.	102				827, 828
Abilene to Holliday	85				576, 577	Leavenworth Junction					827
Anthony to Bowie,						Lecompton.	102				577
Tex	108, 109					Lindsborg.	85			771	
Anthony to Salina.	108			771-774		Longford.	108				
Anthony.	108		244			Lovewell.	109				648
Argentine.	85				576	McPherson.	109				648
Ascot.	108			774		McAllister.	108			771, 772	
Assaria.	108			771		Manchester.	85				584
Atchison.	108				829, 830	Manhattan.	109				647
Aurora.	109				648	Medora.	85				579
Basil.	108			773		Mentor.	108			772	
Bavaria.	85				580	Miltonvale.	108			771	
Belvue.	85				578	Monotony.	109				648
Bridgeport.	108			771		Monument.	85				584
Brookville.	85				581	Morse.	85				584
Buffalo Park.	85				583	Nearman.	87				626
Bunker Hill.	85				582	New Cambria.	102				826
Carvel.	108			773		Newington.	108				579, 580
Castleton.	108			773		Oak Hill.	87				626
Catlin.	109				648	Oakley.	109				648
Cedar Junction.	85				576	Oak Mills.	85				583
Chapman.	85				579	Ogallah.	103				829
Club House.	85				577	Ogden.	85				583
Collyer.	85				583	Olathe.	85				579
Concordia.	109				648	Oneonta.	87				626, 627
Connors.	102				826, 827	Page City.	109				648
Courtland.	109				649	Pageroy.	85				584
Darlow.	108			772		Pomero.	102				826
Desoto.	85				576	Popes.	102				827
Dorrance.	85				581	Pretty Prairie.	108			773	
Duquoin.	108			774		Quindaro.	102				826
Ellis.	85				582	Quinter.	85				583
Ellis to Salina.	85				580-582	Rago.	108			773	
Ellis to Hugo, Colo.	85				582-585	Rossville.	85				578
Ellsworth.	85				581	Russell.	85		243.		582
Eudora.	85				576	St. George.	85				578
Fernie.	108			772		St. Marys.	85				578
Fort Leavenworth.	102				828	Salina.	108				580
Fort Riley.	85				579	Salina to Anthony.	108			771-774	
Gorham.	85				582	Salina to Ellis.	85				580-582
Groveland.	108			772		Salina to Solomon.	108				579, 580
Grainfield.	85				853	Sharon Springs.	85				584
Grinnell.	85				583	Silver Lake.	85			808	578
Grover.	85				577	Solomon.	108, 109				579, 647
Harper.	108			774		Solomon to Salina.	108				579, 580
Hannum.	109				648	Spring.	109			781	
Hays.	85				582	Sulphur Springs.	109				648
Hilton.	108			771		Talmage.	109				647
Holliday.	85, 87				576, 627	Tecumseh.	85				577
Holliday to Abilene	85				576-579	Terra Cotta.	85				581
Holliday to Harrisonville, Mo.						Topeka.	85				577, 578
Holliday to Kansas	87				625-627	Turkey Creek.	85				584
City, Mo	85				575, 576	Varner.	108			773	
Homer.	85				582	Victoria.	85				583
Huscher.	108				648	Wade.	102				828
Hutchinson.	108			772		Wakeney.	85				583
Inman.	108			772		Walker.	85				583
Johnstown.	108			771		Wallace.	85				584
Junction City.	85					Warnego.	85				578
Kackley.	109				579	Weaver.	85				576
Kanopolis.	85				649	Webber.	109				648
Kansas City.	85, 102				825, 826	Weskan.	85				584
Kickapoo.	103				828, 829	Wilson.	85				581
Kingman.	108			773		Winona.	85				584



## Index to elevations and descriptions of bench marks—Continued.

## KENTUCKY.

Place.	Elevation.					Place.	Elevation.				
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Alexander.....		464			598	Hillenmeyer.....		527		624	
Alpine.....		527				Hinton.....		527		623	
Arlington.....		464		629.	598	Jessamine.....		527		625	
Bardwell.....		464			598	Junction City.....		527		626	
Blanchett.....		527		623		Kinkaid.....		527		624	
Burgin.....		527		626		Kings Mountain.....		527	244	627	
Burnside.....		527		628		Lexington.....		527		624	
Brannon.....		527		625		Ludlow.....	526, 534				665
Clinton.....		464			598	McKinney.....		527		627	
Columbus.....	93				715, 718	Mason.....		527		623	
Corinth.....		527		623		Moreland.....		527	626, 627		
Covington.....		526		622		Newport.....		526		622	
Crittenden.....		527		623		Nicholasville.....		527		625	
Crescent Springs.....		526		622		Norwood.....		527		628	
Danville.....		527		626		Pineknott.....		528		629	
Dixon.....		526		622		Pulaski.....		527		627	
Donerail.....		527		624		Richwood.....		526		622	
Dry Ridge.....		527		623		Rodgersgap.....		527		624	
East Cairo.....		464			598	Sadieville.....		527		624	
Erlanger.....		526		622		Science Hill.....		527		627	
Eubank.....		527		627		Sherman.....		527		623	
Faulconer.....		527		626		Sloans Valley.....		527		628	
Floyd.....		527		627		Somerset.....		527		628	
Flat Rock.....		528		629		Strunk.....		528		629	
Fort Jefferson.....	93	464			598, 718	Waynesburg.....		527		627	
Fulton.....		464			598	Walton.....		527		623	
Georgetown.....		527		624		Whitley.....		528		629	
Greendale.....		527		624		Wickliffe.....		464			598
Greenwood.....		528		629		Williamstown.....		527		623	
Hickman.....	93				715	Wilmore.....		527		625	
Highbridge.....		527		625, 626		Worshams Landing.....	93				715

## LOUISIANA.

Acme.....	88			681	Bayou D'Arbonne.....	89				683
Acme to Barbin Landing.....	88		131		Bayou Dorcheat.....	88				670
Acme to Jonesville.....	88			681	Bayou Macon.....	87				676
Alabama Landing.....	89			684	Bayou Sara.....	91			616, 617	
Albany Point.....	88			681	Bayou Siord.....	89				682
Alden Bridge.....	89		134		Belle Helene.....	91			610	
Alexandria.....	88		130		Benton.....	90		134		
Allen Green.....	88			669	Big Creek.....	89				679
Alto.....	89		132		Black Hawk.....	92		136		608
Anchor.....	91			616	Black River.....	88				679
Arbroth.....	91			615	Blankston.....	88				677
Aradia.....	88				Bodcau.....	88				670
Archibald.....	88			669	Bodcau to Monroe.....	88				668-670
Archibald to Concordia.....	88, 89			679	Boeuf River.....	89		132		
Archibald to Columbia.....	89		132		Bonita.....	90				690
Archibald to Rayville.....	88			679	Bonnors Plantation.....	88				670
Ashwood.....	92, 93		144		Bougere.....	92		137		608
Bank Smith Place.....	89			682	Boyce.....	88				672
Barbin Landing.....	88		131		Brooks.....	92			618	
Barbin Landing to Acme.....	88		131		Bullitt Bayou.....	91		140, 141		679
Barbin Landing to Smithland.....	88			673-675	Burke.....	88				
Barbin Landing to Shreveport.....	88			670-673	Burtville.....	91			611	
Barbre Landing.....	88			674	Burnside.....	91			610	
Barnes.....	87			675	Buxtons Landing.....	88				672
Baskin.....	89			679	Cabin Teale Plantation.....	87				610
Baton Rouge.....	91			611, 612, 613	Calhoun.....	88				669
Baton Rouge to New Orleans.....	91		134-136	607-612	California.....	87				675
Baton Rouge to Smithland.....	91, 92			612-619	Campo Bello Plantation.....	88				670
Bayou Bartholomew.....	90			689, 690	Campiti.....	88				671
					Carpenter.....	87				676
					Carrollton.....	91		134	607, 608	603, 667
					Cash Plantation.....	88				670
					Caspiana Landing.....	88				670
					Catahoula Shoals.....	88				678
					Charleville.....	89		132		
					Celestine Plantation.....	91		136		
					Chef Menteur.....				606	
					Cheniore.....	88				669

## Index to elevations and descriptions of bench marks—Continued.

## LOUISIANA—Continued.

Place.	Elevation.					Description.	Place.	Elevation.					Description.
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.			This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	
	pages.	pages.	pages.	pages.	pages.			pages.	pages.	pages.	pages.	pages.	
Choudrant.....	88				669		Good Hope Plan-	91		135			
Clayton.....	89				680		tation.....	87				675	
Coles Landing.....	88				678		Gordon.....	88				672	
Colfax.....	88				672		Grand Bend.....	89				680	
College Landing.....	91		135				Greenville.....	109			786		
Colomb.....	88,89		132	610	678		Greenwood.....	93		145			
Columbia.....							Griffin.....	91			608		
Columbia to Archi-	89		132				Hahnville.....	88				674	
bald.....							Hamburg.....						
Columbia to Jones-	88				678-679		Hardscramble	88				681	
ville.....	88				677, 678		Landing.....						
Columbia to Monroe	88,89				676, 679		Hard Times Land-	92		143, 144			
Concordia.....					680, 681		ing.....	88				678, 679	
Concordia to Archi-	88,89				679-681		Harrisonburg.....	88				670	
bald.....							Haughton.....	89				680	
Concordia to Jones-	88				679		Helena.....						
ville.....	88				676, 677		Hendersons Land-	87				611	
Concordia to Vi-	91			610			ing.....	88				681	
dalia.....	89				680		Hendersons Mill.....	91			615, 616		
Convent.....	88				678		Hermitage.....	91		135	609	604, 605	
Copeland.....	88				671		Hester.....	89		132			
Cottingham Land-	88				676		Holly Grove.....						
ing.....	88				671		Holly Grove Land-	89		132			
Coushatta.....	87				675		ing.....	89		132			
Crew Lake.....	88				671		Holly Ridge.....	87				676	
Crichtons Planta-	88				671		Howard.....	88				670	
tion.....	88				671		Hurricane Bluff.....	89		134			
Crowville.....	88		131				Jeters Landing.....	88				682	
Curtis.....	88		131				Jeters Landing to	88				681, 682	
Cypress City.....	89				680		Shreveport.....	90				690	
Dallas.....	87				676		Jones.....	88				681	
Danville.....	88				678		Jones Bayou.....						
David Ferry.....	88				673		Jones Quarter	88				672	
Delhi.....	87,88		131		676		Landing.....	88				679	
Delhi to Tensas							Jonesville.....	88				681	
River.....	88		131				Jonesville to Acme	88					
Delta.....	87,93		145, 146	610, 636			Jonesville to Co-	88				678, 679	
Devall.....	91			614, 615			lumbia.....						
Doyle.....	88				670		Jonesville to Con-	88				679	
Dubberly.....	88		131		669		cordia.....	109			786		
Duck Port Planta-	87				610		Jewella.....	91		135			
tion.....	88				671		Kenner.....	93		144, 145			
Dunns Landing.....	88				671		King.....	89				680	
Eastpoint.....	89				679		Kirks Ferry.....	87				676	
Eden.....	88		130		673		Lake One.....	91			619		
Egg Bend Landing.....	89				680		Lacour.....	89		132			
Elam.....	87				610		Landerneau.....	91		135			
Elcho Plantation.....	91			619			La Place.....	92		141			
Ennis.....	88				681		L'Argent.....	89				680	
Eva.....	92		141				Lee Bayou.....	90				690	
Fairchilds Island.....	88				672		Lindgrove Landing	91			614		
Fairmount.....	88						Lobdell.....	88				671	
Fairview.....	92		137				Loggy Bayou.....	88				677	
Farmerville.....	89				683		Logtown.....	88				670	
Farmerville to							Lotus Landing.....	88				681	
Glendora.....	88				683		Lums.....	91		135	609		
Fishtrap Shoals.....	92		137, 138		680		Lutcher.....	88				681	
Fish Pond.....	89				684		McCures Landing.....	92		141			
Florence.....	91			606			Mable.....	89				679	
Fort Macomb.....	80				679		Mangham.....	88				673	
Frank Pierre Creek.....	88				679		Mansura.....	88		131		673	
Frogmore.....	91		135				Marksville.....	88				674	
Garyville.....	91			610			Mcrick.....	91		136			
Geismar.....	88				669		Miles.....	89				683	
Gibbsland.....	88				609, 678		Mill Bayou.....	87		134			
Gibsons Landing.....	89				680		Millers Bluff.....	88				610	
Gilbert.....	89						Millikens Bend.....	88				668, 669	
Gilbert to New							Monroe.....	88				677	
Light.....	89		131				Monroe to Bodcau	88				668-670	
Girard.....	87				675		Monroe to Colum-	88				677-678	
Glendora.....	89			809	682		bia.....						
Glendora to Far-	89				683		Monroe to Parke-	89				682	
merville.....	92		142				ville.....	87,88				675	
Goldman.....							Monroe to Rayville.						



