

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

TA
610
.46
455
1934

Serial No. 572

DESCRIPTIONS OF BENCH MARKS

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

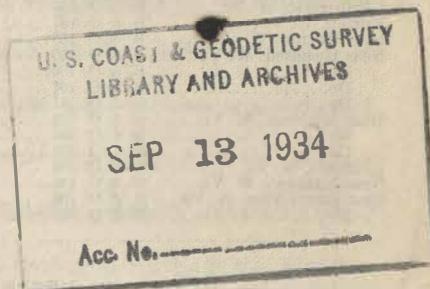
WITH A READJUSTMENT OF THE LEVEL NET AND RESULTING ELEVATIONS

By

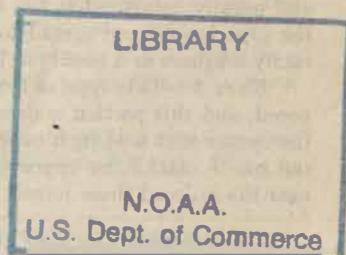
JOHN F. HAYFORD

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	285.6692	Near Woodruff, W. Va.	B. & O. 172	288.0007
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	356.0496
Do.	U. S. G. S.	290.5039	Near Cameron, W. Va.	B. & O. 176	365.5244
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	197.5211
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 reinforced 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. S."

NOTE 16.—The bottom of a hole in a horizontal surface, 25 millimeters 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.iM. 3 (Merrill, 1871).—On top projecting layer of brick on E. corner of court-house, *Alexandria, Rapides Parish, La.*

B.iM. 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= A362.—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. $\frac{1}{4}0$.—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 Δ 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. eB. M. Harland.—Pipe-flange bench at NW. corner of store at Harland Field, near *Charlierille, 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 *Charlierille, 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 *Charlierille, Richland Parish, La.*, on R.eB. 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.eB. 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 dane, 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. Siford; 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. B. 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., 11½ 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 Lusks 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.]

$2\frac{1}{5}$ A.—*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 $2\frac{1}{5}$.

$2\frac{1}{1}$ A.—*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.

²⁰⁸.—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. ²⁹¹ and runs N. and S. (Note 38, p. 128.) B. M. ²⁹⁸ was not recovered in 1897-98, but was described in the 1894 Report as back of fence, back of road, e 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

²⁰⁷.—About $\frac{1}{4}$ mile below landing on *Patterson plantation, St. Charles Parish, 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.)

²⁰⁸.—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.)

²⁰⁴.—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.)

²⁰¹.—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.)

²⁰⁰.—About $\frac{3}{4}$ mile below St. Peter's Church, at *St. Peters, St. John the Baptist Parish, La.*, on land owned by Nicaisse 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.)

¹⁹⁹.—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. ¹⁹² across railroad. (Note 38, p. 128.) B. M. ¹⁹⁹ was not recovered in 1897-98. It was described in the 1894 Report as 1109.7 meters from ¹⁹⁹ on property of Valsin Oubree, 40 meters below Four Seasons store, owned by Geaugard, and below square-topped house occupied by Altore Montz.

¹⁹⁷.—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.)

¹⁹⁶.—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.)

¹⁹⁵.—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 ¹⁹⁵ and ¹⁹³ is 975.3 meters. ¹⁹⁵ 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.

¹⁹⁴.—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.) ¹⁹⁴ is 744.3 meters from ¹⁹⁴, which is College triangulation station. ¹⁹⁴ 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

¹⁹².—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.)

¹⁹¹.—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.)

¹⁹⁰.—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 plantation*, on line of Louisville, New Orleans and Texas R. R. It is $17\frac{2}{3}$ 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° W. is blazed with a triangle.

DESCRIPTIONS OF PERMANENT BENCH MARKS BETWEEN FORT ADAMS AND VICKSBURG, MISS., 1903-6.

[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 $2\frac{1}{2}$ 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 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.

LIV. 11 (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.eM. $1\frac{1}{3}^2$.—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.eM. $1\frac{1}{3}^2$ —*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 *Boys 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 75e meters below corner of field, which corner is at base of levee. T. B. M. is about 20 meters back of leveee 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. $1\frac{3}{5}$.—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. $1\frac{3}{2}$.—Near *Vidalia, Concordia Parish, La.*; tile and pipe set at inner base of levee at angle immediately back of where the old B. M. $1\frac{3}{2}$ 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° 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. 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° from the old marine hospital on bluff above Natchez, Miss. (See also App. 8, Report for 1899, p. 608.)

B. M. $1\frac{3}{4}1$.—*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. $1\frac{3}{4}1$.—*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. Gillaspy, 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. Gillaspy, 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 $\frac{1}{8}$ 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. $1\frac{2}{3}^9$.

B.eM. $1\frac{2}{3}^9$.—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 1400 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. $1\frac{2}{3}^9$. 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. Vaucluse.

P. B. M. Vaucluse.—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 Vaucluse 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. $1\frac{2}{3}^7$.—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. $1\frac{2}{3}^6$.—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. $1\frac{2}{3}^2$.—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. $1\frac{2}{3}^0$.—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. $1\frac{1}{4}^0$.—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 2½ 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 ½ 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 ¾ mile back of bank of river, 1 mile above a prominent angle in levee, 1½ 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 ¼ 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 S. 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. $1\frac{1}{2}$ 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 peach 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. $1\frac{1}{3}$.—At *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 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 SF. 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.eB. 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. Pelicar.—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. ³/₂⁸.—*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.eM. ³/₂⁸.—Near *Aitkin*, *Aitkin Co., Minn.* Not described.e

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 4½ 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 bowlders, 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.eM. 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. $2\frac{8}{2}$.—*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. $2\frac{9}{2}$.—*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.eof 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.eof 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.eof 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. 126.)

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 N.E. corner of St. Bonifacius Cathedral, on the S.W. corner of Second street S. and Fifth avenue E.; the smooth, rounded, conical top of a granite post at the foot and N.E. 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 N.E. 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 S.E. corner of Riverside avenue and Third avenue W., 70 meters N. of the railway, at the N.W. 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 S.E. 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 N.E. 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 N.W. 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 N.E. 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.)

A₁.—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.)

B₁.—*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.)

C₁.—*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.)

D₁.—*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.)

E₁.—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.)

F₁.—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.)

G₁.—*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.)

H₁.—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.

I₁.—*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.)

J₁.—*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.)

K₁.—*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; a 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.e

L₁.—*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. *L₁*. 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.

M₁.—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.)

N₁.—*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.)

O₁.—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.)

P₁.—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.)

Q₁.—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.)

R₁.—*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.)

S₁.—*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.)

T₁.—*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.)

U₁.—*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.)

V₁.—*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.)

W₁.—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.

X₁.—*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.)

Y₁.—*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.

Z₁.—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.)

A₂.—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.)

B₂.—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.)

C₂.—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.)

D₂.—*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.)

E₂.—*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.)

F₂.—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.)

G₂.—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.)

H₂.—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.)

I₂.—*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 Seline 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 13 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.)

J₂.—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.)

K₂.—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.)

L₂.—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.)

M₂.—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.)

N₂.—*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.

O₂.—*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.)

P₂.—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.)

Q₂.—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.)

R₂.—*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.)

S₂.—*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.)

T₂.—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.)

U₂.—*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.

V₂.—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.)

W₂.—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.)

X₂.—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.e (Note 2, p. 126.)e

Y₂.—*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.

Z₂.—*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.)e

A₃.—*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.)e

B₃.—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.)e

C₃.—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.)

D₃.—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.)

E₃.—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.)

F₃.—*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.)

G₃.—*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.)

H₃.—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.e corner of a cultivated field belonging to M. Vigness. (Note 2, p. 126.)e

I₃.—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.e corner of a cultivated field belonging to Claus Carlson. (Note 2, p. 126.)e

J₃.—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.e (Note 8, p. 127.)e

K₃.—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.)

L₃.—*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 8, 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. cornerstone 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.t.—*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.)

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.)

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.)

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.)

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

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

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

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

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

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 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. 55; 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 grounda

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

A₁.—*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

B₁.—*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

C₁.—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

D₁.—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.)

E₁.—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.)

F₁.—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.)

G₁.—*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.)

H₁.—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.)

I₁.—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

J₁.—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.

K₁.—*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.)

L₁.—*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.

M₁.—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.)

N₁.—*Erwin, Kingsbury Co., S. Dak.*, 230 meters S. of the railway station, 130 meters N. of the S. 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.)

O₁.—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.)

P₁.—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.)

Q₁.—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.)

R₁.—*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.)

S₁.—*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.

T₁.—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.)

U₁.—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. 55; 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.

V₁.—*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.

W₁.—*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.)

X₁.—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.)

Y₁.—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.)

Z₁.—*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.)

A₂.—*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.)

B₂.—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.)

C₂.—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.)

D₂.—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.)

E₂.—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. 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.)

F₂.—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. 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.)

G₂.—*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.)

H₂.—*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.)

I₂.—*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.

J₂.—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.)e

K₂.—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.)

L₂.—*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.

M₂.—*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.)e

N₂.—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.)

O₂.—*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.)

P₂.—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.)

Q₂.—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.)

R₂.—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.)

S₂.—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.)

T₂.—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.)

U₂.—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.)

V₂.—*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.)

W₂.—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.)

X₂.—*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.

Y₂.—*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.

Z₂.—*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.)

A₃.—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.)e

B₃.—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.)

C₃.—*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.)

D₃.—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.)

E₃.—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 Volland; 2 meters W. of the corner, 0.7 meter below the rails. (Note 2, p. 126.)

F₃.—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.)

G₃.—*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.)

H₃.—*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.)

I₃.—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.)

J₃.—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.

C₄.—*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 X U. S. Geol. Survey; a point 25 millimeters NE. of the center of the cross.

L₃.—*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.

K₄.—*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.)

M₃.—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. t49 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. t49 W. (Note 18, p. 127.)

N₃.—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.)

O₃.—*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.)

P₃.—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.)

Q₃.—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.)

R₃.—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.)

S₃.—*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.)

T₃.—*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.)

U₃.—*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.)

V₃.—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.)

W₃.—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.)

X₃.—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.)

Y₃.—*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.

Z₉.—*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.)

A₄.—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.)

B₄.—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 Mc'Aull-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 meters 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.)

C₄.—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. ³⁵³—*Elk Point, Union Co., S. Dak.*, in the SE. corner of the court-house yard. (Note 10, p. 127.)

D₄.—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.)

E₄.—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.)

F₄.—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.)

G₄.—*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. ³⁵⁸—*Jefferson, Union Co., S. Dak.*, in the NW. corner of the schoolhouse yard, at the NE. sidewalk line. (Note 10, p. 127.)

H₄.—*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.

I₄.—*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.)

J₄.—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.)

K₄.—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.)

L₄.—*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.)

M₄.—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.)

N₄.—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. 390.—*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.

Q₁.—*Near Brandon, Douglas Co., Minn.* (See p. 152.)

R₁.—*Brandon, Douglas Co., Minn.* (See p. 152.)

S₁.—*Evansville, Douglas Co., Minn.* (See p. 152.)

T₁.—*Evansville, Douglas Co., Minn.* (See p. 152.)

M₃.—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.)

N₃.—*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.)

O₃.—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.)

P₃.—*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.)

Q₃.—*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.)

R₃.—1.5 miles NW. of *Ashby, Grant Co., Minn.*, 17 telegraph poles W. of milepost 169; ½ 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.)

S₃.—*Dalton, Ottertail Co., Minn.*, about 475 meters N. of the Great Northern Ry. track; in the NW. corner of the public school grounds, ½ 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.)

T₃.—*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.)

U₃.—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.)

V₃.—*Parkdale, Ottertail Co., Minn.*, $15\frac{1}{2}$ telegraph poles W. of milepost 181; on the public road $\frac{2}{3}$ meter S. of the right-of-way fence. (Note 3, p. 126.)

W₃.—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.)

X₃.—*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.)

Y₃.—*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.

Z₃.—*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.)

A₄.—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.)

B₄.—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.)

C₄.—*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.)

D₄.—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.)

E₄.—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 Pete 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.)

F₄.—*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.)

G₄.—*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.)

H₄.—*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.)

I₄.—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 Nymoen. (Note 2, p. 126.)

J₄.—*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.)

K₄.—About 1½ 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.)

L₄.—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.)

M₄.—About ½ 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.)

N₄.—*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.)

O₄.—*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 sand-stone sill. (Note 1, p. 126.)

P₄.—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.)

Q₄.—About 4½ 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.)

R₄.—*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.)

S₄.—*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.)

T₄.—About 1½ 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.)

U₄.—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.)

V₄.—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.)

W₄.—*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.)

X₄.—1½ 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 ^W_x; in range with telegraph poles, set in soft clay. (Note 2, p. 126.)

Y₄.—*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.)

Z₄.—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.)

A₅.—*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.)

B₅.—*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.)

C₅.—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.)

D₅.—*Borup, Norman Co., Minn.*, 2½ 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.)

E₅.—*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.)

F₅.—*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.)

G₅.—*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.

H₅.—*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.)

I₅.—*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.

J₅.—*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.)

K₅.—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.)

L₅.—*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.)

M₅.—*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.)

N₅.—*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.)

O₅.—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.)

P₅.—*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.)

Q₅.—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.)

R₅.—*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.)

S₅.—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.)

T₅.—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.)

U₅.—*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.)

V₅.—*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.

W₅.—*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.)

X₅.—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.)

Y₅.—*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.)

Z₅.—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.)

A₆.—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.)

B₆.—*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.)

C₆.—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.)

D₆.—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.)

E₆.—*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.)

F₆.—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.)

G₆.—*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.)

H₆.—*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.)

I₆.—*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 stonestep. (Note 1, p. 126.)

J₆.—*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.

K₆.— $2\frac{1}{2}$ 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.)

L₆.—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.)

M₆.—*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.)

N₆.—*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.

O₆.—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.)

P₆.—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.)

Q₆.—*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.)

R₆.—*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.)

S₆.—*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.)

T₆.—*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.

W₅.—*Smithville, Bastrop Co., Tex.* (See App. 7, Report for 1904, p. 446.)

X₅.—*Smithville, Bastrop Co., Tex.* (See App. 7, Report for 1904, p. 446.)

Y₅.—*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.)

U₆.—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.)

V₆.—*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.)

W₆.—*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.)

X₆.—*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.)

Y₆.—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 $\frac{1}{3}$ 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.)

Z₆.—*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.)

A₇.—*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.)

B₇.—*La Grange, Fayette Co., Tex.*, 275 meters NE. of the Missouri, Kansas and Texas Ry. station and $\frac{1}{3}$ 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.)

C₇.— $1\frac{1}{4}$ 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.)

D₇.—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.)

E₇.—*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.)

F₇.—*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.)

G₇.—*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.)

H₇. - $3\frac{1}{2}$ 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.)

I₇. - *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, $1\frac{1}{2}$ meters above ground. (Note 4, p. 127.)

J₇. - *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.)

K₇. - $4\frac{1}{2}$ 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.)

L₇. - *Cal Spring, Austin Co., Tex.*, 125 meters W. of mile board 1024; $\frac{1}{3}$ meter S. of the right of way, at the SW. corner of a grade crossing. (Note 11, p. 127.)

M₇. - 6 miles W. of *Sealy, 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, $\frac{1}{3}$ meter from the right-of-way fence. (Note 2, p. 126.)

N₇. - $3\frac{3}{4}$ miles W. of *Sealy, 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.)

O₇. - *Sealy, 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.)

P₇. - *Sealy, 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.)

Q₇. - *Sealy, 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.)

R₇. - $1\frac{1}{2}$ miles E. of *San Felipe, Austin Co., Tex.*, $4\frac{1}{2}$ telegraph poles W. of mile board 1040; in the NW. corner of a grade crossing, $\frac{1}{2}$ 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.)

S₇. - $\frac{1}{2}$ 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 centimetersquare, chiseled in outline between two transverse girders.

T₇. - 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, $\frac{2}{3}$ meter from the right-of-way fence; set in clay. (Note 2, p. 126.)

U₇. - *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, $\frac{1}{3}$ meter from the right-of-way fence. (Note 11, p. 127.)

V₇. - 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, $\frac{1}{3}$ meter from the right-of-way fence; set in clay. (Note 2, p. 126.)

W₇. - In *Waller Co.*, $1\frac{1}{4}$ miles W. of *Katy, Harris Co., Tex.*, $12\frac{1}{3}$ 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.)

X₇. - *Katy, Harris Co., Tex.*, 175 meters W. and 100meters S. of the Missouri, Kansas and Texas Ry. station; in the water tank owned by the KatynRice Milling Co., in the horizontal surface of the SW. foundation. (Note 4, p. 127.)

Y₇. - *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.)

Z₇. - $2\frac{3}{4}$ 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.)

A₈. - *Burnet, 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, $\frac{1}{3}$ meter from the property line. (Note 11, p. 127.)

B₈.—*Barker, Harris Co., Tex.*, 20 meters SW. 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.)

C₈.—*Letitiv, 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.)

D₈.—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.)

E₈.—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.)

F₈.—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.)

G₈.—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.)

H₈.—*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.)

I₈.—*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.)h

J₈.—*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.)

K₈.—*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.)

L₈.—*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.

M₈.—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.)

N₈.—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.)

O₈.—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.)

P₈.—4¼ 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.)

Q₈.—3½ 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.—2½ 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.)

R₈.—*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.)

S₈.—*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.—1½ 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.—3½ 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.)

T₈.—1 mile NW. of *Webster, Harris Co., Tex.*, 12½ 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.)

U₈.—*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.—½ 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.)

V₈.—*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.)

W₈.—2 miles southeast of *League City, Galveston Co., Tex.*, on the public highway, 11½ telegraph poles southeast of mile board 26, in the east corner of a grade crossing, 2½ meter from the corner of the right-of-way fences; set in clay. (Note 2, p. 126.)

X₈.—1½ mile NW. of *Dickinson, Galveston Co., Tex.*, on the right of way of the Galveston, Houston and Henderson R. R., 9½ telegraph poles SE. of mile board 28; in the center of the top surface of a concrete culvert, 6½ meters SW. of the tracks. (Note 1, p. 126.)

Y₈.—*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.)

Z₈.—½ 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.)

A₉.—*Lamarque, Galveston Co., Tex.*, on the right of way of the Galveston, Houston and Henderson R. R., 40 meters NW. of the station and 7½ 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.)

B₉.—1½ mile SE. of *Lamarque, Galveston Co., Tex.*, 12½ 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.)

C₉.—*Texas City Junction, Galveston Co., Tex.*, 2½ 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, Galveston Co., 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_u.—*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_u.—2½ 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_u.—*Galveston, Galveston Co., Tex.*, 1½ 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_u.—*Galveston, Galveston Co., Tex.*, a Santa Fe R. R. B. M., at the NE. corner of Broad Twenty-fifth streets; in a steel window sill on the W. side of the Sealy Building, 1½ meters from the S. side of the building, 2½ 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.

P. B. M. 10.—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. $\frac{1}{4}$ 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. d29.)

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.

P. 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. d29), 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. d29), 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 school-yard, 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 pointe 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 *Orrville, Ill.*, and about $\frac{1}{8}$ mile E. from the covered wooden bridge over Mauvestere Creek on the highway along the bluffs. Thee 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 door-yard, 14.8 feet easterly from SW. corner post of dooryard, and 9.6 feet southeasterly from a soft maplee 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 Methodiste Protestant Churchyard situated on the NW. corner of Bluff 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. Brockhouse'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. (wye 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 door-yard 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 10° 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.)^e

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 N.E. and a 6-inch elm (on north fence line of highway) stands 121 feet N.W. of bench.e 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 N.E. 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 N.E. 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 N.E. 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. 4 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 $\frac{1}{3}$ 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 feetn toward the track from the range of the SW. right-of-way fence line S. of the highway. It is 53.5 feetn northwestward from railway post reading, "Marshall Co.-Putnam Co.," and 74.6 feet WNW. from postn of danger warning sign 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.)

T. B. M. 69.—Stone, pipe, and cap (see note 41, p. 129) set in the front dooryard of the residence of D.eB. 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 southward 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 thee NW. side of the highway along the foot of the bluffs; 59.45 feet NW., or square out, from center of railroade track; 21.7 feet SW. from NE. fence and 8.5 feet NW. from SE. fence of dooryard, and 23.6 feet eastwarde 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.)