## Index to elevations and descriptions of bench marks—Continued.

## LOUISIANA—Continued.

Elevation.						Description.					
Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
Montgomery	pages. 88	pages.	pages.	pages.	pages.	St. Maurice	pages. 88	pages.	pages.	pages.	pages.
Mooringsport	88				672	St. Peters	91		135		671
Moreauville	88				674	St. Rose	91			606	
Morganza	91			618		Sarpy	91		135		
Morville	9 2		138			Scotts Bluff	89				683
Mound	87				675	Sellers	9 1			609	604
Mound Landing	90				690	Shiloh Shoals	89				684
Mount Airy	91			609		Shreveport	88, 90		131, 134	787, 808	670
Murrays Landing	88		131			Shreveport to Barbin Landing	109				670-673
New Era	88				681	Shreveport to Camden, Ark.	88				
New Light	89		131			Shreveport to Fort Worth, Tex.	89, 90		133, 134		
New Light to Gilbert	89		131			Shreveport to Jeters Landing	109			782-	787
New Orleans	91		134	606, 6 07	603, 66	Sibley	88				681, 682
New Orleans to Baton Rouge	91		34-136	607-612		Simmesport	88				669
New Orleans to Biloxi, Miss.	9 0, 91			604-607		Simsboro	88				674
New River	91			610		Smithland	88, 92		131	619, 620	66 9
Nichols	109			786		Smithland to Baton Rouge	91, 92			612-619	607
Nocks	92		136			Smithland to Fort Adams, Miss.	92			619-622	
Normands Landing	88				673	Smithland to Barbin Landing	88				673-675
Old River	88				671	Stafford	88				678
Omega	87, 89				611	Steeles Switch	89				679
Osbornes Ferry			131			Steins Bluff	89				683
Palo Alto	92		140		608	Sunrise Landing	88		131		
Parkeville	89, 90				682	Sunshine	91			611	605
Parkeville to Camden, Ark.	89				683-686	Tallulah	87				676
Parkeville to Monroe	89				682	Tarbert (Miss.), opposite	92			620	
Parkeville to Wilkersons Landing, Miss.	90				689-691	Taylor	88				669
Patterson Plantation	91		135			Tensas River to Delhi	88		131		
Pecan Grove Plantation	91		135			Tiger Island	88				671
Peck	89				680	Torras Landing	88				675
Plain Dealing	89		1 34			Trinity	88				679
Point Breeze	9 2			620 621		Upper Brownsville Plantation	88				671
Pointe Coupee	91			617		Vanceville	90		134		
Point Pleasant	89, 92		144		683	Vick	88		131		
Poland	88				673	Vidalia	88, 92		138-140		608, 609
Port Union Landing	89				683	Vidalia to Concordia	88				677
Pullaway Landing	88		131			Vidalia to Fort Adams, Miss.	92		136-140		
Quebec	87				676	Vidalia to Vicksburg, Miss.	92, 93		140-146		
Raccourci	91			619		Walls	91			615	
Rapides	88				672	Wards Ferry	90				680
Rayville	87				675, 679	Waterproof	92		141, 142		609
Rayville to Archibald	88				679	Water Valley Landing	88				674
Rayville to Monroe	87, 88				675	Waverly	87, 88				676
Rayville to Vicksburg, Miss.	87				675, 676	West Baton Rouge	91			613, 614	
Red River Landing	92			620	675	West Monroe	88				689
Riverside Plantation	87				610	Whitehall	91		136		
Riverton	88				678	Williamsport	92			619	
River View Plantation	87				610	Willow	88				671
Rock Row Shoals	89				682	Winnboro	89				679
Ruston	88		131		669	Wisner	89				680
St. Gabriel	91			610							
St. Joseph	92		142, 143								

## Index to elevations and descriptions of bench marks—Continued.

## MARYLAND.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Adamstown.....	122		220			Hagerstown to Harrisburg, Pa.	84.				560
Alberton.....	121		218			Halethorp.....	121		216		
Alexandria Junction.....	121		215			Halpine.....	106			729	
Altamont.....	125		237			Hancock.....	84.				561
Amndendale.....	121		216			Hancock to Cumberland.....	84, 107			734-737	561
Annapolis.....		470			642, 643	Hancock to Hagers-town.....	84				560, 561
Annapolis Junction.....	121		216			Hancock to Wash- ington Junction.....	107			730-734	
Annapolis to Wash- ington, D. C.....		470, 471			642, 643	Hanover.....	121		216		
Baltimore.....	121		216, 217			Harwood.....	121		216		
Baltimore to Relay.....	121		216, 217			Henryton.....	121		218		
Barnesville.....	106, 107			730		Hollofield.....	121		218		
Bartholows.....	121, 122		219			Hoods Mills.....	121		218		
Beltsville.....	121		216			Hutton.....	84, 125		238		562
Berwyn.....	121		215			Hyattsville.....	121		215		
Black Bear.....	125		237			Ijamsville.....	122		219		
Black Oak.....	125		236			Ilchester.....	121		217		
Bloomington.....	84, 125		237, 244			Jessups.....	121		216		
Bond Station.....	125		237			Keedysville.....	87				628
Bowie.....		470			643	Kensington.....	107			729	
Boyd.....	106			730		Knoxville.....	107			731	
Brady.....	125		236			Lansdowne.....	121		216		
Branchville.....	121		215			Laurel.....	121		216		
Bridewell.....	121		216			Lime Kiln.....	122		219		
Brunswick.....	107			731		Linden.....	106			729	
Buckeystown.....	122		219			Little Orleans.....	84				561
Buckeystown Sta- tion.....	122		219			Lowndes.....	125		236		
Buck Lodge.....	106			730		McKenzie Station.....	125		236		
Capitol View.....	106			729		Marriottsville.....	121		216		
Catoctin.....	107			731		Montevideo.....	121		216		
Cedar Cliff.....	125		236			Monrovia.....	122		219		
Cherry Run.....	84				561	Morgan.....	121		218		
Cloppers.....	106			729		Mountain Lake Park.....	125		237, 238		
College Park.....	121		215			Mount Airy Junc- tion.....	121		219		
Contee.....	121		216			Mount Savage Junction.....	107			737	
Crabtree.....	125		237			Mount Winans.....	121		217		
Cresap.....	125		236			Muirkirk.....	121		216		
Cumberland.....	84, 107, 125		236	736, 737	561	North Branch.....	107			736	
Cumberland to Am- bersburg, W. Va.....	84, 125		236-238		561, 562	Oak Crest.....	121		216		
Cumberland to Foley, Pa.....	107			737, 738		Oakland.....	84, 125		238, 244		562
Cumberland to Hancock.....	84, 107			734-737	561	Oella.....	121		218		
Darby.....	106			730		Oldtown.....	84				561
Davis.....	121		218			Orange Grove.....	121		217		
Dawson.....	125		236			Pinto.....	125		236		
Deer Park.....	84, 125		237		562	Plane No. 4.....	121		219		
Derwood.....	106			729		Point of Rocks.....	87, 107			730	627
Dickerson.....	107			730		Potomac Station.....	125		236		
Dorsey.....	121		216			Rawlings.....	125		236		
Doubs.....	122		220			Reels Mill.....	122		219		
Elk Ridge.....	121		216			Relay.....	121		216, 217		
Ellerslie.....	107			737		Relay to Baltimore.....	121		216, 217		
Ellicott City.....	121		218			Relay to Washing- ton, D. C.....	121		215, 216		
Evitts Creek.....	107			736		Relay to Washing- ton Junction.....	121, 122		217-220		
Frankville.....	125		237			Riverdale.....	121		215		
Frederick.....	122		219			Rives.....	121		215		
Frederick Junction.....	122		219			Robert Station.....	125		236		
Gaither.....	121		218			Rockville.....	106			729	
Gaithersburg.....	106			729		St. Denis.....	121		216		
Garrett Park.....	106			729		Savage Station.....	121		216		
Germantown.....	106			729, 730		Sera.....	87				627
Gorsuch.....	121		218			Silver Spring.....	106			729	
Gray.....	121				627	Skipnash.....	125		238		
Great Falls.....	87				560	Sunnyside.....	121		215		
Hagerstown.....	84					Swanton.....	125		237		
Hagerstown to Georgetown, D. C.....	87				627, 628	Sykesville.....	121		218		
Hagerstown to Hancock.....	84				560, 561	Tuscarora.....	107			730	
						Vineyard.....	121		217		



*Index to elevations and descriptions of bench marks—Continued.*

## MARYLAND—Continued.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Ward.....	106			729		Watersville.....	121	218, 219			
Waring.....	106			729		West Baltimore.....	121		216		
Washington Grove.....	106			729		Westmore.....	106			729	
Washington Junction.....	107, 122		220	730		Weverton.....	87, 107			731	628.
Washington Junction to Hancock.....	107			730-734		Whites Ferry.....	87				627
Washington Junction to Relay.....	121, 122		217-220			Williamsport.....	84				560, 561
Washington Junction to Washington, D. C.....	106, 107			728-730		Wilson.....		470			043
						Windham.....	106			729	
						Woodbine.....	121		218		
						Woodside.....	106			729	
						Woodstock.....	121		218		

## MICHIGAN.

Algonac.....	535.		845, 846		Maple Ridge.....	536		791	
Back River.....	535		847		Marine City.....	535		846	
Barbeau.....	536	648			Marquette.....	536, 537		791	
Bay Mills.....	536	650			Marquette to Escanaba.....	536, 537		651	791
Brimley.....	536	650			Marysville.....	535			847
Delray.....	535		843		Monroe.....	532			654
Detour.....	536	645, 646			Mount Clemens.....	535			844
Detour to Iroquois.....	536	645-651			New Baltimore.....	535			845
Detroit.....	535	644	842-844		New Haven.....	538			842
Detroit Junction.....	538		842		Newport.....	532			653
East China.....	535		846		Pine River.....	538			842
Ecorse.....	535	644	843		Port Huron.....	535			847
Escanaba.....	536		791		Raber.....	536	646, 647		
Escanaba to Marquette.....	536, 537		651	791	Roberts Landing.....	535			846
Fair Haven.....	535		845		Rosedale.....	536	648		
Fort Gratiot.....	535		842		Roseville.....	535			844
Gatesville.....	536	647			St. Clair.....	535			846
Gibraltar.....	535		653		Sands.....	536			791
Gibraltar to Deshler, Ohio.....	532		653-656		Sand Beach.....	535	651, 652		
Gibraltar to Trenton.....	535	644	842, 843		Sault Sainte Marie.....	536	648-650		
Grosespoint.....	535		844		Schlesser.....	536	646		
Grosespoint Farms.....	535		845		Sibleys.....	535			843
Iroquois Point.....	536	651			South Rockwood.....	532			653
Iroquois to Detour.....	536	645-651			Stalwart.....	536	647		
Kelden.....	536	647			Sterlingville.....	536	647		
Lakeport.....	535	644	842		Trenton.....	535			842, 843
La Salle.....	532		654		Trenton to Gibraltar.....	535		644	842, 843
Lexington.....	535	644, 645			Trenton to Lexington.....	535, 538		644	842-847
Lexington to Trenton.....	535		644	842-847	Vienna.....	532			654
McCarron.....	536		648		Windmill Point.....	535			844
Mackinaw.....	536		652		Wyandotte.....	535			842, 843

## MINNESOTA.

Ada.....	116	170		Barnesville.....	116	169	
Aitkin.....	98, 99	146	785	Barnum.....	100		786
Aitkin to Brainerd.....	98		783-785	Bear Island.....	97		779
Aitkin to Grand Rapids.....	99, 100	146-148		Belle Prairie.....	98		782
Albany.....	114	149		Beltrami.....	116	170	
Alexandria.....	114	151, 152		Bemidji.....	99		592
Angus.....	116	171		Bena.....	99		594
Anoka.....	97		776, 777	Blackberry.....	99, 100	148	597
Argyle.....	116	171		Borup.....	116	169, 170	
Ashby.....	115	167		Brainerd.....	98		585
Averill.....	116	169		Brainerd to Aitkin.....	98		783-785
Avon.....	114	149		Brainerd to Cass Lake.....	98		586-590
Backus.....	98		587	Brainerd to St. Cloud.....	97, 98		779-783
Bald Eagle Junction.....	100		789	Brandon.....	114, 115	152	
Ball Club.....	99		595	Brock Creek.....	100		788

## Index to elevations and descriptions of bench marks—Continued.

## MINNESOTA—Continued.

Place.	Elevation.					Description.	Place.	Elevation.					Description.
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.			This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	
	pages.	pages.	pages.	pages.	pages.			pages.	pages.	pages.	pages.	pages.	
Browns Hill.....	100				788		Hull.....	99			596		
Carlisle.....	116		168				Hunters.....	98			588		
Carlton.....	100				786		Island Lake.....	98				784	
Cass Lake.....	98, 99			590, 593			Island No. 1.....	98				784	
Cass Lake to Brain- erd.....	98			586-590			Island No. 18.....	94				740	
Cass Lake to Lake Itasca.....	98, 99			590-593			Island No. 22.....	98				782	
Cass Lake to Grand Rapids.....	99			593-598			Itasca.....	97				777	
Cedar Brook, mouth of.....	98				785		Jenkins.....	98			586		
Centerville.....	100				789		Keplers Coulee.....	95				746	
Central Point.....	95				745		Kettle River.....	100				787	
Childs.....	114	153, 154					Kings Coulee.....	95		170		746, 747	
Clearwater.....	97				779		Kittson.....	116					754
Clinton.....	114		156				La Crescent.....	95			592, 593		
Cohasset.....	99			596			Lake Itasca.....	99					
Collegeville.....	114		149				Lake Itasca to Cass Lake.....	98, 99			590-593		
Collis.....	114		155				La Prairie.....	99			597		
Crawford.....	116		169				La Salle River, mouth of.....	99			592		746
Crookston.....	116		170, 171				Lake City.....	95				744, 745	
Cuba.....	99			593			Lake Side.....	95				752	
Dakota.....	95				753		Lamoille.....	95					
Dalton.....	115	167, 168					Lamndale.....	116		168, 169			
Daytons Bluff.....	94				738		Leaks.....	98			585		
Dean Brook.....	98				784		Leech Lake.....	98			589		
Deer River.....	99			595, 596			Libby.....	100		147			
Downer.....	116		169				Little Falls.....	98				781	
Dresbach.....	95				753, 754		Little Rock.....	97				780	
Duluth.....	100				785		Lockhart.....	116		170			
Duluth to St. Paul.....	100				785, 790		Lomond.....	99			593		
Dumont.....	114		155				Lothrop.....	98			588		
Dutchmans Coulee.....	95				747		Maltby.....	99			592		
East St. Cloud.....	97, 113		148		779		Melby.....	115		167			
Elbow Lake.....	114		152, 153				Melrose.....	114		149, 150			
Elk River.....	97				778		Merrifield.....	98			585		
Erdahl.....	114		152				Mildred.....	98			587		
Euclid.....	116		171				Miller.....	100				787	
Evansville.....	114, 115		152, 167				Minneapolis.....	95				775, 776	
Evansville to St. Cloud.....	113, 114		148-152				Minneopa.....	97				752	
Evansville to Stephen.....	115, 116		167-172				Mississippi.....	100		147, 148			
Evansville to Wa- tertown, S. Dak.....	114		152-158				Mission Creek.....	100				788	
Ferris.....	99			590			Monticello.....	97				778, 779	
Felton.....	116		169				Moose Lake.....	100				787	
Fergus Falls.....	115, 116		168				Nelson.....	114		151			
Florence.....	95				745		Newport.....	94				739	
Forest Lake.....	100				789		Newport Landing.....	94				739	
Fort Ripley.....	98				782		Nininger Slough, foot of.....	94				740	
Freepoint.....	114		149				Nininger Slough, head of.....	94				740	
Fridley.....	97				776		Nininger Slough, mouth of.....	94				740	
Garfield.....	114		152				North Branch.....	100				789	
Gladstone.....	100				790		North Prairie.....	98				781	
Glyndon.....	116		169				Nushka.....	99			594, 595		
Graceville.....	114		155, 156				Old Crow Wing Ferry.....	98				782	
Grand Rapids.....	99			597			Old Fort Ripley.....	98				782	
Grand Rapids to Aitken.....	99, 100		146-148				Old Indian Mission.....	98				784	
Grand Rapids to Cass Lake.....	99			593-598			Ortonville.....	114		156, 157			
Hackensack.....	98			587, 588			Osakis.....	114		150, 151			
Hadler.....	116		170				Otsego.....	97				778	
Harris.....	100				788		Parkdale.....	115		168			
Hastings.....	94				740		Pequot.....	98			586		
Hay Creek, mouth of.....	98				784		Pine City.....	100				788	
Hennepin River, mouth of.....	99			592			Pine River.....	98			586		784
Hereford.....	114		153				Point Douglas.....	94				741	
Higwood.....	94				739		Pokegama Lake.....	99			596, 597		
Hinckley.....	100				787		Portage.....	100		147			
Homer.....	95				752		Prospect Hill.....	99			592		
Hubert.....	98			585			Pullman.....	94				739, 740	
							Rabbit River, mouth of.....	98				784	
							Red Rock.....	94				739	
							Red Wing.....	94, 95				743, 744	
							Reeds Landing.....	95				747	