T. 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, 1,000 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.)

T. 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.eM. (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.)e

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 11.7 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.)e

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.)e

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.)e

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.e

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 Holenbeck'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 southwestward 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 wedge 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.e 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.)

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.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.e 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 bowlder lying 34 feet SW. of creek, 430 feet SW. of S. D. 143 ande 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 bowlder 3.9 feet long by 3.6 feet wide bye 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.e of Millsdale. The stone is on springy, marshy ground. (Note 45, p. 130.)

P. B. M. 99.—Near *Channahon, Will Co., Ill.*; stone, pipe, and cap (see note 41, p. 129) set in the highway 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. stonee 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 bowlder 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 southwesterly 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, Sante 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 wastewair 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 drawbridge 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. 11 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. Abbott'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 bowlder 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 bowlder 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 bowlders, 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 bowlder 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 bowlder 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 bowlder 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 bowlder 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 *Summitt, 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 $\frac{5}{8}$ 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.)

A₁.—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.)

B₁.—*Mahomet, Champaign Co., Ill.*, 230 feet W. of station, 15 feet N. from center of track, iron post. (Note 51, p. 130.)

C₁.—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.)

D₁.—*Rising, Champaign Co., Ill.*, 75 feet W. of station, 15 feet N. of center of tracks, iron post. (Note 51, p. 130.)

E₁.—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.)

F₁=Z₄.—*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."

G₁.—*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. B₃.—*Olney, Richland Co., Ill.* (See App. 8, Report for 1899, p. 566.)

A₃.—*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.)

B₃.—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.)

C₃.—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.)

D₃.—*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.)

E₃.—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.)

F₃.—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.)

G₃.—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 "524d 1906." (Note 51, p. 130.)

H₃.—*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 "512d 1906." (Note 51, p. 130.)

I₃.—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.)

J₃.—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.)

K₃.—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.)

L₃.—0.31 mile N. of *Hidalgo*, *Jasper Co., Ill.*, 30 feet W. of track, 8 feet W. of milepost 148-99; iron post stamped "581d 1906." (Note 51, p. 130.)

M₃.—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.)

N₃.—*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.)

O₃.—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.)

P₃.—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.)

Q₃.—*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.)

R₃.—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.)

S₃.—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.)

T₃.—*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.)

U₃.—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.)

V₃.—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.)

W₃.—*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.)

X₃.—*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.)

Y₃.—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. Wason lot; iron post stamped "686 1906." (Note 51, p. 130.)

Z₃.—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.)

A₄.—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.)

B₄.—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.)

C₄.—*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 "652d 1906." (Note 51, p. 130.)

D₄.—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.)
E₄.—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 "661 1906." (Note 51, p. 130.)

F₄.—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.)

G₄.—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.)

H₄.—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.)
I₄.—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.)
J₄.—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.)

K₄.—*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.)

L₄.—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.)

M₄.—*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.)
N₄.—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.)

O₄.—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.)
P₄.—3.32 miles E. of *Fairmount Junction*, *Vermilion Co.*, *Ill.*, 40 feet directly N. of milepost "St. L. el78-Tol. 258," 30 feet N. of track; iron post stamped "672 1906." (Note 51, p. 130.)
Q₄.—*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.)

R₄.—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.)
S₄.—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 "664el906." (Note 51, p. 130.)

T₄.—*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.)
U₄.—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.)

V₄.—*Sidney*, *Champaign Co.*, *Ill.*, in SW. corner of high school; aluminum tablet stamped "673 1906." (Note 50, p. 130.)
W₄.—*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 "691el906." (Note 51, p. 130.)
X₄.—*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.)

Y₄.—*Urbana*, *Champaign Co.*, *Ill.*, 1,059 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.)
Z₄=E₁.—*Champaign*, *Champaign Co.*, *Ill.*. (See p. 209.)
e

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 *Sargent's, 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 *Duvalls, 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 *Duvalls, 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.—*Mound 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'.—*Gnadenhutten, 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.— $\frac{1}{6}$ 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 *Weet 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.—½ 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 ¼ 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.—½ 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.—¼ 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 *Alberton, Howard Co., Md.*, copper bolt set between tracks, W. abutment of bridge 17.

B. & O. 113.—Near *Alberton, Howard Co., Md.*, copper bolt set in center of SE. coping of arch culvert, at *Dorseys Run*.

B. & O. 114.—Near *Alberton, 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 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 *Bartholomew, 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 *Bartholomew, 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.—0.3 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.— $\frac{1}{4}$ 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 *Ohiopyle, 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 *Ohiopyle, 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, $\frac{1}{6}$ 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.— $3\frac{1}{5}$ miles 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 milepost 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.— $1\frac{1}{4}$ miles S. of *McKeesport, Allegheny Co., Pa.*, opposite milepost 312. (Note 21, p. 127.)

B. & O. 284.— $1\frac{1}{4}$ miles 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.— $\frac{3}{5}$ 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 Pittsburg.

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.— $\frac{1}{4}$ miles N. of Laughlin Junction, Allegheny Co., Pa., copper bolt E. of tracks, set in foundation of portal of Pittsburg 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 Pittsburg 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 Pittsburg.—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.— $\frac{5}{6}$ 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.— $\frac{5}{6}$ 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 *Valencin, 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.— $\frac{1}{3}$ 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 undergraduate 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.—*Goehring*, *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.— $\frac{1}{3}$ 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.— $\frac{1}{3}$ 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 high 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.*, undergraduate 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 undergraduate 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. 364.— $3\frac{1}{4}$ 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 N.W. of *Lowellville, Mahoning Co., Ohio*, 600 feet S.E. of Pittsburg and Lake Erie R. R. water tanks, 100 feet S.E. of Baltimore and Ohio culvert. (Note 21, p. 127.)

B. & O. 374.—1 mile S.E. of *Struthers, Mahoning Co., Ohio*, at telegraph pole 69/35. (Note 21, p. 127.)

B. & O. 375.— $\frac{1}{2}$ mile S.E. 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.)

A₂.—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 N.E. 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 N.E. 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 N.E. 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 S.E. 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 N.E. 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 N.E. 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 S.E. corner of the water table of the Pennsylvania R. R. depot; a seat cut in the beveled surface.

Br. 27 $\frac{1}{2}$.—About $\frac{2}{3}$ mile E. of *New Brighton, Beaver Co., Pa.*, on the N.W. corner of the E. bridge seat for bridge 27 $\frac{1}{2}$; an outlined square marked "B M."

Br. 26.—About 1.8 miles E. of the depot at *New Brighton, Beaver Co., Pa.*, on the N.W. 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 S.W. 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.

Q₆.—*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 $\frac{1}{3}$ 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.

R₆.—*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.)

S₆.—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.)

T₆.—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.

U₆.—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.)

V₆.—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.)

W₆.—*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.)

X₆.—*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.)

Y₆.—*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.)

Z₆.—*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.)

A₇.—*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.)

B₇.—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.)

C₇.—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.)

D₇.—*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.)

E₇.—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.)

F₇.—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.)

G₇.—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.)

H₇.—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.)

I₇.—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.)

J₇.—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 mil^g 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 39/24 $\frac{1}{2}$. (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 *Newton*, *Medina Co.*, at telegraph pole 44/10. (Note 29, p. 128.)

B. & O. 479.—1 mile W. of *Newton*, *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 *Newton*, *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 62/23½; 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 62/21½; 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 61/21½; 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 55/1½; 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 53/17½; 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 65/17½.

B. & O. 498.— $1\frac{3}{5}$ 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 67/7½.

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.— $1\frac{1}{4}$ 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 $1\frac{1}{4}$ 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.)

F₅.—*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.

G₅.—*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.)

H₅.—*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.)

I₅.—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.)

J₅.—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.)

K₅.—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.)

L₅.—*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.)

M₅.—*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.)

N₅.—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.)

O₅.—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.)

P₅.—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.)

Q₅.— $\frac{1}{2}$ 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.)

R₅.—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.)

S₅.—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.

T₅.—*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.)

U₅.—About 2½ 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.)

V₅.—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.)

W₅.—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.)

X₅.—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.)

Y₅.—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.)

Z₅.—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.

A₆.—*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.)

B₆.—*Fostoria, Seneca Co., Ohio*, at the SE. corner of Tiffin and Union streets, 1 meter from the curb. (Note 11, p. 127.)

C₆.—In *Hancock Co., Ohio*, 2½ 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.)

D₆.—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.)

E₆.— $\frac{3}{4}$ 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.

F₆.—*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.)

H₆.—*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.

I₆.—*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.)

J₆.—*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.—½ mile S. of *North Baltimore, Wood Co., Ohio*, in the SW. abutment of an iron bridge over a creek. (Note 17, p. 127.)

K₆.—½ 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.)

L₆.—About 1½ 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.")

M₆.—About 2½ 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.)

N₆.—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.)

O₆.—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.)

P₆.—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.)

I₁.—*Deshler, Henry Co., Ohio*. (See App. 8, Report for 1899, p. 656.)

H₁.—*Deshler, Henry Co., Ohio*. (See App. 8, Report for 1899, p. 656.)

J₁.—*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.—¼ mile NE. of *Warwick, Summit Co., Ohio*. (See p. 230.)e

B&O. 1.—½ 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.*, 1¾ miles SE. of *Warwick, Summit Co., Ohio*, at milepost 107. (Note 22, p. 127.)

B&O. 3.—In *Stark Co.*, 2¾ 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 ¼ mile W. of *Crystal Spring, Stark Co., Ohio*, at milepost 100. (Note 22, p. 127.)e

B&O. 10.—About ¾ 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.—¼ 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 smalle 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 bridge crossing at telegraph pole 186/37. (Note 23, p. 128.)

B. & O. 9.—*Patomac 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 *Keyser, 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.— $\frac{1}{4}$ 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.— $\frac{1}{4}$ miles NW. of *Fetterman, Taylor Co., W. Va.*, at milepost 283. (Note 21, p. 127.)

B. & O. 105A.— $\frac{3}{4}$ miles NW. of *Fetterman, Preston Co., W. Va.*, on culvert at telegraph pole 283/20. (Note 26, p. 128.)