## Index to elevations and descriptions of bench marks—Continued.

## MINNESOTA—Continued.

Elevation.		Description.				Elevation.		Description.			
Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Rice.....	98				780, 781	Smithville.....	100				786
Richmond.....	95				753	South Bemidji.....	99			591	
River Junction.....	95				754	Stacy.....	100				789
Roscoes Coulee.....	95				747	Stärke.....	99			595	
Rosby.....	99			590, 591		Stephen.....	116		171, 172		
Rothsay.....	116		168			Stephen to Evansville.....	115, 116		167-172		
Royalton.....	98				781	Sturgeon Lake.....	100				787
Rush City.....	100				788	Tenney.....	114		153		
Russia.....	116		170			Tepeeota Point.....	95				748
St. Augusta.....	97				779	"The Rapids".....	99			592	
St. Cloud.....	97, 113, 114		148, 149		779, 780	Thomson.....	100				786
St. Cloud to Brainard.....	97, 98				779-783	Thorsborg.....	114		152		
St. Cloud to Evansville.....	113, 114		148-152			Tintah.....	114		153		
St. Cloud to St. Paul.....	97				774-779	Toxhead Rapids.....	98				784
St. Paul.....	94, 97, 100				737, 738, 775, 790	Verna.....	100		148		
St. Paul to Duluth.....	100				785-790	Wabasha.....	95				747, 748
St. Paul to St. Cloud.....	97				774-779	Wacouta.....	95				744
St. Paul to Savanna, Ill.....	94-97				737-774	Waldeck.....	98		146, 147		
St. Paul Park.....	94				739, 740	Walker.....	116			588, 589	
St. Joseph.....	114		149			Warren.....	100		171		785
Sandstone Junction.....	100				787	West Duluth.....	114		150		
Sauk Center.....	114		150			West Union.....	114		153		
Sauk Rapids.....	97				780	Wheaton.....	114		170		
Schley.....	99			593, 594		Wheatville.....	116				790
Shirley.....	116		171			White Bear.....	100				
Short Line Park.....	100				786	Wilkinson.....	98			589, 590	
						Willo v River.....	100				787
						Winona.....	95				751, 752
						Wyoming.....	100				789
						Yarmouth.....	114		153		

## MISSISSIPPI.

Argyle.....	90				697	Clarksdale.....	90				698
Arnot.....	92		137			Clarksdale to Friar Point.....	90				697, 698
Artesia.....		463			595	Clarks Landing.....	90				695
Auburn Plantation.....	87				612	Clinton.....	87				638
Austin.....	90				700	Clover Hill.....	90				697
Australia.....	90				694	Coahoma.....	90				697
Baird.....	90				693	Commerce.....	90				699
Baldwyn.....		463			595	Concordia.....	90				695
Bay St. Louis.....	91				605	Content.....	90				696
Beauvoir.....	91				605	Corinth.....	463, 532			643, 644	596, 700
Bee Lake.....	90				692	Corinth to Cairo, Ill.....	463, 464				596-599
Belle Isle Plantation.....	90				692	Corinth to Memphis, Tenn.....	87				641, 642
Ben Lomond Plantation.....	87				611	Corinth to Meridian.....		463			594-596
Beulah.....	90				695	Corinth to Tusculum, Ala.....		530, 532		642-644	700-702
Biloxi.....	90	463		604, 605	591, 592	De Soto.....	87	463			594
Biloxi to Mobile, Ala.....		463			591, 592	Edwards.....	90				638
Biloxi to New Orleans, La.....	90, 91			604-607		Enola.....	90				692
Blakely Plantation.....	90				692	Enterprise.....		463			594
Bolivar.....	90				696	Forest.....	87				639
Bolton.....	87				638	Fort Adams.....	92			621	
Booneville.....		463			596	Fort Adams to Smithland, La.....	92			619-622	
Bovina.....	87				638	Fort Adams to Vidalia, La.....	92		136-140		
Brandon.....	87				639	Fort Loring.....	90				693
Bucatanuna.....		463			593	Friar Point.....	90				694, 697, 698
Buck Ridge.....	90				696	Friar Point to Clarksdale.....	90				697, 698
Buggs Landing.....		531, 532			708	Friar Point to Memphis, Tenn.....	90				698-700
Burnsville.....		530, 532		643	700	Friar Point to Wilkersons Landing.....	90				694-696
Calmar.....	90				692	Glendale.....	90				698
Carsons.....	90				695	Glenora Plantation.....	87				612
Childers.....	90				696						
Chinchuba.....	91			606							
Chunkys.....	87				640						
Claiborne.....	91			606							
Clarkshurg.....	87				639						

## Index to elevations and descriptions of bench marks—Continued.

## MISSISSIPPI—Continued.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Graham.....	87				640	Quitman.....	87	463			594
Greenfield.....	87				639	Rankin.....	87				639
Greenville.....	87, 90				612, 691, 697	Refuge.....	87				612
Greenville to Vicksburg.....	87				610-612	Refuge Plantation.....	87				612
Greenville to Vicksburg via Greenwood.....	90				692-694	Reserve Plantation.....	87				611
Greenville to Wilkersons Landing.....	90				691, 697	Rienzi.....		463			596
Greenwood.....	90				693	Riverdale Plantation.....	87				611
Guntown.....		463			595	Riverton.....	90				695
Hays.....	87				611	Robinsonville.....	90				694
Heathman.....	90				694	Rodney.....	92		142, 143		
Hickory.....	87				640	Rosedale.....	90				695
Horn Lake Creek.....	90				699	Russell.....		479			714
Hughes Landing.....	90				694	Saltillo.....		463			595
Indian Creek.....		531			708	Satartia.....	90				692
Indianola.....	90				693	Scooba.....		463			594
Ingomar.....	87				611	Scranton.....		463		807	592
Itta Bena.....	90				693	Shannon.....		463			595
Iuka.....		530			700	Shiloh Plantation.....	87				611
Jackson.....	87				639	Shubuta.....		463			594
Kleinston.....	87, 93		146		637	Sidon.....	90				693
Lake.....	87				640	Smiths.....	87				638
Lake Charles Landing.....	90				694	Star Landing.....	90				699
Lake See.....	87				612	Stoneville.....	90				694
Lake Washington.....	87				612	Stormville.....	90				696
Landing.....	90				611, 612	Sunflower Landing.....	90				694
L'Argent.....	87				611, 612	Tallulah Landing.....	87				611
Leota.....	87				612	Tarbert (opposite, in La.).....	92			620	
Longwood Plantation.....	87				698	Tchula.....	90				693
Lyon.....	90				611	Terrene.....	90				695
Macon.....		463			594, 595	The Bogue.....	90				694
Mayersville.....	87				611	Toomsaba.....		479			714
Meridian.....	87	463, 479			594, 640, 611	Tupelo.....		463			595
Meridian to Corinth.....		463			594, 596	Verona.....		463			595
Meridian to Mobile, Ala.....		463			593, 594	Vicksburg.....	87, 90, 93		130, 146		636, 637, 692
Meridian to Vicksburg.....	87				636-640	Vicksburg (Delta).....	87, 93				610
Meridian to York, Ala.....		478, 479			713, 714	Vicksburg to Greenville.....	87				610-612
Mhoons Landing.....	90				699	Vicksburg to Greenville via Greenwood.....	90				692-694
Millers Bend.....	91				691, 697	Vicksburg to Meridian.....	87				636-640
Mississippi City.....	91			605	601, 668	Vicksburg to Rayville, La.....	87				610, 636, 675, 676
Morton.....	87				639	Vicksburg to Vidalia, La.....	92, 93		140, 146		612
Mound Place.....	90				696	Warfield Point.....	87				602
Natchez.....	88, 92		139, 140		677	Waveland.....	91			606	593
Nebletts Landing.....	90				695	Waynesboro.....		463			595
Newmans.....	87				638	West Point.....		463			601
Newton.....	87				640	White Harbor.....	91			605	696
Ocean Springs.....	90	463, 523		604	592	Wilkersons Landing.....	90				694-696
Offutt's Landing.....	90				691, 697	Wilkersons Landing to Friar Point.....	90				691, 697
Okolona.....		463			595	Wilkersons Landing to Greenville.....	90				689-691
Palmetto Plantation.....	87				611	Wilkersons Ldg. to Parkeville, La.....	90				593
Pass Christian.....	91			605	601	Winchester.....		463			692
Pearson.....	87				639	Yazoo City.....	90				692
Pelahatchee.....	87				691, 697	Yazoo River.....	90				692
Port Anderson.....	90				695						
Pretiss.....	90										

## MISSOURI.

Adrian.....	87				624	Arthur.....	86				624
Alexandria.....	93				724	Ashburn.....	93				725
Allenton.....		459			567	Atherton.....	102				823
Amazonia.....	1 03				833	Bainbridge Creek.....		480			722
Archie.....	87				625	Becker.....		502			795



## Index to elevations and descriptions of bench marks—Continued.

## MISSOURI—Continued.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Belton.....	87				626	Franklin.....	101				813
Berger.....		459, 503			568, 80	Franklin Island.....	101				812
Berlin.....	102				820	Gasconade.....		459, 504			568, 569,
Big Blue River.....	102				575, 824	Geigers Landing.....	101				801, 802
Bigelow.....	103				834	Glasgow.....	101				810, 811
Birmingham Point.....		480			722	Grand Eddy.....		480			815, 816
Blue Mills Landing.....	102				823	Grand River.....	101				722
Bluffport.....	101				815	Grays Creek.....	100				817
Bois Brule.....		480			795, 796	Grays Point.....		481			808
Boles.....		502			794	Greenwood.....	85				723
Bon Homme.....		502			570, 805,	Gregory Landing.....	93				574
Bonnets Mill.....		459, 505			806	Gumbo.....		501			724
Boonville.....	101				812, 813,	Halls.....	103				794
Boston.....	86				814	Hannibal.....	93			808	831
Boston to Chester, Ark.....	86				622, 623	Harrisonville.....	87				725
Boston to Harrisonville.....	86, 87				619-623	Harrisonville to Boston.....	86, 87				625
Buckhorn Point.....	101				623-625	Harrisonville to Holliday, Kans.....	87				623-625
Bull Rock.....	100				816	Harrisonville to Pleasant Hill.....	87				625
Butler.....	86				809	Herrmann.....		459, 503, 504			568, 800,
California.....	84				671						801
Cambridge.....	101				816	Hilton.....	93				725
Canton.....	93				724, 725	Holden.....	85				574
Cape Girardeau.....		481			723	Horton.....	86				624
Cape Girardeau County.....		480			722	Illinois.....		480			720
Cape Rock.....		480			722	Independence.....	85, 102				575, 824
Carondelet.....		480			720	Irwin.....	86				623
Carthage.....	86				622	Isbell.....		459, 505			570, 805
Centaur.....		502			794	Jamestown Land- ing.....		501			792
Centertown.....	84				571	Jasper.....	86				622
Center View.....	85				574	Jefferson Barracks.....		480			720
Chamois.....		459, 504			569, 803,	Jefferson City.....	100	459, 505			570, 571,
Charbonnier Point.....		501			804	Jefferson City to Pleasant Hill.....	84, 85				806-808
Clarksburg.....	84				792	Jefferson City to Kansas City.....	100-102				807-825
Clarksville.....	93				572	Jefferson City to 12 miles above St. Louis.....		500-505			791-807
Claysville.....	100				726	Jefferson City to St. Louis.....		459			567-570
Cliff.....		480			809	Jefferson Station.....		480			720
Cliff Cave.....		480			720, 721	Kansas City.....	85, 102				575, 824,
Cold Water Creek, mouth of.....		501			720	Kansas City to Jefferson City.....	100-102				825
Cole.....	84				791	Kansas City to Pleasant Hill.....	85				807-825
Coleman.....	87				791	Kansas City to St. Joseph.....	102, 103				825-832
Columbia Bottom.....		500			626	Kansas City to Hol- iday, Kans.....	85				575, 576
Commerce.....		481			791	Kenmoor.....	103				881
Corning.....	103				723	Kent.....		503			798
Courtney.....	102				834, 835	Kimmswick.....		480			720
Craig.....	103				823, 824	Kimpton.....	87				625
Creve Cœur Lake.....		501			834	Kingsville.....	85				574
Cromwell Point.....	101				793, 794	Knobnoster.....	85				573
Cursons.....	103				816	Labadie.....		502			795
Deer Creek.....		505			833	La Grange.....	93				725
Dewitt.....	101				804	Lamar.....	86				623
Dover.....	102				817	Lamonte.....	85, 86				573
Drew.....		501			819, 820	Langdon.....	103				835
Dundee.....		503			794	Laynesville.....	101				818
East Atchison.....	103				798, 799	Lees Summit.....	85				574
Edwards.....	101, 102				830	Lexington.....	102				820, 821
Ellotts Landing.....	101				819	Lisbon.....	101				814, 815
Elston.....	84				812						
Etlah.....		459, 503			571						
Ewings Landing.....		505			568, 799,						
Exeter.....	86				800						
Fabius River.....	93				806						
Forbes.....	103				621						
Forest City.....	103				725						
Fort Bellefontaine.....		501			833, 834						
Fortuna.....	85				791						
					572						

## Index to elevations and descriptions of bench marks—Continued.

## MISSOURI—Continued.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Little Blue.....	85				575	St. Louis.....	84	480			567, 719,
Little Blue River..	85, 102				823	St. Louis to Cairo,					720, 791
Lone Tree.....	87				625	Ill.....		480, 481			720-724
Loose Creek.....		505			805	St. Louis to Jeffer-			459		567-570
Louisiana.....	93				726	son City.....					
Malta Bend Land-					818	St. Louis to Odin,					
ing.....	101				809, 810	Ill.....	84				566, 567
Marion.....	100, 101				822	St. Louis to 12					
Matthews Landing..	102				817	miles above St.					
Miami.....	101				623	Louis.....		480			719, 720
Milo.....	86				823	St. Louis (12 miles					
Missouri City.....	102				794	above) to Jef-					
Mona.....		501			621	erson City.....		500-505			791-807
Monett.....	86				810	St. Louis (12 miles					
Moniteau Creek....	101				573	above) to Graf-					
Montserrat.....	85				569, 803	ton, Ill.....		480			719
Morrison.....	459, 504				811	St. Paul.....		459			567
Mount Vernon					792	Ste. Genevieve....		480			721
Landing.....	101				834	St. Marys.....		480			721
Musicks Ferry.....		501			822	Salt Creek.....	101				816
Napier.....	103				623	Sandy Hook Land-					
Napoleon.....	102				816	ing.....	101				810
Nevada.....	86				568, 799	Sarcoie.....	86				622
New Frankfort....	101				823	Saverton.....	93				725
New Haven.....	459, 503				835	Scott.....	84				571
New Sibley.....	102				833	Sedalla.....	85				573
Nishnabotna.....	103				833	Seligman.....	86				621
Nodaway.....	103				820	Sheldon.....	86				623
Northrup.....	102				570, 806	Shipley Landing..		505			804, 805
Osage City.....	459, 505				572	Shibley.....	102				822
Otterville.....	85				811	Sibley Bridge....	102				822
Overton.....	101				624	Smithton.....	85				572
Passaic.....	87				835	South Point.....		459, 502			568,
Phelps.....	103				621	Stanleys Landing..	100				796, 797
Pierce City.....	86				720	Stevens.....		502			809
Platin Rock Creek..		480			574	Strasburg.....	85				794
Pleasant Hill.....	85, 87				625	Sugar Loaf Rock..	100				574
Pleasant Hill to						Sulphur Springs..		480			809
Harrisonville.....	87				574, 575	Syracuse.....	85				720
Pleasant Hill to						Terrapin Island..	101				572
Kansas City.....	85				570-574	Teteseau Bend....	101				811
Pleasant Hill to					785	Tipton.....	84				818
Jefferson City.....	84, 85				621	Tower Rock.....		480			572
Port Royal.....		502			721	Versailles.....	85				722
Purdy.....	86				626	Warrensburg.....	85				572
Quarrytown.....		480			622	Washburn.....	86				573
Raymore.....	87				624	Washington.....		459,			621
Reeds.....	86				815			502, 503			568,
Rich Hill.....	86				811	Waterloo.....	102				797, 798
Richland Creek....	101				720	Watson.....	103				822
Rocheport.....	101				830	Wayverly.....	101				835
Rush Tower.....		480			795	Wayne.....	102				818, 819
Rushville.....	103				569, 804	Wellington.....	102				824
St. Albans.....		502			792, 793	Westworth.....	86				621, 822
St. Aubert.....	459, 505				831	West Quincy.....	93				622
St. Charles.....		501			831, 832	White Sand Depot					725
St. George.....	103				833-842	Landing.....		480			721
St. Joseph.....	103				825-832	Wittenburg.....		480			722
St. Joseph to Sioux						Wolf Point.....	101				811
City, Iowa.....	103, 104										
St. Joseph to Kan-											
sas City.....	102, 103										

## NEBRASKA.

Ainsworth.....	110			796		Bassett.....	110			796	
Alta.....	109			651		Blue Hill.....	109			649, 650	
Amboy.....	109			649		Bordeaux.....	110			798	
Andrews.....	110			799		Bostwick.....	109			649	
Arabia.....	110			796		Brickton.....	109			650	
Atkinson.....	110			795		Brunswick.....	109			794	
Aper.....	109			792		Central City.....	109			661	
Ayr.....	109			650		Chadron.....	110			798, 799	



## Index to elevations and descriptions of bench marks—Continued.

## NEBRASKA—Continued.

Elevation.		Description.				Elevation.		Description.			
Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Chadron to Orin Junction, Wyo.	110			799, 800		Nacora	109			793	
Chadron to Page	109, 110			795-799		Nenzl.	110			797	
Chapman	109				651	Newport	110			795	
Clarks	109				651	Norfolk	109				653
Clinton	110			798		Norfolk to Abilene, Kans.	109				647-653
Coburn	109			793		Norfolk to Page	109			793, 794	
Cody	110			797		Norfolk to Sioux City, Iowa.	109			792, 793	
Columbus	109			652		Oconee	109				652
Cowles	109			649		Omaha	104				837, 838
Crawford	110			799		O'Neill	110			795	
Crookston	110			796, 797		Orchard	109			794	
Dakota City	109			793		Paddock	109				651
Doniphan	109				650	Page	109			794	
Duncan	109				652	Page to Chadron	109, 110			795-799	
Eli	110			797		Page to Norfolk	109			793, 794	
Emerson	109			792		Pierce	109			794	
Emmet	110			795		Plainview	109			794	
Fort Robinson	110			799		Platte Center	109				652
Foster	109			794		Ridge	109			792	
Georgia	110			797		Rivers	109				650
Gordon	110			797, 798		Rushville	110			798	
Grand Island	109				650, 651	Savage	109			794	
Glen	110			799		Shelton	109				651
Guide Rock	109			649		Silver Creek	109				651
Hadar	109			793		South Sioux City	109			793	
Hansen	109				650	Stuart	110			795	
Hastings	109				650	Superior	109				649
Harrison	110			799, 800		Tarnov	109				652
Havens	109				651	Thacher	110			796	
Hay Springs	110			798		Thummel	109				651
Hope	109			792		Valentine	110			796	
Hoskins	109			792		Van Tassell	110			800	
Hubbard	109			793		Wakefield	109			792	
Humphrey	109				652	Wayne	109			792	
Irwin	110			797		Whitney	110			799	
Johnstown	110			796		Winside	109			792	
Lockwood	109				651	Woodlake	110			796	
Long Pine	110			796		Wood River	109				651
Madison	109				652, 653						
Merriman	110			797							

## NEW JERSEY.

Annandale	84			559	New Market	84			559
Bergen		456		554	North Branch	84			559
Bloomsbury	84			559	Perth Amboy		456		554
Bound Brook	84			558, 559	Phillipsburg	84			559
Branchport		455		552	Port Monmouth		456		553
Conasronk Point		456		553	Raritan		456		553
Constables Hook		456		554	Raritan Bay to Harrisburg, Pa.	84			558-560
Elizabeth		456		554	Red Bank		455		552
Highlands		455		552	Sandy Hook		45, 456		552, 553, 558
Keyport		456		553	Seabright		457		558
Matawan		456		553	Somerville				559
Metuchen	84			558	South Amboy	84		456	559
Morgan		457		558	South Plainfield	84			558
Navesink Hgh. lands.		456, 457		558					

## NEW YORK.

Addison		559		861	Allegany		559		860
Addison Junction		550		717	Almond		559		860
Adrian		559		861	Amboy		545		
Afton		559		862	Amsterdam		539, 541, 542		663, 672, 682
Albany	538, 541		661, 677	848	Andover		559		860
Albany to Buffalo	541-549		677-703		Angola	563, 564		748	
Albion		548		700	Aqueduct Station		541		671, 672
Alexandria Bay		552		857, 858	Ardsley		554		720
Alfred		559		860					

## Index to elevations and descriptions of bench marks—Continued.

## NEW YORK—Continued.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 18 99, App. 8.		This publication.	Rept. 1 903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 18 99, App. 8.
Arkport.....	pages.	pages.	pages.	pages.	pages.	Chubbs Dock.....	pages.	pages.	pages.	pages.	pages.
Astoria.....		563		747		Clayton.....		550		716	
Astoria Dock.....		456	243		556	Cleveland.....		552		858, 85	9
Athol Springs.....		456			556, 557	Clyde.....		540		668	
Auriesville.....	541, 542	563		748		Clyde to Phoenix.....		549		694, 695, 705	
Avon.....		541, 542		673, 682		Cobleskill.....		5 49		703-705	
Bainbridge.....		563		746	862	Cochecton.....		559			863
Bainbridge to Binghamton.....		559			862	Cohoes.....		562		742	
Bainbridge to Cohoes.....		559			862	Cohoes to Bainbridge.....		538, 540, 542, 560		661, 671, 677, 678	
Baldwinsville.....	559, 560				8 6, 863	Cold Spring.....	244	559-560		862, 863	
Barnerville Crossing.....	549		703, 704			College Point.....		554		722	849, 863
Barrytown.....	559			723, 724	8 63	Colliers.....		456	243	557, 558	
Barton.....	559				861	Comstock.....		559		862	
Bath.....	540			671		Constantia.....	550, 553			712, 715, 716	
Bath Beach.....	456		243		555	Coomer.....		540		668	
Bay Ridge.....	456				555	Coopersville.....	244	537		85 4	
Belgium.....	549, 550		703, 706			Coopersville to Hogsburg.....		550		717	
Belle Isle.....	5 44		692			Corlears Hook.....	550, 551			717-719	
Belmont.....	55 9				8 60	Corning.....		456			556
Belvidere.....	559				860	Coveville.....		559		861	
Bemis Heights.....	550, 552		708, 714			Coxsack Station.....	550, 552			708, 709, 714	
Bermards Bay.....	540			668		Crescent.....		553		725, 727	
Big Flats.....	559				861	Croton.....		555			
Binghamton.....	559				8 6	Crown Point.....	538, 540, 542			661, 671	
Binghamton to Bainbridge.....		559			8 6	Crown Point Light-house.....		554		679, 721	
Binghamton to Elmira.....		559			8 6, 8 6	Crown Point to Whitehall.....		550		717	
Binghamton to Hancock.....	561, 562			741		Cuba.....		550		716, 717	
Blasdel.....	563			743		Cuylerville.....		559			860
Bradford's Hill.....	551				85	Dayton.....		563		746	
Brewerton.....	541			676		Deposit.....		568			860
Brighton.....	547			698		Derby.....		562		7 14	
Brockport.....	547, 548			699		De Witt.....		563		748	
Brooklyn.....	45 6				555, 556	Dobbs Ferry.....	456, 554			6 91	
Buffalo.....	537, 549, 563		657, 658, 702, 703, 747, 748			Dobbs Ferry Poughkeepsie.....		554		71 9, 720	557
Buffalo to Albany.....	541- 954		677-703			Dodges Bay.....		552			850
Buffalo to Dunkirk.....	563, 564		747-94			Downing.....		539, 541		664, 673, 683	
Buffalo to Olcott.....	537, 538		653-659			Dresden.....		543			
Burns.....	563			747		Duanesburg.....		550		716	
Bushnell Basin.....	547			697		Dunhams Basin.....		559			863
Cadosia.....	562			743		Dunkirk.....	550, 553			711, 715	
Callicoon.....	562			742		Dunkirk to Buffalo.....	558, 564			749	85 9
Camelot.....	559			722		Dunkirk to Salamanca.....	5 63, 564			747-749	
Cameron.....	559				861	Dunsbach Ferry.....		558			859, 860
Campbell Hall.....	562			742		Durhamville.....		540		671	
Canarullus.....	545			692		Eagle Harbor.....		544		68 9	
Canajoharie.....	539, 543		664, 684		85 0	East Worcester.....		548		700	
Canaseraga.....	544, 563		690, 747			Egg Island.....		559			86 3
Canastota.....	544		689, 690			Elmira.....	559, 561			738	85 3
Canisteo.....	559				8 61	Elmira to Binghamton.....		551			861
Cape Vincent.....	552				8 6	Elmira to Hornellsville.....		559			861
Carrollton.....	559				860	Elmira to Williamsport, Pa.....		561		738, 739	
Castleton.....	555			725, 728		Elm Park.....		456			554
Castleton to Hudson.....		555		727, 728		Esperance.....		559			863
Catskill Station.....		555		724		Fairport.....		547		697	
Cattaraugus.....		558			860	Farnham.....		564		748	
Caughdenoy.....	540, 541		669, 676			Fishkill.....		554	244	722	
Central Square.....	540			669		Flushing.....		456	243		557
Champlain.....	550			717, 718		Fondas Basin.....	5 38, 542			662, 679	
Charlotte.....	562			745		Forestville.....		558			85 9
Charlotte to Hornellsville.....	56 2, 563			745-747							
Chelsea.....	554			722							
Chemung.....	559				86 1						
Chippewa Village.....	551, 552				85 6, 85						
Chittenango.....	544			690							



## Index to elevations and descriptions of bench marks—Continued.

## NEW YORK—Continued.

Elevation.					Description.						
Place.	This publi- cation.	Rept. 1903, App. 3.	This publi- cation.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	Place.	This publi- cation.	Rept. 1903, App. 3.	This publi- cation.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Fort Ann.....	550, 553			712, 715		Hornellsville to					
Fort Covington.....	551			719		Elmira.....	559				861
Fort Edward.....	550, 553			710, 711, 715		Hornellsville to					
Fort Frederick.....	550			717		Salamanca.....	559				860, 861
Fort Hamilton.....	456, 580		244	807, 809	555	Horseheads.....	559				861
Fort Hunter.....	{ 539, 541, 542 }			{ 663, 673, 682 }		Howes Cave.....	559				863
Fort Miller.....	550, 553			709, 710		Hudson.....	555		{ 724, 725 }		
Fort Montgomery.....	550			715		Hudson to Castle-					
Fort Plain.....	{ 539, 541, 543 }			{ 664, 673, 684 }		ton.....	555		727, 728		
Fort Ticonderoga.....	550			717		Hulberton.....	548		699, 700		
Fort Wadsworth.....	456			716	554	Hunters Point.....	456	243			556
Fowlerville.....	563			746		Hyde Park.....	554		244	723	
Fox Ridge.....	549			705		Ilion.....	{ 539, 541, 543 }			{ 666, 675, 686, 687 }	
Frankfort.....	{ 539, 541, 543 }			{ 666, 675, 687 }	851	Indian Castle.....	{ 539, 541, 543 }			{ 665, 674, 685 }	
Friendship.....	559				860	Ingalls Crossing.....	541			676	
Fulton.....	540, 541			669, 676		Irving.....	564			748	
Fultonville.....	{ 539, 541, 542, 543 }			{ 663, 664, 673, 682, 683 }	850	Irvington.....	554			720	
Garrison.....	554			722		Jordan.....	545		692, 693		
Gasport.....	548			701		Kelleys.....	559				863
Genesee Junction.....	563			745		Kirkville.....	544			690	
Genesee Valley						Kirkwood.....	562			740	
Junction.....	563			746		Knowlesville.....	548			700	
Germantown.....	555			724		Langdon.....	561			740	
Gifford.....	456				554	Lake View.....	563			748	
Glens Falls.....	553			711		La Salle.....	537, 538			656, 659	
Governors Island.....	456				555, 556	Lewiston.....	537, 538			{ 655, 659 }	
Grass River.....	551				853	Lewiston Heights.....	537			660	
Great Kills.....	456				554	Leonardsville.....	562			744	
Greenbush (Rensse-						Linlithgo.....	555			724	
laer).....	555			726	848	Lisbon.....	551				854
Greenbush (Rensse-						Little Falls.....	{ 539, 541, 543 }			{ 665, 674, 685, 686 }	
laer) to Oswego.....	540, 541			670-676		Little Valley.....	558				860
Greenbush (Rensse-						Liverpool.....	550			706	
laer) to Pough-						Livingston Creek.....	555			724	
keepsie).....	554, 555			722-726		Lock Berlin.....	546			695	
Greenbush (Rensse-						Lockport.....	538, 548			{ 659, 701, 702 }	
laer) to Troy.....	555			726, 727		Long Eddy.....	562			741	
Greenbush (Rensse-						Long Island City.....	456				557
laer) to Vischers						Lordville.....	562			741	
Ferry.....	538			661		Louisville Landing.....	551				853
Green Island.....	541			677		Loyd.....	562			742	
Guynard.....	562			742		Lyons.....	546			695, 696	
Hancock.....	562			741, 743		Macedon.....	547			697	
Hancock to Bing-	561, 562			741		Manlius.....	544			690	
hamton.....						Maryland.....	559				862
Hancock to Pough-						Maywood.....	562			743	
keepsie).....	562			741-743		Meadville.....	546			694	
Hancock to Sidney.....	562			743		Mechanicsville.....	550, 552			{ 707, 713, 714 }	
Hankins.....	562			741		Medina.....	548			700, 701	
Harpersville.....	559				862	Memphis.....	545			692	
Herkimer.....	{ 539, 541, 543 }			{ 665, 674, 686 }		Middleport.....	548			713	
Higginsville.....	540, 544			667, 689	852	Middletown.....	562			701, 742	
Highlands.....	554, 562			721, 742		Mindenville.....	{ 539, 541, 543 }			{ 665, 674, 685 }	
Hinmanville.....	541			676		Minetto.....	540			669, 676	
Hinsdale.....	559				860	Model City.....	537			654	
Hogansburg.....	551				852	Mohawk.....	539, 543			{ 665, 666, 686 }	
Hogansburg to						Montezuma.....	545, 546			694	
Coopersville.....	550, 551			717-719		Montrose.....	554			721	
Hogansburg to						Morristown.....	551				855, 856
Tibbetts Point.....	551, 552				852-859	Moses Kill.....	550			715	
Holley.....	548			699		Mount Morris.....	563			746	
Holmesville.....	562			744		Mount Upton.....	562			744	
Honeoye Junction.....	563			746		Murphys Island.....	551				853
Hornellsville.....	559, 563			747	861	Narrowsburg.....	562			742	
Hornellsville to						Newark.....	546			696	
Charlotte.....	562, 563			745-747							