B. & O. 106.— $\frac{1}{2}$ 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.— $\frac{1}{2}$ 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.—1¼ 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.—1¼ 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 116½. (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.i& 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.i& 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.i& 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 tracki 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.i& O. 150.— $\frac{1}{4}$ mile N. of *Metz*, Marion Co., W. Va., on bridge at telegraph pole 324/25. (Notei 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 mileposti 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.i& 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. ofi Burton tunnel. (Note 26, p. 128.)

B. & O. 156.—*Cottontown*, Wetzel Co., W. Va., on bridge near telegraph pole 331/5. (Note 24,i 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.i& 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.i& 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.i& 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. (Notei 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.i& 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.e— $\frac{1}{4}$ 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.) e

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.— $\frac{1}{6}$ 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 W. 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 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.— $2\frac{1}{2}$ 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.— $1\frac{1}{2}$ 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.— $\frac{1}{4}$ mile NW. of *Moundsville*, *Marshall Co., W. Va.*, square cut on N. pedestal of water tank 54.

B. & O. 197.— $1\frac{3}{8}$ miles NW. of *Moundsville*, *Marshall Co., W. Va.*, rail section set SW. of tracks at milepost 370.

B. & O. 198.— $2\frac{3}{8}$ miles NW. of *Moundsville*, *Marshall Co., W. Va.*, rail section set W. of tracks at milepost 371.

B. & O. 199.— $3\frac{1}{2}$ 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.— $1\frac{1}{2}$ 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.)^e

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. $\frac{1}{4}$ of sec. 25, T. 13, R. 14, in a pasture belonging to Mr. Long, of *Russell*, *Kans.*; a point marked by a $\frac{3}{8}$ -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. A₁, 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 E₁, 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. Y₁, 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. 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'—*Newburgh, 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 I₁, 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. F₃, 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 B₁, near *Hot Springs, Wash.*, was about to be destroyed by raising abutments.

Page 234. I₁.—*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. $48^{\circ} 33'$ 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 $\frac{1}{4}$ 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.

Index to elevations and descriptions of bench marks—Continued.

ARKANSAS.

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.
Alexander.	89				688	Jordan Landing.	89		133		
Alma.	86				618	Kidds Spur.	90				690
Altus.	86				617	Knoxville.	86				616
Argenta.	86				614	Lake Landing.	89				684
Arkadelphia.	89				687, 688	Lamar.	86				616
Arkansas City.	86, 90				612, 691	Lancaster.	86				619
Arkansas City to Little Rock.	86				612-614	Leopards Camp.	89				686
Atkins.	86				615	Lester.	89				686
Avoca.	86				621	Lewisville.	89		133		
Baxter.	90				691	Lillie.	86				619
Bayou Bartholomew.	90				690	Little Bay.	89				686
Bayou Lapie.	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			McGehce.	90				613, 691
Brightwater.	86				621	McNeil.	89		133		
Buena Vista.	89				688	Malevile.	89				688
Buckner.	89		133			Malvern.	89				688
Camden.	89				686	Marche.	86				614
Camden to Little Rock.	89				686-689	May Flower.	86				614
Camden to Parkville, La.	89				683-686	Monifee.	86				615
Camden to Shreveport, La.	89, 90		133, 134			Mill Creek.	86				616
Canfield.	89		134			Morrell.	90				690
Careyville Landing.	89				685	Morrilton.	86				615
Champagnolle, Landing.	89				685	Mountaintburg.	86				619
Chester.	86				685	Mulberry.	86				618
Chester to Boston, Mo.	86				619-623	New Lewisville.	89		133		
Chester to Van Buren.	86				618, 619	Noble Lake.	86				613
Chidester.	89				687	Oaganaw.	89		133		
Clarksville.	86				616	Onita.	86				615
Coal Hill.	86				617	Ouachita Belle Landing.	89				684
Conway.	86				615	Ozark.	86				617
Curtis.	89				687	Palarm.	86				614
Daleville.	89				688	Parkdale.	90				690
Dermott.	90				691	Pigeon Hill Landing.	89				685
Donaldson.	89				688	Pine Bluff.	86				613
Dyer.	86				618	Plumerville.	86				615
Eldorado Landing.	89				685	Poepping.	86				617
Elliott.	89				686	Porter.	86				619
Ensign.	89				688	Portland.	90				690
Eutaw Shoals.	89				684	Preston.	86				615
Fayetteville.	86				620	Redfield.	86				613
Fletchers Landing.	89				685	Rogers.	86				621
Fort Smith.	86				618	Rudy.	86				619
Fort Smith to Van Buren.	86				618	Russellville.	86				615
Franklin Bayou.	89				685	Saline River.	89				688
Frenchport.	89				686	Smackover Creek.	89				685
Gaia Creek.	86				615	Smithton.	89				687
Garfield.	86				621	Spadra.	86				617
Garland.	89	133			...	Springdale.	86				620
Germantown.	86				615	Stamps.	89		133		
Greenland.	86				626	Stephens.	89		133		
Gun Springs.	89				687	Sunshine.	90				690
Gurdon.	89				687	Tillar.	86				613
Hartman.	86				617	Traskwood.	89				688
Helema.	90				699	Trippie Junction.	90				691
Hudspeth.	90				691	Van Buren.	86				618
Jacks Island.	89				684	Van Buren to Chester.	86				618, 619
Johnson.	86				620	Van Buren to Fort Smith.	86				618
Jordan Ferry.	89		133		...	Van Buren to Little Rock.	86				614-618
						Varner.	86				613

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.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
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		
Boyero	85				585	Lake	85				585, 586		
Brighton	110				644	Larkspur	85				589		
Byers	86				591	La Salle	110				644		
Cal han	85				586	Limon	85				586		
Carr	110				645	Limon to Colorado						583, 588	
Castle Rock	85				589	Springs	85				586		
Cheyenne Wells	85				585	Limon to Denver	86				590, 591		
Colorado Springs	85				587, 588	Limon to Hugo	85				585, 586		
Colorado Springs to Denver	85, 86				588-590	Littleton	86				589		
Colorado Springs to Limon	85				586-588	Lowland	86				591		
Deer Trail	86				591	Lucerne	110				645		
Denver	86, 110				(590, 591)	Lupton	110				644		
Denver to Cheyenne, Wyo.	110				643	Magnolia	86				591		
Denver to Colorado Springs	85, 86				643-645	Mattison	85				586		
Denver to Limon	86				588-590	Mirage	85				585		
Douglas	85				590, 591	Monument	85				588		
Dover	110				645	Nantes	110				644		
Eaton	110				645	Palmer Lake	85				588, 589		
Edgerton	85				588	Petersburg	86				589		
Elsmere	85				587	Peyton	85				586		
Falcon	85				586	Pierce	110				645		
First View	85				585	Pike View	85				588		
Godfrey	86				590	Plateau	85				589		
Greeley	110				645	Plateauville	110				644		
Greenland	85				589	Ramah	85				586		
Hazeltine	110				643	Resolis	85				586		
Henderson	110				644	River Bend	86				590		
Hugo	85				585	Roswell	85				587		
						Sedalia	86				589		
						Toluca	86				591		
						Watkins	86				585		
						Wildhorse	85				585		
						Wolhurst	86				589		

DISTRICT OF COLUMBIA.

Brookland	106				728		Washington	87, 106	468, 470	215, { 728, 805	{ 627, 643
Eckington	126				728		Washington to Annapolis, Md.	121	471	243, { 806, 807	{ 642, 643
Georgetown	87				809	627	Washington to Georgetown		470, 471		
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	121		728-730	
Langdon	121			215						215	
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. 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.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
Albion.	469				635	Hawthorn.		469					634
Archer.	469			808	635	Hollister.		469					633
Arredondo.	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				
Daines Ferry.	566		758		Pine Grove.		567		759				
Doek Junction.	567		760		Pinson.		566		757				
Eastman.	567		759		Powder Springs.		566		757				
Ellenwood.	569		758		Reid.		567		758				
Empire.	567		759		Rome.		566		757				
Everett.	567		760		Rockmart.		566		757				
Gardi.	567		760		Sapps Still.		567		760				
Godwinville.	567		759		Scotland.		567		759				
Graham.	567		759		Seney.		566		757				
Gresson.	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.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1904, App. 4.	Rept. 1904, App. 6.
American Falls.	111				427	Dayton.	111		427				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.	Rept. 1904, App. 6.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1905, App. 4.	Rept. 1904, App. 6.	
Inkom.	111					426	Owyhee to Seattle,						
Kinnauna.	111					428	Wash.	111-113			218-241		
King Hill.	111					429	Oxford.	111				425	
Kuna.	111			218			Parma.	112			220		
Marsh Valley.	111					426	Payette.	112			221		
McCannion.	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				Senter.	111			428		
Napati.	111					427	Shoshone.	111			428		
Notus.	112		220				Swan Lake.	111			426		
Olds Ferry.	112		222, 223				Ticeska.	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-						420-430	Yale.	111			427		
tello.	111												

ILLINOIS.