## Index to elevations and descriptions of bench marks—Continued.

## NEW YORK—Continued.

Elevation.		Description.			Elevation.		Description.				
Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
New Berlin		562		744		Rhinecliff		554		723	
Newfane	537, 538			653, 659		Richards Landing		551			853
New Hamburg		554	244	722		Richfield Junction		562		744	
New London	{ 540, 541, 544 }			667, 675, 689		River Road		551			853
New York		456			556, 557	Richmondville		559			863
Niagara Falls	537, 538			655		Rochester	547, 563		698, 745		
Niskayuna		541		671		Rock Rift		562		743	
North Bay	540, 541			668, 676		Rome	{ 540, 541, 544 }		667, 675, 688, 689		852
Northfield		562		743		Ross Crossing		563		747	
North Tonawanda	537			656		Rotterdam Junction		541, 542		672, 680	
Northumberland	550, 553			709, 715		Rouse Point		550		717	
Nunda		563		746, 747		Salamanca		558			860
Oak Point Village		551			856	Salamanca to Dunkirk					859, 860
Ogdensburg		551			854, 855	Salamanca to Hornellsville		558, 559			860, 861
Olcott		537		653		Salamanca to Irvineton, Pa.		561		739, 740	
Olcott to Buffalo	537, 538			653-659		Savannah		549		705	
Olean		559			860	Sand Ridge		541		676	
Oneonta		559			862	Sanitaria Springs		559			862
Oriskany	{ 540, 541, 544 }			666, 667, 675, 688		Scarboro		554		720	
Osening	244			721		Schaghticoke		550		714	
Oscawana		554		721		Schenectady	{ 538, 541, 542, 559 }		662, 672, 680, 681		849, 863
Oswego		540		669, 670	852	Schenevus		559			862
Oswego to Greenbush (Rensselaer)		541		670-676		Schodack Landing		555		725	
Oswego to Utica		540		666-670		Scottsville		563		745	
Otisville		562		742		Schuylerville	560, 553		709, 714, 715		
Otego		559			862	Severance		563		745	
Owego		559			861, 862	Sidney		562		744	
Painted Post		559			861	Sidney to Hancock		562		743	
Palmyra	546, 547			696, 697		Sidney to Utica		562		743, 744	
Pattersonville	{ 539, 541, 542 }			662, 663, 672, 681	849	Silver Creek		564		749	
Peeckskill		554		721		Smiths Basin	550, 553		711, 712, 715		
Pendleton		548		702		Smith Mills		558			860
Pendleton Center	537, 538			658, 659		Snody Dock		550		716	
Penneville		540		669		Sonyea		563		746	
Phoenix	541, 549			676, 703, 706		South Edmeston		562		744	
Phoenix to Clyde		549		703-705		South Greece		547		698, 699	
Phoenix to Syracuse	549, 550			705, 706		South New Berlin		562		744	
Piffard		563		746		Spencerport		547		699	
Pittsford		547		697, 698		Sprakers	{ 539, 541, 543 }		664, 673, 683, 684		
Plainville		549		704		Stacys Basin	540, 544		667, 669		
Polhemus Dock		456			557	Staatsburg		554		723	
Port Byron	545, 549			693, 694, 704, 705		Stanwix		540		667, 688	
Port Crane		559			862	St. Johnsville	539, 543		664, 665, 684, 685		
Pot Cove		456			557	Stillwater	550, 552		707, 714		
Port Gibson		546		696		Stockport (Delaware County)		562		741	
Port Jervis		562		742		Stockport Station (Columbia County)					
Poughkeepsie	554, 562		244	722, 723, 742		Stuyvesant		555		725, 727	
Poughkeepsie to Dobbs Ferry		554		719-722		Swains		563		747	
Poughkeepsie to Greenbush (Rensselaer)		554, 555		722-726		Sylvan Beach		541		675	
Poughkeepsie to Hancock		562		741-743		Sylvan Junction		540		667	
Pullman		537		657		Syracuse	{ 544, 545, 549, 550 }		691, 692, 705, 706		
Putnam		550		716		Syracuse to Phoenix	549, 550		705, 706		
Quaker Bridge		561		739		Tarrytown		554		720	
Quarantine Dock		456			554	Three River Point		549		703	
Racket River		551			853	Tibbetts Point		552			859
Ransomville		537		654		Tibbetts Point to Hozansburg	551, 552				852, 859
Rathbone		559			861	Ticonderoga		550		716	
Ravenswood		456			556	Tilden		551			854
Red House		561		739							
Rensselaer	538, 555			661, 671, 726, 728							
Rexford Flats	{ 538, 542, 559, 560 }			662, 679, 680	849, 863						



## Index to elevations and descriptions of bench marks—Continued.

## NEW YORK—Continued.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Tivoli.....		554, 555		636, 657, 724		Warners.....		545		692	
Tonawanda.....		537, 549		658, 702, 726, 727		Washington Mills.....		502		743	
Troy.....		540, 541, 555		671, 706		Waterford.....	550, 552			706, 713	
Troy to Greenbush (Rensselaer).....		555		726, 727		Watervliet.....	538, 541			661, 677	
Troy to Whitehall.....		550		706-713		Waverly.....		559			861
Tunnel.....		559			862	Wayneport.....		547		697	
Tuscarora.....		563		746		Weedsport.....	545, 549			693, 704	
Unadilla.....		559			802	Wells Bridge.....		559			862
Union.....		559			862	Wellsburg.....		559			861
Utica.....		539, 540, 541, 543, 502		666, 675, 687, 688, 743	851	Wellsville.....		559			860
Utica to Oswego.....		540		666-670		West Downing.....		543		683	
Utica to Sidney.....		562		743, 744		West Edmeston.....		562		744	
Utica to Vischers Ferry.....		538, 539		662-666		West Monroe.....		540		669	
Verplanck.....		554		721		West Seneca.....		563		748	
Vischers Ferry.....		538, 541, 542		661, 662, 671, 679	849	West Troy.....		540		671, 713	
Vischers Ferry to Greenbush (Rensselaer).....		538		661		Whites.....		563		745	
Vischers Ferry to Utica.....		538, 539		662-666		Whitehall.....	550, 554			712, 716	
Waddells Point.....		551			854	Whitehall to Crown Point.....		550		716, 717	
Waddington.....		551			854	Whitehall to Troy.....		550		706-713	
Waites Crossing.....		564		749		Whitehall to Waterford.....		552-554		713-716	
Walden.....		562		742		Whitesboro.....	540, 543			666, 688	
Walton.....		562		743		Wilburs Basin.....		550		714	
						Willets Point.....		456			558
						Wilson.....		537		654	
						Wolf Run.....		561		739	
						Worcester.....		559			862
						Wrights.....		550		716	
						Wrights Corners.....		538		659	
						York.....		563		746	

## NORTH CAROLINA.

Alexander.....	565	755	Kingston.....	564	752
Asheville.....	565	755	Lagrange.....	564	752
Atlantic.....	564	751	Lexington.....	565	753
Azalea.....	565	755	Linwood.....	565	753
Bailey.....	565	755	McLeansville.....	566	753
Barnard.....	566	755	Majolica.....	565	753
Bests.....	564	752	Marion.....	565	754
Biltmore.....	565	755	Marshall.....	565	755
Bridgewater.....	565	754	Mebane.....	565	753
Cary.....	565	752	Morehead City.....	564	244 751
Catawba.....	565	754	Morehead City to		
Chapel Hill.....	565	753	Caswell, Tenn.....	564-566	751-756
Claremont.....	565	754	Morganton.....	565	754
Clark.....	564	751	Morrisville.....	565	752
Clayton.....	565	752	Mud Cut.....	565	754
Cleveland.....	565	753	Nehoe.....	565	754
Conrad.....	565	753	Nelson.....	565	752
Cove Creek.....	564	751	Newbern.....	564	751
Connelly Springs.....	565	754	Newport.....	564	751
Durham.....	565	752	Newton.....	565	754
Dover.....	564	751	Old Fort.....	565	754
Drexel.....	565	754	Olivette.....	565	755
Elfund.....	565	753	Paint Rock.....	566	755
Elmwood.....	565	753	Plott.....	565	753
Falling Creek.....	564	752	Princeton.....	565	752
Garner.....	565	752	Pomona.....	565	753
Gibsonville.....	565	753	Raleigh.....	565	752
Glen Alpine.....	565	754	Riverdale.....	564	751
Goldsboro.....	565	752	Robeson.....	565	752
Graham.....	565	753	Rose.....	565	752
Greensboro.....	565	753	Round Knob.....	565	754
Greenleafs.....	565	754	Salisbury.....	565	753
Havelock.....	564	751	Selma.....	565	752
Hickory.....	565	754	Statesville.....	565	753
High Point.....	565	753	Swannanoa.....	565	754
Hildebran.....	565	753	Thomasville.....	565	753
Hillsboro.....	565	753	Tuscarora.....	564	751
Hot Springs.....	566	755	University Station.....	565	752
Jamestown.....	565	753	Wilsons Mills.....	565	752

## Index to elevations and descriptions of bench marks—Continued.

## NORTH DAKOTA.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Blackmer.....	114		154			Fairmount.....	114		153, 154		

## OHIO.

Akron.....	123		229			Columbus Grove.....		533			656
Alexandria.....		533			660	Coolville.....	84				563
Alexis.....		532	244		654	Crescentville.....		534			663
Alliance.....	123		228			Creston.....	124		230		
Alliance to Struthers.....	123		228, 229			Crestview.....		534			663
Anna.....		533			658	Cridersville.....		533			657
Athens.....	84				564	Cromley.....	120		213		
Bairdstown.....	124		233			Crystal Spring.....	124		234		
Bannon.....	121		213			Cummins ville.....	84				565
Barberton.....	123		229			Custar.....		532			655
Bascon.....	124		233			Davis.....	120		212		
Basil.....	121		213			Dayton.....		533			660
Beach City.....	124		235			Delano.....	120		212		
Berlin Center.....	123		228			Delhi.....	84	534		807	565, 666
Bedford.....		567		762		Dennison.....	121		215		
Belmore.....		532			656	Deshler.....	124	532			656
Beloit.....		568		764		Deshler to Chicago Junction.....	124		232-234		
Belpre.....	84				563	Duvals.....	120		213		
Belpre to Chillicothe.....	84				563, 564	East Akron.....		568		762	
Belpre to Grafton, W. Va.....	84				562, 563	East Akron Junction.....		567		762	
Birds Run.....	121		214			East Akron Jct. to Cleveland.....		567		761, 762	
Bloomdale.....	124		233			East Akron Jct. to Canton.....		568		762, 763	
Boenna Crossing.....	123		228			East Akron Jct. to Warwick.....	123, 124		229, 230		
Botkins.....		533			658	Easton.....	124		230		
Boughtonville.....	124		231, 232			Ellsworth.....	123		228		
Brice.....	121		213			Farrington.....		533			659
Cambridge.....	121		214			Flockton.....		534			663
Cananville.....	84				563, 564	Postoria.....	124		233		
Canal Dover.....	124		235			Franklin.....		533, 534			661, 662
Canal Fulton.....	124		234			Fultonham.....	121		214		
Canton.....		569		765		Galatea.....	124		234		
Canton to E. Akron Junction.....		568		762, 763		Girard.....	123		229		
Carlisle.....		533, 534			661	Glassrock.....	121		214		
Carrollton.....		533			661	Glendale.....		534			663
Carthage.....		534			664	Glenford.....	121		213, 214		
Cassels.....	121		214			Glen Jean.....	120		212		
Chicago Junction.....	124		232			Gnadenhutten.....	121		215		
Chicago Jct. to Deshler.....	124		232-234			Godsend.....	124		233		
Chicago Jct. to Greenwich.....	124		231-232			Goshen.....	125		236		
Chillicothe.....	84, 120		212		564	Gregg.....	120		213		
Chillicothe to Belpre.....	84				563, 564	Greenwich.....	124		231		
Chillicothe to Cincinnati.....	84				564, 565	Greenwich to Chicago Jct.....	124		231, 232		
Chillicothe to Portsmouth.....	120		211, 212			Greenwich to Sullivan.....	124		231		
Chillicothe to Valley Crossing.....	120		212, 213			Guernsey.....	121		214, 215		
Cincinnati.....	84	534			565, 664, 665, 666	Guysville.....	84				563
Cincinnati to Chillicothe.....	84				564, 565	Hamden.....	84				564
Cincinnati to Harman Jct., Tenn.....		526-528		622-630		Hamilton.....		534			662, 663
Circleville.....	120		212, 213			Harley.....	121		213		
Cleveland.....		567		761-762		Haskins.....		532			655
Cleveland to E. Akron Junction.....		567		761, 762		Haysville.....	120		212		
Clifford.....	120		212			Hazelton.....	123		229		
Clinton.....	124		229			Heno.....		534			662
Clinton Valley.....	84				564	Hereford.....	124		231		
Columbus.....	120		213			Higby.....	120		212		
Columbus to Valley Crossing.....	120		213			Highland Springs.....		567		762	
						Homer.....	124		230		
						Hoytville.....	124		234		
						Hull Prairie.....		532		244	655
						Ivorydale.....		534			664
						Jones.....		534			663
						Justus.....	124		235		
						Kimbolton.....	121		214		
						Kingston.....	120		212		



## Index to elevations and descriptions of bench marks—Continued.

OHIO—Continued.

Elevation.						Description.					
Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Kirkwood.....		533			658	Seventeen.....	121				
Leipsic.....		532			656	Seneca.....	124		232		
Le Sourdsville.....		534			662	Siam.....	124		232		
Lima.....		533			657	Sidney.....		533			658
Little Hocking.....	84				563	Silver Lake Junction.....		567		762	
Little York.....		567		762		Snodes.....	123		228		
Locks.....	120		212			Sonora.....	121		214		
Lockbourne.....	120		213			South Zanesville.....	121		214		
Lockland.....		534			664	Station 15, P. O.....	121		215		
Lock No. 17.....	121		215			Sterling.....	124		230		
Lodi.....	124		230			Stewart.....	84				563
Londonderry.....	84				564	Strasburg.....	124		235		
Lordstown.....	123		228			Struthers.....	123		229		
Loveland.....	84				564	Struthers to Alliance.....	123		228, 229		
Lowellville.....	123		227			Struthers to Ellwood City, Pa.....	123		226, 227		
Lucasville.....	120		212			Sullivan.....	124		231		
Lyndon.....	84				564	Sullivan to Greenwich.....	124		231		
Macedonia.....		567		762		Sullivan to Warwick.....	124		230		
Marietta.....	126		243			Sundale.....	121		214		
Martinsville.....	84				564	Swanders.....		533			658
Massillon.....	124		234, 235			Tadmor.....		533			660
Messenger.....	123		229			Taormport.....	121		213		
Miamisburg.....		533			661	Thurston.....	121		213		
Middletown.....		533			662	Tiffin.....	124		235		
Midvale.....	125		236			Tippecanoe City.....		533			659
Milton Center.....		532			655	Toledo.....		532			654, 655
Monroe.....		533			657	Tontogany.....		532			655
Moonville.....	84				564	Trenton.....		534			662
Mount Perry.....	121		214			Troy.....		533			659
Musselmans Junction.....	84				564	Truro.....	121		213		
Myersville.....		568		762		Turkeyfoot Junction.....	123		229		
Navarre.....	124		235			Tuscarawas.....	121		215		
New Berlin.....		568		762, 763		Uhrichsville.....	121		236		
Newcomertown.....	121		215			Uhrichsville to Warwick.....	124, 125		234-236		
New Concord.....	121		214			Uhrichsville to Zanesville.....	121		214, 215		
New Philadelphia.....	124, 125		235			Valley Crossing.....	120		213		
New Salem.....	121		213			Valley Crossing to Chillicothe.....	120		212, 213		
Newtons.....	124		230			Valley Crossing to Columbus.....	120		213		
Niles.....	123		228			Valley Crossing to Zanesville.....	121		213, 214		
North Baltimore.....	124		234			Vera.....	120		212		
North Bend.....		534			666	Wakefield.....	120		212		
North Jackson.....	123		228			Wapakoneta.....		533			657
Nova.....	124		231			Warwick.....	124		230, 234		
Omega.....	120		212			Warwick to East Akron Junction.....	123, 124		229, 230		
Ottawa.....		533			656	Warwick to Sullivan.....	124		230		
Overpeck.....		534			662	Warwick to Uhrichsville.....	124, 125		234-236		
Pauls.....	124		234			Waverly.....	120		212		
Perrysburg.....		532			655	West Cairo.....		532			657
Piketon.....	120		212			Weston.....		532			655
Piqua.....		533			658, 659	White Cottage.....	121		214		
Poasttown.....		534			662	Whitfield.....		533			660
Portsmouth.....	120		212			Winston Springs.....		534			664
Portsmouth to Chillicothe.....	120		211, 212			Woods Dale.....		534			662
Port Union.....		534			663	Youngstown.....	123		229		
Port Washington.....	121		215			Zaleski.....	84				564
Ramey.....	124		231			Zanesville.....	121		214		
Rees.....	120		213			Zanesville to Uhrichsville.....	121		214, 215		
Remington.....	84				565	Zanesville to Valley Crossing.....	121		213, 214		
Renick.....	120		211								
Rensselaer.....		534			664						
Republic.....	124		232								
Rittman.....	124		230								
Roachton.....		532			655						
Rockdale.....		534			662						
Rosemont.....	123		228								
St. Bernard.....		534			664						
St. Joseph.....		534			666						
Sargents.....	120		212								
Schooley.....	84				564						
Scipio.....	124		232								
Seasons.....		567		762							
Sebring.....	123		228								
Sedamsville.....		534			666						

## Index to elevations and descriptions of bench marks—Continued.

## OKLAHOMA.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Addington.....	108			776		Manchester.....	108			781	
Bison.....	108			780		Marlow.....	108			777	
Caddo.....	108			780		Medford.....	108			781	
Chickasha.....	108			778		Minco.....	108		778, 779		
Clyde.....	108			781		Ninnekah.....	108			778	
Comanche.....	108		776, 777			North Enid.....	108			781	
Darlington.....	108			779		Okarche.....	108			780	
Dover.....	108			780		Pond Creek.....	108			781	
Duncan.....	108			777		Reno Junction.....	108			779	
Elreno.....	108			779		Rush Springs.....	108		777, 778		
Enid.....	108			780		Ryan.....	108			776	
Gibbon.....	108			781		Sugden.....	108			776	
Hennessey.....	108			780		Terral.....	108		775, 776		
Jefferson.....	108			781		Union.....	108			779	
Kingfisher.....	108			780		Wakita.....	108			781	
Kremlin.....	108			781		Waukomis.....	108			780	

## ONTARIO, CANADA.

Amherstburg.....	535	644	Port Colborne.....	538	847
International Bridge.....	538	660	Port Colborne to Port Dalhousie.....	538	847, 848
Fort Erie.....	538	660	Port Dalhousie.....	538	847, 848
Lake Erie.....	538	660			

## OREGON.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1905, App. 4.	Rept. 1903, App. 3.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1905, App. 4.	Rept. 1903, App. 3.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Baker City.....	112			225		Mission.....	112			229, 230	
Bingham Springs.....	112			229		North Fork.....	112			229	
Canon.....	113			230		North Powder.....	112		225, 226		
Cayuse.....	112			229		Norton.....	112			225	
Durkee.....	112			224		Nyssa.....	112			220	
Encina.....	112			225		Ontario.....	112			220, 221	
Fulton.....	113			230		Pendleton.....	112, 113			230	
Haines.....	112			225		Perry.....	112			228	
Helix.....	112			230		Pleasant Valley.....	112			225	
Hilgard.....	112			228		Stanton.....	112			230	
Huntington.....	112		223, 224			Telocaset.....	112			226	
Hutchinson.....	112			225		Union.....	112		226, 227		
Kamela.....	112			228		Union Station.....	112			226, 227	
Killian Junction.....	113			230		Unity.....	112			224	
La Grande.....	112		227, 228			Warren.....	113			230	
McCormack.....	113			230		Weatherby.....	112			224	
Meacham.....	112			228		Wingville.....	112			225	

## PENNSYLVANIA.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Allegheny.....	123		224			Annaville.....	84			560	
Allegheny Tunnel.....	105				872	Aqueduct.....	104			868	
Allegrippus.....	105				872	Ardara.....	105			874	
Allen town.....	84				559	Ardenheim.....	105			871	
Allison Park.....	123		225			Bagdad.....	105		598		
Alters Run Bridge.....	104				868	Bailey.....	104			868	
Altosna.....	105				872	Bakerstown.....	123		225		
Anderson.....	104				870	Baird.....	108			867	



*Index to elevations and descriptions of bench marks—Continued.*

## PENNSYLVANIA—Continued.

Elevation.						Description.					
Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.	
Banning	123		222			Gove Creek	104				868
Barree	105				871	Cowley		561		738	
Bear Run	122		221, 222			Cresson	105				872
Beatty	105				874	Dauphin	106			599, 600	
Beaver	84				500	Dawson	122		222		
Beaver Falls	123		227			Demmler	122		223		
Belle Valley		560			864	Denholm	104				869
Bellwood	105				872	Derry	105				873
Bennington	105				872	Dewart	106			603	
Benvenue	108				868	Dotter		560			865
Benvenue to Ell-						Dougal	106			602	
wood City	123		224-226			Downieville	123		225		
Benvenue to Foley	122, 123		220-224			Duncannon	104				868
Bessemer	108, 122		224		867	Durward	104				869
Bidwell	122		221			East Brady		560			865
Big Spring Run	105				873	Easton	84				559
Birmingham	105				871	East Sandy		560			864
Bixler Water Sta-						Edenburg	123		227		
tion	104				869	Edgecliff		560			865
Blacks Run		560			865	Edri	106			598, 599	
Blair Furnace	105				872	Ehrenfeld	105				872
Blairsville	105, 106			500		Elfinwild	123		225		
Blairsville Intersec-					873	Elizabeth Furnace	105				872
tion	105					Elgin		564		749, 750	
Blairsville Intersec-					863, 864	Ellwood City	123		226		
tion to Brad-	105					Ellwood City to			224-226		
dock						Benvenue	123				
Blairsville Intersec-					868-873	Ellwood City to			227		
tion to Harris-	104, 105					Monaca	123				
burg						Ellwood City to				226, 227	
Blairsville Intersec-						Struthers, Ohio	123				865
tion to West						Emlenton		560			863, 864
Penn Junction	105, 106			598, 599	873	Erie		560			863, 864
Bolivar	105					Erie to Leboeuf		560			
Bolivar Junction	105, 106			599		Eureka	122		223		
Bow	106			599		Evans City	123		225		
Braddock	107, 122		224		868	Fairchance	108				867
Braddock to Blairs-					873, 874	Fairhope	107			738	
ville Intersection	105					Fields		561		738	
Braddock to Bens-					866-868	Fishers Ferry	106			601	
tons Ferry, W. Va.	107, 108					Foley	107			738	
Bradenville	105				873	Foley to Benvenue	122, 123		220-224		
Brandon		560			865	Foley to Cumber-				737, 738	
Bridgeport	105				870	land, Md.	107				
Brilliant		560			866	Fombell	123		226		
Brinton	105				874	Fort Hill	122		221		
Broad Ford	122		222			Fostoria	105				872
Broad Ford Junc-						Franklin		560		740	
tion	122		222			Franklin to Irvine-				740, 741	
Bryant	123		225			ton		561			864
Callery Junction	123		225			Franklin to Leboeuf		560			
Canton		561		738		Franklin to West					
Carlisle	84				560	Penn Junction		560			864, 865
Carney	105				874	Garland		564		750	
Casselman	122		221			Garrett	122		220, 221		
Celia	123		226			Gallitzin	105				872
Chambersburg	84				560	Geiger Point	106			600	
Charleroi	108				867	Geneva	123		227		
Chewton	123		226			George	105				874
Christy Park	122		223			Georgetown	106			601	
Clarks Ferry	106			600		Gibsonia	123		225		
Coal Valley	108				867	Glencoe	122		220		
Cochranon		560			864	Glenshaw	123		225		
Columbia Cross-						Glenwood	122		224		
roads		561		738		Goehring	123		226		
Colza		564		750		Granville	104				870
Conemaugh	105				873	Grapeville	105				874
Conemaugh Via-						Gratztown	122		223		
duct	105				873	Grazierville	105				872
Confluence	122		221			Great Bend (War-					
Connellsville	122		222			ren Co.)		561		739	
Cooks Mills	107			737		Great Bend (Sus-				741	
Corry		564		750		quehanna Co.)		562			
Corydon		561		739		Greensburg	107				874
Coulter	122		223			Greencastle	84				560
Cove	104				868	Griffin	122		223		

## Index to elevations and descriptions of bench marks—Continued.

## PENNSYLVANIA—Continued.

Elevation.		Description.			Elevation.		Description.				
Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.		pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Guffey.....	122		223			Lower Hillville.....		560			865
Haggerty Run.....	105				872	Loyalhanna.....	105				873
Halifax.....	106			600		Loyalsock.....	106			603	
Harmony.....	123		226			McKeesport.....	122		223		
Harmony Junction.....	123		226			McKimms.....	123		226		
Harrisburg.....	84, 104				560, 868	McSpadden.....	122		221		
Harrisburg to Blairsville Inter-section.....	104, 105				868-873	McVey town.....	105				870
Harrisburg to Hagerstown, Md.....	84				500	Macungie.....	84			601	559
Harrisburg to Raritan Bay, N.J.....	84				558-560	Mahantango.....	106				
Harrisburg to Williamsport.....	106			599-604		Mahoningtown.....	123		226		
Hazen.....	23		226			Manayunk Bridge.....	105				870
Hecks.....	106			599		Mance.....	122		220		
Hemlock.....		561		739		Manor.....	105				874
Herndon.....	106			601		Mapleton.....	105				870
Hickory.....		561		740		Marion Junction.....	122		224		
Hickory Grove.....		562		741		Markleton.....	122		221		
Highland.....	122		224			Mars.....	123		225		
Hoblitzell.....	107			737		Mayfield.....	123		227		
Homewood.....	108, 123		227		868	Mayes Bridge.....	104				870
Horingford Station.....	105				870	Meadville.....		560			864
Horn.....		564		750		Mexico.....	104				869
Huntingdon.....	105				871	Millin.....	104				869
Hyde Park.....	105			598		Mill Creek.....	105			870, 871	
Hyndman.....	107			737		Millers.....		560			864
Indian Creek.....	122		222			Millersburg.....	106			600	
Ingenook.....	106			600		Millers town.....	104				869
Irvineton.....		561, 564		740, 751		Mill Rift.....		562		742	
Irvineton to Franklin.....		561		740, 741		Millwood.....	105				873
Irvineton to Leboeuf.....		564		749-751		Milton.....	106			602	
Irvineton to Selamancaca, N. Y.....		561		739-740		Mineral Point.....	105				873
Irwin.....	105				874	Monaca.....	123		227, 244	763	
Jacksons Crossing.....		561		740		Monaca to Ellwood City.....	123		227		
Jacks town.....	105				870	Montandon.....	106			602	
Jacobs Creek.....	122		223			Monterey.....		560			865
Johnstown.....	105				873	Montgomery.....	106			603	
Juniata Bridge.....	104				868	Mosgrove.....		560			865
Kapps.....	106			602		Moss Side.....	105				874
Kennerdell.....		560			865	Mount Royal.....	123		225		
Kenwood.....	123		227			Mount Union.....	105				870
Keystone.....	122		220			Muncy.....	106			603	
Kinzua.....		561		739		Myersdale.....	122		220		
Kittanning.....		560			865	Narrows Station.....	104				869
Kittanning Point.....	105				872	New Brighton.....	123		227		
Larimer.....	105				874	New Castle Junction.....	123		226		
Latrobe.....	105				874	New Florence.....	105				873
Laughlin Junction.....	123		224			Newport.....	104				869
Laurenceville.....	123		224			Newton Hamilton.....	105				870
Lavenia.....	122		222			North Sewickley.....	123		226		
Layton.....	122		222			Northumberland.....	106			602	
Lebanon.....	84				560	Ohio pyle.....	122		221		
Leboeuf.....		560, 564		749	864	Old Ferry Station.....	104				860
Leboeuf to Erie.....		560			863-864	Old Furnace.....	123		226		
Leboeuf to Franklin.....		560			864	Oleopolis.....		561		740	
Leboeuf to Irvineton.....		564		749-751		Outcrop.....	108				866
Leechburg.....	105			508		Pack Saddle.....	105				873
Lewistown Junction.....					869	Parker.....		560			865
Lilly.....	104				872	Paulton.....	105			598	
Livermore.....	106			599		Penn.....	105				874
Liverpool.....	106			600, 601		Perdix.....	104				868
Lock No. 4.....	108				867	Petersburg.....	105				871
Lockport.....	105				873	Peters Creek.....	108				867
Longfellow Station.....	104				870	Philson.....	122		220		
Loshes Run.....	104				868	Piney Run.....	105				873
Lovell.....		564		750		Pinkerton.....	122		221		
						Pittsburg.....	123		560		866
						Pittsfield.....		564		750	
						Point Marion.....	108				866
						Pondeddy.....		562		742	
						Portage.....	105				872
						Port Royal.....	104, 122		223		869
						Powys.....		561		738	
						President.....		561		740	
						Radebaugh.....	105				874