Place.	Elevation.			Description.			Place.	Elevation.			Description.		
	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	
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				
Arsenal Island.	94					731	Chicago.	94, 119, 120			204-208		726, 736,
Ashley.	86					600	Chicago to Pekin.	118, 119			183-208		737
Averyville.	118		184				Chicago to Savanna.	94					733-737
Aviston.	84					567	Chillicothe.	118			185		
Bartlett.	94					736	Clarkesville, Mo.,						
Bath.	118		181				opposite.	93					
Beardstown.	117, 118		180			736	Clay City.	84			807		726
Bensenville.	94						Collins.	84			807		566
Bloomfield.	117		179				Cordova.	94					567
Bloomington.	120		208, 209				Cragin.	94					732
Bluffs.	117		179				Danvers.	120			208		736
Boos.	120		210				Davis Junction.	94					735
Bradbury.	120		210				Deers.	120			211		
Bridgewater.	117		178				Depue.	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, { 164, 479, }		481, }			{ 598, 599, }	Dundas.	120			209		
Cairo to Corinth.						{ 718, 724 }	Duquoin.	86					600
Miss.							East Dubuque.	96					768
Cairo to Memphis,							East Elgin.	94					730
Tenn.	93						East St. Louis.	84					567
Cairo to Odin.	86						Eldred.	117			178		
Cairo to St. Louis,							Elgin.	94					736
Mo.		480, 481				720-724	Empire.	120			209		
Carbondale.	86					600	Fairgrange.	120			210		
Carlyle.	84					567	Fairmount.	120					
Caseyville.	84					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.	Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.
Fielding.....	94	94	94	94	735	Mira.....	120	120	211	211	211	Fielding.....	599	599	599	599
Flora.....	84	84	84	84	566	Moline.....	94	94	732	732	732	Flora.....	732	732	732	732
Ford Woods.....	120	120	209	209	734	Monroe.....	94	94	735	735	735	Ford Woods.....	735	735	735	735
Forreston Junction.....	94	94	94	94	733	Morris.....	119	119	192, 193	192, 193	192, 193	Forreston Junction.....	599	599	599	599
Fulton.....	94	94	94	94	733	Mossville.....	118	118	183	183	183	Fulton.....	599	599	599	599
Fulton to Savanna.....	94	94	94	94	733	Mound City Junction.....	86	86	86	86	86	Fulton to Savanna.....	599	599	599	599
Fulton to Albany.....	94	94	94	94	733	Mount Carroll.....	94	94	734	734	734	Fulton to Albany.....	599	599	599	599
Gales Landing.....	118	118	182	182	733	Mount Forest.....	119	119	202	202	202	Gales Landing.....	599	599	599	599
Genoa.....	94	94	94	94	735	New Boston.....	93	93	730	730	730	Genoa.....	599	599	599	599
Gillum.....	120	120	200	200	735	Newton.....	120	120	210	210	210	Gillum.....	599	599	599	599
Glasgow.....	117	117	179	179	719	Nutwood.....	117	117	178	178	178	Glasgow.....	599	599	599	599
Grafton.....	117	117	480	177	724-732	Oakland.....	120	120	210-211	210-211	210-211	Grafton.....	599	599	599	599
Grafton to Albany.....	93, 94	93, 94	93, 94	93, 94	724-732	Odin.....	84, 86	84, 86	566, 601	566, 601	566, 601	Grafton to Albany.....	599	599	599	599
Grafton to Pekin.....	117, 118	117, 118	177-183	177-183	724-732	Odin to Cairo.....	86	86	599-601	599-601	599-601	Grafton to Pekin.....	599	599	599	599
Grafton to 12 miles above St. Louis, Mo.....	120	120	480	480	719	Odin to Olney.....	84	84	596	596	596	Grafton to 12 miles above St. Louis, Mo.....	599	599	599	599
Greenup.....	120	120	210	210	719	Odin to St. Louis, Mo.....	84	84	566-570	566-570	566-570	Greenup.....	599	599	599	599
Hamburg.....	93	93	93	93	727	Olney.....	84, 120	84, 120	459	459	459	Hamburg.....	599	599	599	599
Hampshire.....	94	94	94	94	735	Olney to Champaign.....	120	120	209-211	209-211	209-211	Hampshire.....	599	599	599	599
Hampton.....	94	94	94	94	732	Olney to Lawrenceburg, Ind.....	84	84	565, 566	565, 566	565, 566	Hampton.....	599	599	599	599
Harris.....	120	120	200	200	732	Olney to Odin.....	84	84	566	566	566	Harris.....	599	599	599	599
Harris Landing.....	97	97	97	97	773	Oquawka.....	93	93	729, 730	729, 730	729, 730	Harris Landing.....	599	599	599	599
Hastings Landing.....	93	93	93	93	728	Ottawa.....	118	118	190, 191	190, 191	190, 191	Hastings Landing.....	599	599	599	599
Havana.....	118	118	181, 182	181, 182	734	Oxville.....	117	117	179	179	179	Havana.....	599	599	599	599
Henry.....	118	118	186	186	734	Pegram.....	117	117	179	179	179	Henry.....	599	599	599	599
Hickory Grove.....	94	94	94	94	734	Pekin.....	118, 120	118, 120	183, 208	183, 208	183, 208	Hickory Grove.....	599	599	599	599
Hidalgo.....	120	120	210	210	734	Pekin to Chicago.....	118, 119	118, 119	208, 209	208, 209	208, 209	Hidalgo.....	599	599	599	599
Hildreth.....	120	120	211	211	727	Pekin to Grafton.....	117, 118	117, 118	177-183	177-183	177-183	Hildreth.....	599	599	599	599
Hillview.....	117	117	179	179	727	Pekin to Peoria.....	118	118	183, 184	183, 184	183, 184	Hillview.....	599	599	599	599
Hogville Landing.....	93	93	93	93	727	Pekin to Peru.....	118	118	188, 189	188, 189	188, 189	Hogville Landing.....	599	599	599	599
Homer.....	120	120	211	211	727	Pekin to Pella Creek.....	480	480	719	719	719	Homer.....	599	599	599	599
Hume.....	120	120	211	211	727	Pingree Grove.....	94	94	735	735	735	Hume.....	599	599	599	599
Island 256, opposite foot of.....	97	97	97	97	727	Point Landing.....	93	93	728	728	728	Island 256, opposite foot of.....	599	599	599	599
Itasca.....	94	94	94	94	736	Port Byron.....	94	94	732	732	732	Itasca.....	599	599	599	599
Iuka.....	84	84	807	807	566	Putnam.....	118	118	186	186	186	Iuka.....	599	599	599	599
Jamaica.....	120	120	211	211	735	Radom.....	86	86	600	600	600	Jamaica.....	599	599	599	599
Janesville.....	120	120	210	210	735	Rapids City.....	94	94	732	732	732	Janesville.....	599	599	599	599
Jersey Landing.....	119	119	195, 196	195, 196	719	Rardin.....	86, 120	86, 120	210	210	210	Jersey Landing.....	599	599	599	599
Joliet.....	119	119	195, 196	195, 196	719	Reds Landing.....	93	93	727	727	727	Joliet.....	599	599	599	599
Keithsburg.....	93	93	93	93	730	Richview.....	86	86	600	600	600	Keithsburg.....	599	599	599	599
Kingston.....	94	94	94	94	735	Rising.....	120	120	209	209	209	Kingston.....	599	599	599	599
Kirkland.....	94	94	94	94	735	Rockdale.....	119	119	195	195	195	Kirkland.....	599	599	599	599
Lake Michigan, in.....	94	94	94	94	737	Rock Island.....	94	94	731	731	731	Lake Michigan, in.....	599	599	599	599
Lanark.....	94	94	94	94	734	Rome.....	118	118	185	185	185	Lanark.....	599	599	599	599
Lanark Junction.....	94	94	94	94	734	Romeo.....	119	119	198	198	198	Lanark Junction.....	599	599	599	599
Lasalle.....	118	118	189	189	734	Rosedale.....	117, 119	117, 119	177, 178	177, 178	177, 178	Lasalle.....	599	599	599	599
Leaf River.....	94	94	94	94	734	Roschill.....	120	120	210	210	210	Leaf River.....	599	599	599	599
Lebanon.....	84	84	567	567	734	Roselle.....	94	94	736	736	736	Lebanon.....	599	599	599	599
Lemont.....	119	119	198-200	198-200	734	Sac Bridge Station.....	119	119	200	200	200	Lemont.....	599	599	599	599
Lerna.....	120	120	210	210	734	Sadora.....	118	118	181	181	181	Lerna.....	599	599	599	599
Le Roy.....	120	120	209	209	734	Salem.....	84	84	566	566	566	Le Roy.....	599	599	599	599
Leslie.....	120	120	208	208	734	Sandoval.....	84	84	567	567	567	Leslie.....	599	599	599	599
Lilly.....	120	120	208	208	734	Savanna.....	94, 97	94, 97	733, 774	733, 774	733, 774	Lilly.....	599	599	599	599
Liverpool.....	118	118	182	182	734	Savanna to Chicago.....	94	94	733-737	733-737	733-737	Liverpool.....	599	599	599	599
Lockport.....	119	119	196, 197	196, 197	728	Savanna to Fulton.....	94	94	733	733	733	Lockport.....	599	599	599	599
Lydda.....	117	117	180	180	734	Savanna to St. Paul, Minn.....	94-97	94-97	737-774	737-774	737-774	Lydda.....	599	599	599	599
Mackinaw.....	120	120	208	208	734	Semeca.....	119	119	192	192	192	Mackinaw.....	599	599	599	599
Mahomet.....	120	120	209	209	734	Sidell.....	120	120	211	211	211	Mahomet.....	599	599	599	599
Marcus.....	97	97	774	774	734	Sidney.....	120	120	211	211	211	Marcus.....	599	599	599	599
Marquette.....	118	118	187	187	734	Spankey.....	117	117	178	178	178	Marquette.....	599	599	599	599
Marseilles.....	118, 119	118, 119	191	191	728	Sparland.....	118	118	185, 186	185, 186	185, 186	Marseilles.....	599	599	599	599
Marshalls Landing.....	118	118	182	182	728	Spring Valley.....	118	118	188	188	188	Marshalls Landing.....	599	599	599	599
Martins Landing.....	93	93	728	728	734	Sterling Island.....	93	93	727	727	727	Martins Landing.....	599	599	599	599
Matanzas.....	118	118	181	181	734	Stillman Valley.....	94	94	735	735	735	Matanzas.....	599	599	599	599
Menert.....	120	120	208	208	734	Stoehrs.....	118	118	182	182	182	Menert.....	599	599	599	599
Meredosia.....	117	117	180	180	728	Summit.....	119	119	204	204	204	Meredosia.....	599	599	599	599
Millers Landing.....	93	93	728	728	734	Thomas Landing.....	93	93	728	728	728	Millers Landing.....	599	599	599	599
Millsdale.....	119	119	194	194	734							Millsdale.....	599	599	599	599

Index to elevations and descriptions of bench marks—Continued.

ILLINOIS—Continued.

INDIANA.