## Index to elevations and descriptions of bench marks—Continued.

## PENNSYLVANIA—Continued.

Place.	Elevation.					Place.	Elevation.				
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Ralston	122	561	224	738	560	Troy	561	738	740	874	
Rankin	84				865	Trunkerville	561	599	871		
Reading		560			865	Tunnelton	106				
Red Bank					865	Turtle Creek	105				
Reduction	122		223		865	Tuscarora	104				
Rimerton		560			865	Tuttlestown		561	739		
River View	108				867	Tyrone	105				
Roaring Branch		561		738		Union City		564	749		
Roaring Run	105			598		Union Furnace	105				
Roach		564		750		Uniontown	108				
Robesonia	84				560	Upper Middletown	108				
Rockland		560			865	Ursina	122		221		
Rock Point	123		226			Utica		560			864
Rockville	104			809	868	Valencia	123		225		
Rockwood	122		221			Vandergrift	105			598	
Rosston		560			865	Vandergrift					
Ryde	105			809	870	Vandergrift	105				870
Saegertown		560			864	Vandyke	104				869
St. George		560			865	Venango		560			864
Salma	105, 106			598		Versailles	122		223		
Salisbury Junction	122		220			Vineyard Station	105				870
Saltsburg	106			599		Vista	122		223		
Samson		560			864	Wall	1 05				874
Sand Patch	122		220			Warrior Ridge	105				871
Sang Hollow	105				873	Warren		561		739	
Scott Haven	122		223			Watertown	106			602, 603	
Selinsgrove Junction						West Brownsville					
Shaner	106			601		Junction	108				867
Shamrock	122		223			Westcoolang Park		562		742	
Sharpsburg	84				560	West Ellwood Jct.	123		227		
Shermans Creek	123		224, 225			West Penn Jct.	105	560		598	865
Shippensburg	104				868	West Penn Jct. to					
Shippensburg	84				560	Blairsville Int.	105, 106			598, 599	
Shippensburg	105				871	West Penn Jct. to					
Shippensburg		562		742		Franklin		560			864, 865
Shippensburg	122		221			West Ellwood City					
Shippensburg	122		223			West Pittsburg	123		226		
Snedekerville		561		738		West Newton	122		223		
Social Hall	106			599		Wheeling Jct.	122		224		
South Connellsville	122		222			White Rock	106			599	
South Oil City		561		740		Wildwood	123	560	225		866
Spring Creek		564		750		Wilmore	105				872
Stewarton	122		222			Williams	107				
Sugar Creek		560			864	Williamsport	106	561		603, 604, 739	
Sugar Run		561		739		Williamsport to					
Summit	123		227	763		Elmira		561		738, 739	
Sunbury	106			602		Williamsport to					
Susquehanna		562		741		Harrisburg	106			599, 604	
Suter	122		223			Wittmer	123		225		
Thompsonstown	104				869	Womelsdorf	84				560
Thomson	108			740	867	Woods Run	108				867
Tidioute		561		740		Woodvale	105				873
Tionesta		561		740		Youngsville		564		751	
Tippecanoe	108				867	Zelienople	123		226		
Tipton	105				872						
Trimmers Rock	104				869						

## SOUTH DAKOTA.

Baltic	115	163			McCook	115	167		
Bigstone City	114	157			Milbank	114	157		
Bryant	115	159, 160			Oldham	115	161		
Canton	115	164			Ramona	115	161		
Colman	115	162			Renner	115	163		
Dell Rapids	115	163			Sioux Falls	115	163, 164		
Egan	115	162			Southshore	114	158		
Elk Point	115	166			Stockholm	114	158		
Erwin	115	160			Trent	115	162, 163		
Fairview	115	164, 165			Twinbrooks	114	157		
Forestville	114	158			Vienna	115	159		
Grover	114	159			Watertown	114	158		
Harrisburg	115	164			Watertown to				
Hazel	114	159			Evansville, Minn.	114	152, 158		
Hudson	115	165			Watertown to				
Jefferson	115	166, 167			Sioux City, Iowa	114, 115	158-167		
Lake Preston	115	160, 161			Wentworth	115	162		
Madison	115	161, 162			White Rock	114	154, 155		

## Index to elevations and descriptions of bench marks—Continued.

## TENNESSEE.

Place.	Elevation.					Place.	Elevation.				
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Annadel.....	93	528		630	717	Hinches Switch.....	567		761		
Ashport.....		566		756		Hixson.....	528		634		
Athens.....	87				642	Hodges.....	566		756		
Bailey.....		464			596	Island No. 40.....	93			718	
Bethel Springs.....		567		761		Isham.....	528		629		
Black Fox.....		528		631		Jackson.....	464			597	
Blackoak.....		566		757		Knoxville.....	566		756		
Blue Springs.....	93				716	Knoxville to Har-					
Booths Point.....						riman Junction.....	528		630, 631		
Booths Point Land-	93				716	Lancing.....	528		630		
ing.....						La Grange.....	87			641	
Boysds Landing.....		532			708	Lesters Landing.....	93			716	
Boyce.....	528, 567		634, 761			Lenoir City.....		566		756	
Bradford.....		464			597	Lorraine.....		528		632	
Bridgeport.....		566		755		Loudon.....		566		756	
Brinkleys Landing.....	93				718	McConnell.....		464			598
Buntyn.....	87				642	McCarty.....		567		761	
Cardiff.....		528		632		McNairy.....		464			596
Caswell.....		566		756		Martin.....		464			597
Caswell to More-						Mascot.....		566		756	
head City, N. C.....	564-566		751-756			Medina.....		464			597
Cave Springs.....		528		634		Memphis.....	87, 93			642, 718	
Charleston.....		566		756		Memphis to Cairo,					
Chattanooga.....	528, 567		634, 761			Ill.....	93			715-718	
Chattanooga to						Memphis to Cor-					
Cleveland.....		567		761		inth, Miss.....	87			641, 642	
Chattanooga to De-						Memphis to Friar					
catur, Ala.....	528, 529		634-639			Point, Miss.....	90			698-700	
Chattanooga to						Middleton.....	87			641	
Harriman Junc-		528		631-634		Milan.....		464			597
tion.....						Morristown.....		566		755	
Chewalla.....	87				641	Moscow.....	87				641
Cleveland.....		566		756		Mossy Creek.....		566		756	
Cleveland to Bruns-						Mott Landing.....	93				716
wick, Ga.....	566, 567		756-761			Mouse Creek.....		566		756	
Cleveland to Chat-						Newport.....		566		755	
tanooa.....		567		761		Nemo.....		528		630	
Cleveland to Wright		566		756		New River.....		528		629	
Clinton.....		528		631		Oakfield.....		464			597
Collierville.....	87				642	Oakdale.....		528		630	
Concord.....		566		756		Oliver Springs.....		528		631	
Cypress Creek.....	87				641	Oneida.....		528		629	
Daisy.....		528		633		Ooltewah Junction.....		567		761	
Dayton.....		528		633		Paynes Landing.....	93				717
DeRio.....		566		755		Philadelphia.....		566		756	
Dossett.....		528		631, 637		Pinson.....		464			596
Elverton.....		528		631		Pittsburg Landing.....		532			708, 709
Emory Gap.....		528		632		Pittsburg Landing					
Evansville.....		528		633		to Riverton Junc-					
Falcon.....		463			596	tion, Ala.....		531, 532			707-709
Forked Deer Island	93				717	Plum Point.....	93				71 7
Fort Pillow Land-						Pocahontas.....	87				641
ing.....						Powell.....		528		631	
Fulton.....	93				717	Ramer.....		463			596
Germantown.....	87				642	Randolph.....	93				717
Glen Alice.....		528		632		Rankin.....		566		755	
Glen Mary.....		528		629		Rathburn.....		528		633	
Glen Junction.....	87				641	Reelfoot Landing.....	93				716
Grayville.....		528		633		Retro.....		528		633	
Greenfield.....		464			597	Riceville.....		566		756	
Hales Point.....	93				716	Richardsons Land-					
Hamburg Landing.....		532			708	ing.....	93				717
Harriman.....		528		630, 631		Robbins.....		528		629	
Harriman Junction.....		528		630		Rossville.....	87				642
Harriman Junction						Rockwood.....		528		632	
to Chattanooga.....		528		631-634		Roddy.....		528		632	
Harriman Junction						Sale Creek.....		628		633	
to Cincinnati, Ohio.....	528-528		622-630			Saulsbury.....	87				641
Harriman Junction						Sharon.....		464			597
to Knoxville.....		528		630, 631		Sheffield.....		528		632	
Heiskell.....		528		631		Shellmound.....		529		635	
Helenwood.....		528		629		Spring City.....		528		632	
Henderson.....		464			596	Sunbright.....		528		630	
						Sweetwater.....		566		756	



*Index to elevations and descriptions of bench marks—Continued.*

## TENNESSEE—Continued.

Place.	Elevation.					Place.	Elevation.				
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Tasso.....		566		756		White Pine.....		566		755	
Talbot.....		566		756		Williams Ferry.....		528		631	
Thomas Landing.....	93				718	Winfield.....		528		629	
Tiptonville.....	93				716	Wolf River.....	87				641
Tyners.....		567		761		Wolf Creek.....		566		755	
Wauhatchie.....		529		635		Wright.....		566		756	
Wheat.....		528		631		Wright to Cleveland.....		566		756	
White.....	87				642	Yellow Creek.....		532			708
Whiteside.....		529		635							

## TEXAS.

Place.	Elevation.					Place.	Elevation.				
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1904, App. 7.	Rept. 1903, App. 3.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1904, App. 7.	Rept. 1903, App. 3.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Abbot.....		575			789	Fayetteville.....	117		172		
Alvarado.....		575			788	Fisher.....	109	574			783
Alvord.....		573			782	Fort Worth.....	109	574			782, 783, 787
Arlington.....	109				783	Fort Worth to Bowie.....		573, 574			782
Austin.....	116			444		Fort Worth to Comanche.....		574, 575			787, 788
Avinger.....	109				786	Fort Worth to Shreveport, La.....	109				782-787
Avondale.....		573			782	Fort Worth to Temple.....		575			788-790
Bateman.....	116			447		Fruitland.....		573			782
Barker.....	117		174			Galveston.....	117		176		
Bartlett.....	116			442		Galveston to Smithville.....	117		172-177		
Bastrop.....	116			445		Garland.....	109				784
Bellevue.....	108	572			775	Genoa.....	117		175		
Belt Junction.....		574			787	Goodwin.....	116			449	
Belton.....		575			790	Granbury.....		575			788
Bethel.....		575			788	Granbury to Fort Worth.....		574, 575			787, 788
Blocker.....	109				786	Grand Prairie.....	109		575		783
Boggy-tank.....	117		172			Grand View.....		575			789
Bowie.....	108				774, 775	Granger.....	116			442	
Bowie to Anthony, Kans.....	108, 109				774-781	Greenville.....	109				784
Bowie to Fort Worth.....		573, 574			782	Halsted.....	117		172		
Brashear.....	109				785	Handley.....	109				783
Brookshire.....	117		173			Harrisburg.....	117		174		
Burleson.....		575			788	Hemkens.....	116			447	
Burnap.....	117		173			Hewitt.....		573			782
Caddo Mills.....	109				784	Hilldale.....	117		174		790
Cat Spring.....	117		173			Hills Prairie.....	116			446	
Campbell.....	109				784	Hillsboro.....		575			789
Cason.....	109				785	Holland.....	116	575		442	791, 792
Circleville.....	116			443		Holland to Temple.....		575			791, 792
Clear Fork.....	116			448		Holland to Smithville.....	116			442-446	
Como.....	109				785	Houston.....	117		174		
Conley.....		575			785	Houston Heights.....	117		174		
Copperas Cove.....		575			790, 791	Hughes.....	109				785
Coupland.....	116			443		Hunter.....	116			448, 449	
Cowen.....		573			782	Itasca.....		575			789
Creson.....		574			788	Jefferson.....	109				786
Cumby.....	109				785	Karnack.....	109				786
Daffan.....	116			443		Katy.....	117		173		
Daffan.....	116			447		Kelleyville.....	109				786
Dallas.....	109				783	Kempner.....		575			791
Daingerfield.....	109				785	Killeen.....		575			790
Decatur.....		573			782	Kirtley.....	117		172		
Dickinson.....	117		175			La Grange.....	117		172		
Eagle Ford.....	109				783						
Eddy.....		575			780						
Egan.....		575			788						
Elgin.....	116			443, 444							
Elm Mott.....		575			789						
Eureka.....	117		174								
Fate.....	109				784						