Cochran.	84	807	565	Mitchell.	84	566
Delaware.	84	807	565	North Vernon.	84	565
Fort Ritner.	84	807	565	Scottville.	84	566
Lawrenceburg.	84	807	667	Vincennes.	84	566
Lawrenceburg to Olney, Ill.	84	565, 566	565	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		Mondamin	104	839
Beloit	115	164	Montpelier	94	731
Bellevue	97		Montrose	93	728
Blencoe	104		Muscatine	93	730, 731
Buena Vista	96		Nashville	93	728
Buffalo	94		Nebraska City		
Burlington	93		Junetion	103	836
California Junction	104		Nine Mile Island	97	770
Calliope	115	165	North Bellevue	97	771
Cattes	96, 97		North McGregor	96	809
Chatsworth	115	16, 5, 166	Oneva	104	840
Clayton	96		Pacific Junction	103	837
Council Bluffs	104		Percival	103	836
Crescent	104		Port Louisa	93	730
Dubuque	96		River Sioux	104	839
Eagle Point	96		Salix	104	841
Eckard	96		Sargents Bluff	104	841
Edmore	96		Shavondasee Club		
Elm Springs	115	164	Grounds	97	769
Fairport	94		Sioux City	104, 1109, 115	167
Finley Landing	96		Sioux City to Norfolk, Nebr.	109	792, 793
Fort Madison	93		Sioux City to St. Joseph, Mo.	103, 104	833-842
Frenchtown Landing	96	765	Sioux City to Wauertown, S. Dak.	114, 115	158-167
Gordon Ferry	97	770, 771	Sloan	104	840
Guttenberg	96	763	Smiths Station	97	771
Hamburg	103		Snyders	97	770
Hawarden	115	165	Sny McGill	96	762
Haynies	103		South McGregor	96	761
Hentons	104		Spechts Ferry	96	766
Honey Creek	104		Turkey River Junction	9, 6	764
Island 176	96		Viele Station	93	728, 729
Island 207	96		Waupeton	96	765
Island Park	1, 04		West Davenport	94	731
Keokuk	93		Westfield	115	166
Little Maquoketa River	96		Whiting	104	840
Loveland	104				
McPaul	103				
Massey	97				
		724, 728			

Index to elevations and descriptions of bench marks—Continued.

KANSAS.

Place.	Elevation.			Description.			Place.	Elevation.			Description.		
	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.		
Abilene	109				579	Lashmet	108				773		
Abilene to Norfolk, Nebr.	109				647, 653	Lawrence	85					577	
Abilene to Holliday	85				576, 577	Leavenworth	102					827, 828	
Anthony to Bowie, Tex	108, 109					Leavenworth Junc-							827
Anthony to Salina	108			771-774		tion	102						577
Anthony	108		244			Lecompton	85						
Argentine	85				576	Lindsborg	108				771		
Ascot	108			774		Longford	109					648	
Assaria	108			771		Lovewell	109					649	
Atchison	103				829, 830	McPherson	108			771, 772			
Aurora	109				648	McAllister	85					584	
Basil	108			773		Manchester	109					647	
Bavaria	85				580	Manhattan	85					579	
Belvue	85				578	Medora	108			772			
Bridgeport	108			771		Mentor	108			771			
Brookville	85				581	Miltonvale	109					648	
Buffalo Park	85				583	Monotony	85					584	
Bunker Hill	85				582	Monument	85					584	
Carvel	108			773		Morse	87					626	
Castleton	108			773		Nearman	102					826	
Catlin	109				648	New Cambria	108					579, 580	
Cedar Junction	85				576	Newington	87					626	
Chapman	85				579	Oak Hill	109					648	
Club House	85				577	Oakley	85					583	
Collyer	85				583	Oak Mills	103					829	
Concordia	109				826, 827	Ogallah	85					583	
Connors	102					Ogden	85					579	
Courtland	109				649	Olathe	87					626, 627	
Darlow	108			772		Oneonta	109					648	
Desoto	85				576	Page City	85					584	
Dorrance	85				581	Pomeroy	102					826	
Duquoin	108			774		Popes	102					827	
Ellis	85				582	Pretty Prairie	108			773			
Ellis to Salina	85				580-582	Quindaro	102					826	
Ellis to Hugo, Colo.	85				582-585	Quinter	85					583	
Ellsworth	85				581	Rago	108			773			
Eudora	85				576	Rossville	85					578	
Fernie	108			772		Russell	85		243			582	
Fort Leavenworth	102				828	St. George	85					578	
Fort Riley	85				579	St. Marys	85					578	
Gorham	85				582	Salina	108					580	
Groveland	108			772		Salina to Anthony	108						
Grainfield	85				833	Salina to Ellis	85					580-582	
Grinnell	85				583	Salina to Solomon	108					579, 580	
Grover	85				583	Sharon Springs	85					584	
Harper	108			774	577	Silver Lake	85					578	
Hannum	109				648	Solomon	108, 109					808	
Hays	85				582	Solomon to Salina	108					579, 647	
Hilton	108			771		Spring	109					579, 580	
Holiday	85, 87				576, 627	Sulphur Springs	109				781		
Holiday to Abilene	85				576-579	Talmage	109					648	
Holiday to Harrisonsonville, Mo.	87				625-627	Tecumseh	85					647	
Holiday to Kansas City, Mo.	85				575, 576	Terra Cotta	85					577	
Homer	85				582	Topeka	85					581	
Huscher	109				648	Turkey Creek	85					577, 578	
Hutchinson	108			772		Varner	108					584	
Inman	108			772		Victoria	85					582	
Johnstown	108			771		Wade	102					582	
Junction City	85				579	Wakeeney	85					583	
Kackley	109				649	Walker	85					582	
Kanopolis	85				581	Wallace	85					584	
Kansas City	85, 102				825, 826	Warnego	85					578	
Kickapoo	103				828, 829	Weaver	85					576	
Kingman	108			773		Webber	109					649	

Index to elevations and descriptions of bench marks—Continued.

KENTUCKY.

Elevation.				Description.				Elevation.				Description.			
Place.	This publication.	Rept. 1903.	Rept. App. 3.	This publication.	Rept. 1903.	Rept. App. 3.	Rept. App. 8.	Place.	This publication.	Rept. 1903.	Rept. App. 3.	This publication.	Rept. 1903.	Rept. App. 3.	Rept. 1899. App. 8.
Alexander.		464				598		Hillenmeyer.		527				624	
Alpine.		527		629.				Hinton.		527				623	
Arlington.		464				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.		327		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				627	
Covington.		326		622				Newport.		526				622	
Crittenden.		527		623				Nicholasville.		527				625	
Crescent Springs.		526		622				Norwood.		527				628	
Danville.		527		626				Pineknot.		528				629	
Dixon.		526		622				Pitlaski.		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.		404				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.	80					683	
Acme to Barbin Landing.	88		131					Bayou Dorcheat.	88					670	
Acme to Jonesville.	88					381		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			672		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	
Arcadia.	88					669		Bodeau.	88					670	
Archibald.	88					679		Bodeau to Monroe.	88					668-670	
Archibald to Concordia.	88, 89					679-681		Boeuf River.	89		132				
Archibald to Columbia.	89		132					Bonita.	90					690	
Archibald to Rayville.	88					679		Bonners Plantation.	88					670	
Ashwood.	92, 93		144					Bougere.	92		137			608	
Bank Smith Place.	89					682		Boyce.	88					672	
Barbin Landing.	88		131					Brooks.	91				618		
Barbin Landing to Acme.	88		131					Bullitt Bayou.	92		140, 141				
Barbin Landing to Smithland.	88					673-675		Burke.	88					679	
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. Teele. Plantation.	87						
Baton Rouge.	91					{ 611, 613 }		Calhoun.	88					610	
Baton Rouge to New Orleans.	91		134-136			607-612		California.	87					669	
Baton Rouge to Smithland.	91, 92					612-619		Campo Bello Plantation.	88					675	
Bayou Bartholomew.	90					689, 690		Campi.	88					670	
								Carpenter.	87					671	
								Carrollton.	91		134	607, 608	603, 667		
								Cash Plantation.	88					670	
								Caspiana Landing.	88					670	
								Catahoula Shoals.	88					678	
								Charleville.	89		132				
								Celestine l'plantation.	91		136				
								Chef Menteur.	88				606		
								Cheniere.	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.	
Choudrant.	88				669		Good Hope Plantation.	91		135			
Clayton.	89				680		Gordon.	87				675	
Coles Landing.	88				678		Grand Bend.	88				672	
Colfax.	88				672		Greenville.	89				680	
College Landing.	91			135			Greenwood.	109			786		
Colomb.	91				610		Griffin.	93		145			
Columbia.	88, 89				678		Hahnville.	91			608		
Columbia to Archibald.	89			132			Hamburg.	88				674	
Columbia to Jonesville.	88				678-679		Hardscrabble Landing.	88				681	
Columbia to Monroe.	88				677, 678		Hard Times Landing.	92		143, 144			678, 679
Concordia.	88, 89				676, 679		Harrisonburg.	88				670	
Concordia to Archibald.	88, 89				680, 681		Haughton.	88				680	
Concordia to Jonesville.	88				679		Helena.	89				611	
Concordia to Vandalia.	88				679		Hendersons Landing.	87				681	
Convent.	91			610	676, 677		Hendersons Mill.	88				681	
Copeland.	89				680		Hermitage.	91			615, 616	609	604, 605
Cottingham Landing.	88				678		Hester.	91		135			
Coushatta.	88				671		Holly Grove.	89		132			
Crew Lake.	87				675		Holly Grove Landing.	89				676	
Crichtons Plantation.	88				671		Holly Ridge.	87				670	
Crowville.	88		131				Howard.	88				682	
Curtis.	88		131				Hurricane Bluff.	89				682	
Cypress City.	89				680		Jeters Landing.	88				681	
Dallas.	87				676		Jeters Landing to Shreveport.	88				681, 682	
Danville.	88				678		Jones.	90				690	
David Ferry.	88				673		Jones Bayou.	88				681	
Delhi.	87, 88		131		676		Jones Q. Carter Landing.	88				672	
Delhi to Tensas River.	88				671		Jonesville.	88				679	
Delta.	88		131				Jonesville to Acme.	88				681	
Devall.	87, 93	145, 146	614, 615		610, 636		Jonesville to Columbia.	88				678, 679	
Doyle.	91				670		Jonesville to Concordia.	88				679	
Dubberly.	88		131		669		Jewella.	109			786		
Duck Port Plantation.	87				610		Kenner.	91		135			
Dunns Landing.	88				671		King.	93		144, 145			680
Eastpoint.	88				671		Kirks Ferry.	89				676	
Eden.	89				679		Lake One.	87				680	
Egg Bend Landing.	88	130			673		Lacour.	91			619		
Elam.	89				680		Landerneau.	89				680	
Echo Plantation.	87				610		La Place.	91		135			
Ennis.	91		619				L'Argent.	92		141			
Eva.	88				681		Lee Bayou.	89				680	
Fairchilds Island.	92		141				Lindgrove Landing.	90				690	
Fairmount.	88				672		Lobdell.	91			614		
Fairview.	92		137				Loggy Bayou.	88				671	
Farmererville.	89				683		Lotown.	88				677	
Farmererville to Glendora.	88				683		Lotus Landing.	88				670	
Fishtrap Shoals.	89				683		Lums.	88				681	
Fish Pond.	92	137, 138					Lutcher.	91		135	609		
Florence.	89				680		McClures Landing.	88				681	
Fort Macomb.	91		606				Mable.	92		141			
Frank Pierre Creek.	89				684		Mangham.	89				679	
Frogmore.	88				679		Mansura.	88				673	
Garyville.	91	135					Marksville.	88		131		674	
Geismar.	91		610				Merrick.	88				683	
Gibsland.	88				669		Mites.	91		136			
Gibsons Landing.	88		609, 678				Mill Bayou.	89				683	
Gilbert.	89				680		Millers Bluff.	89		134			
Gilbert to New Light.	89		131				Millikens Bend.	87				610	
Girard.	87				675		Monroe.	88				{ 668, 669	677
Glendora.	89		809		682		Monroe to Bodeau.	88				668-670	
Glendora to Farmererville.	89				683		Monroe to Columbia.	88				677-678	
Goldman.	92		142				Monroe to Parkeville.	88				682	
							Monroe to Rayville.	87, 88				675	

Index to elevations and descriptions of bench marks—Continued.

LOUISIANA--Continued.

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.	
Adamstown	122		220			Hagerstown to Harrisburg, Pa.	84					560
Alberton	121		218			Halethorpe	121		216			
Alexandria Junction	121		215			Halpine	106			729		
Altamont	125		237			Hancock	84					561
Ammendale	121		216			Hancock to Cumberland	84, 107		734-737			561
Annapolis		470			642, 643	Hancock to Hagerstown	84					
Annapolis Junction	121		216			Hancock to Washington Junction	107			730-734		
Annapolis to Washington, 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			Holmesville	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 Station	122		219			Little Orleans	84					561
Buck Lodge	106			730		Lowndes	125			236		
Capitol View	106			729		McKenzie Station	125			236		
Catoctin	107			731		Marriottsville	121			216		
Cedar Cliff	125		236			Montevideo	121			216		
Cherry Run	84				561	Monrovia	122			219		
Cloppers	106			729		Morgan	121			218		
College Park	121		215			Mountain Lake Park	125			237, 238		
Contee	121		216			Mount Airy Junction	121			219		
Crabtree	125		237			Mount Savage Junction	107				737	
Cresap	125		236			Mount Winans	121			217		
Cumberland	84, 107		236	736, 737	561	Muirkirk	121			216		
Cumberland to Amblersburg, W. Va.	125					North Branch	107				736	
Cumberland to Foley, Pa.	107			737, 738		Oak Crest	121			216		
Cumberland to Hancock	84, 107					Oakland	84, 125		238, 244			562
Darby	106			730		Oella	121			218		
Davis	121		218			Oldtown	84					561
Dawson	125		236			Orange Grove	121			217		
Deer Park	84, 125		237		562	Pinto	125			236		
Derwood	106			729		Plane No. 4	121			219		
Dickerson	107			730		Point of Rocks	87, 107				730	627
Dorsey	121		216			Potomac Station	125			236		
Doubs	122		220			Rawlings	125			236		
Elk Ridge	121		216			Reels Mill	122			219		
Ellerslie	107			737		Relay	121			216, 217		
Elliott City	121		218			Relay to Baltimore	121			216, 217		
Evitts Creek	107			736		Relay to Washington, D. C.	121			215, 216		
Frankville	125		237			Relay to Washington Junction	121, 122			217-220		
Frederick	122		219			Riverdale	121			215		
Frederick Junction	122		219			Rives	121			215		
Gaither	121		218			Robert Station	125			236		
Gaithersburg	106			729		Rockville	106				729	
Garrett Park	106			729		St. Denis	121			216		
Germantown	106			729, 730		Savage Station	121			216		
Gorsuch	121		218			Seneca	87					627
Gray	121		218			Silver Spring	106				729	
Great Falls	87				627	Skipnish	125			238		
Hagerstown	84				560	Sunnyside	121			215		
Hagerstown to Georgetown, D. C.	87				627, 628	Swanton	125			237		
Hagerstown to Hancock	84				560, 561	Sykesville	121			218		
						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.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
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, 627	
Washington Junction to Hancock.....	107				730-734		Whites Ferry.....	87				560, 561	
Washington Junction to Relay.....	121, 122			217-220			Williamsport.....	84				643	
Washington Junction to Washington, D. C.....	106, 107				728-730		Wilson.....		470				

MICHIGAN.

Algoma.....	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			844		
Detour.....	536			645, 646			Mount Clemens.....	535			845		
Detour to Iroquois.....	536			645-651			New Baltimore.....	535			842		
Detroit.....	535			644	842-844		New Haven.....	538			653		
Detroit Junction.....	533				842		Newport.....	532			842		
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 Dealer, Ohio.....	532			653-656			Sand Beach.....	535			651, 652		
Gibraltar to Trenton.....	535			644	842, 843		Sault Sainte Marie.....	536			648-650		
Grossepont.....	535				844		Schlesser.....	536			646		
Grossepont Farms.....	535				845		Sibley.....	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, 533			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		783
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.			
Browns Hill	100				788	Hull	99			506							
Carlisle	116		168			Hunters	98			588							
Carlton	100				786	Island Lake	98			587							
Cass Lake	98.99		590, 593			Island No. 1	98			784							
Cass Lake to Brainerd	98		586-590			Island No. 18	94			784							
Cass Lake to Lake Itasca	98.99		590-593			Island No. 22	98			740							
Cass Lake to Grand Rapids	99		593-598			Itasca	97			782							
Cedar Brook, mouth of	98				785	Jenkins	98			777							
Centerville	100				789	Keplers Coulee	95			746							
Central Point	95				745	Keetle River	100			787							
Childs	114		153, 154			Kings Coulee	95			746, 747							
Clearwater	97				779	Kittson	116		170								
Clinton	114		156			La Crescent	95			754							
Cohasset	99		596			Lake Itasca	99			592, 593							
Collegeville	114		149			Lake Itasca to Cass Lake	98.99			590-593							
Collis	114		155			La Prairie	98			597							
Crawford	116		169			La Salle River, mouth of	99			592							
Crookston	116		170, 171			Lake City	95			746							
Cuba	99				753	Lake Side	95			744, 745							
Dakota	95				753	Lamoille	95			752							
Dalton	115		167, 168			Lawndale	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	Malty	99			592							
East St. Cloud	97, 113		148		779	Melhy	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			753, 754	Minneapolis	97			775, 776							
Evansville to St. Cloud	113, 114		148-152			Minneopa	95			752							
Evansville to Stephen	115, 116				785, 790	Mississippi	100		147, 148								
Evansville to Watertown, S. Dak.	114		152-158			Mission Creek	100			788							
Farris	99				790	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							
Freeport	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			Oscego	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				784	Pine River	98			784							
Hereford	114		153		784	Point Douglas	94			741							
Highwood	94				784	Pokegama Lake	99			596, 597							
Hinckley	100				787	Portage	100		147								
Homer	95				787	Prospect Hill	99			592							
Hubert	98				787	Pullman	94			739, 740							
					787	Rabbit River, mouth of	98			784							
					787	Red Rock	94			739							
					787	Red Wing	94, 95			743, 744							
					787	Reeds Landing	95			747							

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.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		
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		Starke.....	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				Teepeeota Point.....	95			748		
St. Augusta.....	97				779		“The Rapids”.....	99			592		
St. Cloud.....	97, 113		148, 149		779, 780		Thomson.....	100				786	
St. Cloud to Brainerd.....	114						Thorsborg.....	114		152			
St. Cloud to Evansville.....	97, 98				779-783		Tintah.....	114		153			
St. Cloud to St. Paul.....	113, 114		148-152				Toxhead Rapids.....	98			784		
St. Paul.....	97				774-779		Verna.....	100		148			
St. Paul.....	94, 97				737, 738,		Wabasha.....	95			747, 748		
St. Paul.....	100				775, 790		Wacouta.....	95			744		
St. Paul to Duluth.....	100				785-790		Waldeck.....	99		146, 147			
St. Paul to St. Cloud.....	97				774-779		Walker.....	98			588, 589		
St. Paul to Savanna, Ill.....	94-97				737-774		West Duluth.....	116		171		785	
St. Paul Park.....	94				739, 740		West Union.....	114		150			
St. Joseph.....	114		149				Wheaton.....	114		155			
Sandstone Junction.....	100				787		Wheatville.....	116		170			
Sauk Center.....	114		150				White Bear.....	100			790		
Sauk Rapids.....	97				780		Wilkinson.....	98			589, 590		
Schley.....	99			593, 594			Willow River.....	100			787		
Shirley.....	116		171				Winona.....	95			751, 752		
Short Line Park.....	100				786		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 Tuscum-bia, Ala.....	530, 532		642-644		700-702	
Biloxi.....	90	463	604, 605	591, 592	De Soto.....	463					594
Biloxi to Mobile, Ala.....	463			591, 592	Edwards.....	87					635
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 Vicksburg, La.....	92		136-140			
Brandon.....	87			639	Fort Loring.....	90					693
Bucatunna.....	463			593	Friar Point.....	90					694, 697, 698
Bucks Landing.....	531, 532			708	Friar Point to Clarksdale.....	90					697, 698
Burnsville.....	530, 532		643	700	Friar Point to Memphis, Tenn.....	90					698
Calmar.....	90			692	Friar Point to Winklers Landing, La.....	90					694-696
Carsons.....	90			695	Glendale.....	90					698
Childers.....	90			696	Glenora Plantation.....	87					612
Chinchuba.....	91			606							
Chunkeys.....	87			640							
Claiborne.....	91			606							
Clarkshurg.....	87			639							

Index to elevations and descriptions of bench marks—Continued.