## Index to elevations and descriptions of bench marks—Continued.

## TEXAS—Continued.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1904, App. 7.	Rept. 1903, App. 3.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1904, App. 7.	Rept. 1903, App. 3.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Lamarque.....	117		175			San Marcos.....	116			448	
Lampasas.....		575			791	Sayers.....	116			444, 445	
Lampasas Temple.....		575			790, 791	Seofield.....		575			789
Lasater.....	109				786	Scroggins.....	109				785
League City.....	117		175			Sealy.....	117		173		
Leburg.....	109				785	Seguin.....	116			449	
Leitia.....	117		174			Smithville.....	116			446	
Little.....	116			443		Smithville to Holland.....					
Little River.....		575			791	Smithville to New Braunfels.....	116			446-450	
Lockhart.....	116			447, 448		Smithville to Galveston.....	117		172-176		
Loren.....		575			790	Stoneburg.....	108				775
McDowell.....	117		173			Sulphur Springs.....	109				785
Manor.....	116			443		Sunset.....		573			782
Maxwell.....	116			448		Taylor.....	116			443	
New Braunfels.....	116, 117			449		Temple.....		575			790
New Braunfels to Smithville.....	116			446-450		Temple to Fort Worth.....		575			788-790
New Ulm.....	117		173			Temple to Holland.....		575			791, 792
Nolanville.....		575			790	Temple to Lampasas.....		575			790, 791
Norwood.....	109				786	Texas City Jct.....	117		175		
Pickton.....	109				785	Troy.....		575			790
Pittsburg.....	109				785	Upton.....	116			446	
Plum.....	117		172			Virgile.....		574			787
Primms Spur.....	117		172			Virginia Pt.....	117		176		
Primrose.....		574			787	Waco.....		575			789
Redrock.....	116			447		Waskom.....	109				786
Reedville.....	116			448		Waples.....		575			788
Rhorne.....		573			782	Webster.....	117		175		
Ringgold.....	108				775	West.....		575			789
Rockwall.....	109				784	West Point.....	117		172		
Rosanky.....	116			446		Winnboro.....	109				785
Rowlett.....	109				784						
Royse.....	109				784						
Saginaw.....		573			782						
San Felipe.....	117		173								

## UTAH.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Report 1903, App. 3.	This publication.	Report 1904, App. 6.	Report 1903, App. 3.		This publication.	Report 1903, App. 3.	This publication.	Report 1904, App. 6.	Report 1903, App. 3.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Bear River.....	111			425		Honeyville.....	111			425	
Brigham.....	111			425		Hot Springs.....	111			425	
Cache Junction.....	111			425		Morgan.....	111			423	
Castle Rock.....	111			423		Ogden.....	111			422, 423	
Cornish.....	111			425		Ransom.....	111			425	
Croydon.....	111			423		Strawberry.....	111			423	
Devils Gate.....	111			423		Uinta.....	111			423	
Dewey.....	111			425		Wasatch.....	111			423	
Echo.....	111			423		Willard.....	111			425	
Emory.....	111			423		Wyuta.....	111			423	

## VIRGINIA.

Place.	Elevation.		Description.			Place.	Elevation.		Description.		
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Accotink.....		468			629	Fort Monroe.....		468			630
Alexandria.....		468			629, 630	Fredericksburg.....		468			629
Ashland.....		468			628	Guinea.....		468			628
Brooke.....		468			629	Lanexa.....		468			631
Cameron Run.....		468			629	L aurel.....		468			628
Diascond.....		468			631	Lee Hall.....		468			630
Doswell.....		468			628	Milford.....		468			628



## Index to elevations and descriptions of bench marks—Continued.

## VIRGINIA—Continued.

Elevation.			Description.			Elevation.			Description.		
Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Morris on.....		468			630	Richmond to Old					
Newport News.....		468			630	Point Comfort.....	468, 469				630-632
Old Point Comfort.....		468			630	Richmond to					
Old Point Comfort						Georgetown, D. C.....		468			628-630
to Richmond.....	468, 469				630-632	Roxbury.....		469			631
Penola.....		468			628	Rutherford.....		468			628
Pohick Creek.....		468			629	Summit.....		468			629
Potomac Run.....		468			629	Tanno.....		468			630
Providence Forge.....		469			631	Widewater.....		468			629
Quantico.....		468			629	Williamsburg.....		468			630
Richmond.....	468, 469		244		628, 631	Woodbridge.....		468			629

## WASHINGTON.

Elevation.		Description.			Elevation.		Description.				
Place.	This publication.	Report 1903, App. 3.	This publication.	Report 1905, App. 4.	Report 1903, App. 3.	Place.	This publication.	Report 1903, App. 3.	This publication.	Report 1905, App. 4.	Report 1903, App. 3.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Alfalfa.....	113			237		Maywood.....	113			233	
Argo.....	113			231		Nelson.....	113			235	
Auburn.....	113			232		North Yakima.....	113			236, 237	
Badger.....	113			239		Palmer Junction.....	113			233	
Black River.....	113			231		Pasco.....	113			239, 240	
Borup.....	113			234		Prosser.....	113			238	
Bristol.....	113			235		Ravensdale.....	113			232, 233	
Byron.....	113			238		Relief.....	113			239	
Canton.....	113			233		Roza.....	113			236	
Canyon.....	113			236		Satus.....	113			237	
Chandler.....	113			238		Seattle.....	113			231	
Clealum.....	113			235		Seattle to Owyhee,					
Covington.....	113			232		Idaho.....	111-113			218-241	
Eagle Gorge.....	113			233		Selah.....	113			236	
Easton.....	113		245	234		South Seattle.....	113			231	
Ellensburg.....	113			235, 236		Stampede.....	113			234	
Gibson.....	113			238		Teauaway.....	113			235	
Hot Springs.....	113		245	233		Thomas.....	113			232	
Hunts Junction.....	113			230, 240		Thorp.....	113			235	
Kennewick.....	113			239		Thrall.....	113			236	
Kent.....	113			232		Toppenish.....	113			237	
Kiona.....	113			238, 239		Umtanum.....	113			236	
Lester.....	113			234		Wapato.....	113			237	
Mabton.....	113			238		Wenas.....	113			236	
Martin.....	113			234		Weston.....	113			234	
						Yakima City.....	113			237	

## WEST VIRGINIA.

Elevation.		Description.			Elevation.		Description.				
Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Amblersburg.....	84, 125		238		562	Bellton.....	126		242		
Amblersburg to						Bentons Ferry.....	107, 125		240		866
Cumberland, Md.	84, 125		236, 238		561, 562	Bentons Ferry to					
Amblersburg to	84, 125		238, 239		562	Benwood.....	125, 126		240-243		
Grafton.....			245			Bentons Ferry to					
Anderson.....	125		245			Braddock.....	107, 108				866, 868
Austen.....	125		239, 245			Bentons Ferry to					
Back Creek.....	107			733		Grafton.....	107, 125		239, 240		866
Baird.....	107			735		Benwood.....	126		243		
Barnesville.....	125		240			Benwood Junction.....	126		243		
Barrackville.....	125, 126		240			Benwood to Benton					
Barrackville Sta-	125					Ferry.....	125, 126		240-243		
tion.....			240			Broomfield P. O....	126		240		

## Index to elevations and descriptions of bench marks—Continued.

## WEST VIRGINIA—Continued.

Place.	Elevation.					Place.	Description.				
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.
Board Tree.....	126		242			Lineburg.....	107			734	
Bridgeport.....	84				562	Little Cacapon.....	107			735	
Buckhorn.....	125		245			Little Falls.....	107				866
Burton.....	126		241			Littleton.....	126	241, 242			
Bush.....	125		239			Loudenville.....	126	242			
Cairo.....	84				563	Magnolia.....	107			735	
Cameron.....	126		242			Mannington.....	126	241			
Catawba.....	107				866	Martinsburg.....	107			732	
Cherry Run.....	107			733		Metz.....	126	241			
Cogley.....	126		242			Miller.....	107			733	
Collax.....	125	239, 240				Morgantown.....	107				866
Corinth.....	125		238			Moundsville.....	126	243			
Cornwall.....	84				563	Newburg.....	125	239			
Cottonwood.....	126		241			North Mountain.....	107			733	
Cranberry Summit.....	84				562	Okanoko.....	107			735	
Dans Run.....	107			736		Opequan.....	107			732	
Denver Station.....	126		242			Orleans Road.....	107			734	
Doe Gully.....	107			735		Parkersburg.....	84				563
Downs.....	126	240, 241				Patterson Creek.....	107			736	
Duffields.....	107			732		Patterson Creek				736	
Engle.....	107			731		Cut-off.....	107			735	
Fairmont.....	125		240		866	Paw Paw.....	107				563
Farmington.....	126		240			Petroleum.....	84				
Fetterman.....	125		239			Piedmont.....	125			237	
French.....	107			736		Powells.....	107, 125			239	866
Gaston Junction.....	125		240			Riggs.....	125			238	
Glen Easton.....	126		242			Rinard.....	125			238	
Glover Gap.....	126		241			Rockwells Run.....	107			734	
Grafton.....	84, 125		239		562	Rodamers.....	125			238	
Grafton to Am-						Roshys Rock.....	126	242, 243			
blersburg.....	84, 125		238, 239		562	Round Top.....	107			734	
Grafton to Belpre,			245			Rowlesburg.....	84, 125		238, 244 } 245 }		562
Ohio.....	84				562, 563.	Shenandoah Junc-					
Grafton to Bentons						tion.....	107			732	
Ferry.....	125		239-240		866	Sir Johns Run.....	107			734	
Grafton to Am-						Sleepy Creek.....	107			733	
blersburg.....	84, 125		238, 239		562	Tabb.....	107		238	732, 733	
Great Cacapon.....	107			734		Terra Alta.....	125		239		
Green Spring.....	107			736		Thornton.....	125		239		
Hammond.....	125		239			Tunnelton.....	125		245		
Hancock.....	107			733, 734		Uffington.....	107				866
Hansrotte.....	107			735		Underwood Station.....	126		240		
Hardman.....	125		239			Valley Falls.....	107, 125		239		866
Harpers Ferry.....	107			731		Van Clevesville.....	107			732	
Hobbs.....	107			732		Van Vorhis.....	108				866
Hundred.....	126		241			West End.....	125		245		
Ironton.....	125		239			West Union.....	84				563
Independence.....	125		239			West Virginia Cen-					
Katy.....	126		240			tral Junction.....	125		237		
Kernysville.....	107			732		Woodmont.....	107			734	
Keyser.....	84, 125		236, 237 } 244 }		562	Woodruff.....	126		242		
Kingmont.....	125		240								

## WISCONSIN.

Alma.....	95			748, 749	North La Crosse.....	95			754, 755
Britts Landing.....	95			756	Prairie Du Chien.....	96			760, 761
Charme.....	96			759, 760	Prescott.....	94			741
Cochrane.....	95			749	Puckerville.....	96			743
De Soto.....	96			757, 758	Rush Creek.....	96			758
Diamond Bluff.....	94			742, 743	Smiths Bar.....	94			741
Ferryville.....	96			758	Smiths Landing.....	94			741, 742
Fountain City.....	95			749, 750	Stoddard.....	95			755, 756
Genoa.....	95, 96			756	Tippets Landing.....	96			757
Island No. 24.....	94			743	Trenton.....	94			743
Island No. 65.....	95			750	Trenton Landing.....	94			743
Island No. 69.....	95			750	Victory.....	96			757
La Crosse.....	95			754, 755	Viola.....	96			759
Lynxville.....	96			759	Warners Landing.....	95			756
Milwaukee.....		536		653	Winona, Minn.,				
Morgans Coulee.....	94			742	opposite.....	95			750



## Index to elevations and descriptions of bench marks—Continued.

## WYOMING.

Elevation.						Elevation.					
Description.						Description.					
Place.	This publi- cation.	Rept. 1903, App. 3.	Rept. 1904, App. 6.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	Place.	This publi- cation.	Rept. 1903, App. 3.	Rept. 1904, App. 6.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
pages.	pages.	pages.	pages.	pages.	pages.	pages.	pages.	pages.	pages.	pages.	pages.
Ah Say.....	111		421			Keeline.....	110			800	
Allen.....	110			803		Knight.....	111		424		
Altamont.....	111		424			Laramie.....	110				646
Athol.....	110				645	Latham.....	110			805	
Aurora.....	110			803		Le Roy.....	111		424		
Azusa.....	111		422			Lookout.....	110				646
Baxter.....	111		421			Lost Spring.....	110			800	
Bitter Creek.....	111		421			Lusk.....	110			800	
Black Buttes.....	111		421			Manville.....	110			800	
Bona.....	110			802		Marston.....	111		422		
Bordeaux.....	110			801		Medicine Bow.....	110			803	
Borie.....	110				645	Monell.....	111		420, 421		
Bridge.....	111		424			Node Ranch.....	110			800	
Bryan.....	111		422			Orin Junction.....	110			802	
Buckhorn.....	110			802		Orin Junction to					
Carter.....	111		424			Chadron, Nebr.....	110			799, 800	
Cassa.....	110			802		Orin Junction to					
Cheyenne.....	110			808	645	Cheyenne.....	110			800-802	
Cheyenne to						Otto.....	110				646
Denver, Colo.....	110				643-645	Peru.....	111		422		
Cheyenne to						Point of Rocks.....	111		420, 421		
Orin Junction.....	110			800-802		Rawlins.....	110			804	
Cheyenne to						Red Buttes.....	110				646
Rock Creek.....	110				645-647	Red Desert.....	110		420	805	
Chugwater.....	110			801		Red Desert to					
Church Buttes.....	111		424			Rock Creek.....	110			803-805	
Como.....	110			803		Red Desert to					
Coopers Lake.....	110				646	Pocatello, Idaho.....	110, 111		421-426		
Creston.....	110			805		Riner.....	110			804	
Dale Creek.....	110				646	Rock Creek.....	110			803	647
Daleys Ranch.....	110			80 04		Rock Creek to Red					
Dana.....	110			80 04		Desert.....	110			803-805	
Diamond.....	110			80 01		Rock Creek to					
Edson.....	110			80 04		Cheyenne.....	110				645-647
Elkhurst.....	111		424			Rock Springs.....	111		421		
Evanston.....	111		423, 424			Salt Wells.....	111		421		
Fillmore.....	110			805		Shawnee.....	110			800	
Fisher.....	110			800		Sherman.....	110				646
Fort Steele.....	110			804		Silver Crown.....	110			800, 801	
Garrett.....	111		424			Solon.....	110			804	
Glendo.....	110			802		Spring Valley.....	111		424		
Granger.....	111		422, 424			Table Rock.....	111		420		
Granite Canyon.....	110				646	Tipton.....	110		420		
Greenriver.....	111		422			Uva.....	110			802	
Greenville.....	110			804		Van Tassel.....	110			800	
Hallville.....	111		421			Volente.....	110			801	
Hampton.....	111		424			Walcott.....	110			804	
Hanna.....	110			803		Wamsutter.....	110			805	
Harper.....	110				647	Wendover.....	110			802	
Hartville Junction.....	110			802		Wheatland.....	110			801, 802	
Horse Creek.....	110			801		Wilcox.....	110			803	
Howell.....	110				646	Wilkins.....	111		422		
Iron Mountain.....	110			801		Wyoming.....	110				646
Isley.....	110			801							