MISSISSIPPI—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.
Graham	87				640	Quitman	pages.	463	pages.	594	
Greenfield	87				639	Rankin	87			639	
Greenville	87, 90				612, 691,	Refuge	87			612	
Greenville to Vicksburg	87				697	Refuge Plantation	87			612	
Greenville to Vicksburg via Greenwood	90				610-612	Reserve Plantation	87			611	
Greenville to Wilekersons 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		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 Landing	87				612	Stormville		90		696	
L'Argent	90				692	Sunflower Landing		90		694	
Leota	87				611, 612	Tallulah Landing		87		611	
Longwood Plantation	87				612	Tarbert (opposite, in La.)		92		620	
Lyon	90				698	Tchula		90		693	
Macon		463			594, 595	Terrene		90		695	
Mayersville	87				611	The Bogue		90		694	
Meridian	87	463, 479			594, 640,	Toomsuba		479		714	
Meridian to Corinth		463			714	Tupelo		463		595	
Meridian to Mobile, Ala.		463			594-596	Verona		463		595	
Meridian to Vicksburg	87				593, 594	Vicksburg	87, 90, 93	130, 146		636, 637,	
Meridian to York, Ala.		478, 479			636-640	Vicksburg (Delta)	87, 93			692, 610	
Mhoons Landing	90				713, 714	Vicksburg to Greenville		87		610-612	
Millers Bend	90				699	Vicksburg to Greenville via Greenwood		90		692-694	
Mississippi City	91				691, 697	Vicksburg to Meridian		87		636-640	
Morton	87				601, 668	Vicksburg to Rayville, La.		87		610, 636, 675, 676	
Mound Place	90				639	Vicksburg to Vida-lla, Ia.	92, 93	140, 146			
Natchez	88, 92	139, 140			696	Warfield Point	87			612	
Nebletts Landing	90				677	Waveland	91			602	
Newmans	87				695	Waynesboro		463		593	
Newton	87				638	West Point		463		595	
Ocean Springs	90	463, 523			640	White Harbor	91			601	
Offuts Landing	90				592	Wilkersons Landing	90			696	
Okolona		463			699	Wilkersons Land- ing to Friar Point	90			694-696	
Palmetto Plantation	87				696	Wilkersons Land- ing to Greenville	90			691, 697	
Pass Christian	91				611	Wilkersons Ldg. to Parkerville, La.	90			689-691	
Pearson	87				601	Winchester		463		593	
Pelahatchee	87				639	Yazoo City	90			692	
Port Anderson	90				639	Yazoo River	90			692	
Prentiss	90				695						

MISSOURI.

Adrian	87			624	Arthur	86				624
Alexandria	93			724	Ashburn	93				725
Allenton		459		567	Atherton	102				823
Amazonia	103			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.
Belton	87				626	Franklin	101				813
Berger		459, 503			568, 801	Franklin Island	101				812
Berlin	102				820	Gasonade		459, 504			568, 569,
Big Blue River	102				575, 824	Geigers Landing	101				{ 801, 802
Bigelow	103				834	Glasgow	101		480		810, 811
Birmingham Point		480			722	Grand Eddy					815, 816
Blue Mills Landing	102				823	Grand River	101				817
Bluffport	101				815	Grays Creek	100				808
Bois Brule		480			721	Grays Point		481			723
Boles		502			795, 796	Greenwood	85				574
Bon Homme		502			794	Gregory Landing	93				724
Bonnets Mill		459, 505			570, 805,	Gumbo		501			794
Boonville	101				806	Halls	103				831
Boston	86				812, 813,	Hannibal	93			808	725
Boston to Chester, Ark.	86				814	Harrisonville	87				625
Boston to Harrisonville	86, 87				622, 623	Harrisonville to Boston		86, 87			623-625
Buckhorn Point	101				619-623	Harrisonville to Holliday, Kans.	87				625-627
Bull Rock	100				623-625	Harrisonville to Pleasant Hill	87				625
Butler	86				816	Hernann		459, 503,			{ 568, 800,
California	84				809			504			{ 801
Cambridge	101				624	Hilton	93				725
Canton	93				571	Holden	85				574
Cape Girardeau		481			816	Horton	86				624
Cape Girardeau County					724, 725	Illinois		480			720
Cape Rock		480			723	Independence	85, 102				575, 824
Carondelet		480			574	Irwin	86				623
Carthage	86				720	Isbell		459, 505			570, 805
Centaur		502			622	Jamestown Landing		501			792
Centertown	84				794	Jasper	86				622
Center View	85				571	Jefferson Barracks		480			720
Chamois		459, 504			572	Jefferson City	100	459, 505			{ 570, 571,
Charbonnier Point		501			803			806-808			{ 806-808
Clarksburg	84				804	Jefferson City to Pleasant Hill	84, 85				570-574
Clarksville	93				792	Jefferson City to Kansas City	100-102				807-825
Claysville		100			572	Jefferson City to 12 miles above St. Louis		500-505			791-807
Cliff		480			809	Jefferson City to St. Louis					567-570
Cliff Cave		480			720, 721	Jefferson Station		459			720
Cold Water Creek, mouth of		501			720	Kansas City	85, 102				{ 575, 824,
Cole	84				791	Kansas City to Jefferson City	100-102				{ 825
Coleman	87				571	Kansas City to Pleasant Hill	85				807-825
Columbia Bottom		500			816	Kansas City to St. Joseph					825-832
Commerce		481			791	Kansas City to Pleasant Hill	85				574, 575
Corning	103				723	Kansas City to St. Joseph					575, 576
Courtney	102				834, 835	Kansas City to St. Louis	85				831
Craig	103				823, 824	Kansas City to Tammwick	102, 103				720
Creve Cœur Lake		501			834	Kansas City to Kimpton	85				625
Cromwell Point	101				793, 794	Kansas City to Kingsville	85				574
Curzons	103				816	Kansas City to Knoboster	85				574
Deer Creek		505			833	Labadie		502			573
Dewitt	101				804	La Grange	93				795
Dover	102				817	Lamar	86				623
Drew		501			819, 820	Lamonte	85, 86				573
Dundee		503			794	Langdon	103				835
East Atchison		503			830	Laynesville	101				818
Edwards	101, 102				819	Lees Summit	85				574
Ellotts Landing	101				812	Lexington	102				820, 821
Elston	84				571	Lisbon	101				814, 815
Etlah		459, 503			568, 799,						
Ewing Landing		505			800						
Exeter	86				806						
Fabius River	93				821						
Forbes	103				725						
Forest City	103				833						
Fort Bellefontaine		501			834						
Fortuna	85				791						
					572						

Index to elevations and descriptions of bench marks—Continued.

MISSOURI—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.
Little Blue.....	85				575	St. Louis.....	84	480		567,719,	
Little Blue River.....	85,102				823	St. Louis to Cairo, Ill.....	480,481			720,791	
Lone Tree.....	87				625	St. Louis to Jefferson City.....	459			720-724	
Loose Creek.....		505			805	St. Louis to Odin, Ill.....	84			567-570	
Louisiana.....	93				726	St. Louis to 12 miles above St. Louis.....				566,567	
Malta Bend Landing.....	101				818	St. Louis (12 miles above) to Jefferson City.....	480			719,720	
Marion.....	100,101				809,810	St. Louis (12 miles above) to Grafton, Ill.....	500-505			791-807	
Matthews Landing.....	102				822	St. Paul.....	480			719	
Miami.....	101				817	St. Paul.....	459			567	
Milo.....	86				623	Ste. Genevieve.....	480			721	
Missouri City.....	102				823	St. Marys.....	480			721	
Mona.....		501			794	Salt Creek.....	101			816	
Monett.....	86				621	Sandy Hook Landing.....	101			810	
Monteau Creek.....	101				810	Sarcoxie.....	86			622	
Montserrat.....	85				573	Saverton.....	93			725	
Morrison.....		459,504			569,803	Scott.....	84			571	
Mount Vernon Landing.....	101				811	Sedalia.....	85			573	
Musicks Ferry.....		501			792	Seligman.....	86			621	
Napier.....	103				834	Sheldon.....	86			623	
Napoleon.....	102				822	Shipley Landing.....	505			804,805	
Nevada.....	86				623	Shipley.....	102			822	
New Frankfort.....	101				816	Sibley.....	102			822	
New Haven.....		459,503			568,799	Sibley Bridge.....	102			822	
New Sibley.....	102				823	Smithton.....	85			572	
Nishnabotna.....	103				835	South Point.....	459,502			568	
Nodaway.....	103				833	Stanleys Landing.....	100			796,797	
Northrup.....	102				820	Stevens.....		502		809	
Osage City.....		459,505			570,806	Strasburg.....	85			794	
Otterville.....	85				572	Sugar Loaf Rock.....	100			574	
Overton.....	101				811	Sulphur Springs.....	480			809	
Passaic.....	87				624	Syracuse.....	85			720	
Phelps.....	103				835	Terrapin Island.....	101			572	
Pierce City.....	86				621	Teteseau Bend.....	101			811	
Platin Rock Creek.....		480			720	Tipton.....	84			572	
Pleasant Hill.....	85,87				574	Tower Rock.....		480		722	
Pleasant Hill to Harrisonville.....	87				625	Versailles.....	85			572	
Pleasant Hill to Kansas City.....	85				574,575	Warrensburg.....	85			573	
Pleasant Hill to Jefferson City.....	84,85				570-574	Washburn.....	86			621	
Port Royal.....		502			795	Washington.....		459		568	
Purdy.....	86				621	Washington.....		502,503		797,798	
Quarrytown.....		480			721	Waterloo.....	102			822	
Raymore.....	87				621	Watson.....	103			835	
Reeds.....	86				622	Waverly.....	101			818,819	
Rich Hill.....	86				624	Wayne.....	102			824	
Richland Creek.....	101				615	Wellington.....	102			821,822	
Rocheport.....	101				811	Wentworth.....	86			622	
Rush Tower.....		480			720	West Quincy.....	93			725	
Rushville.....	103				830	White Sand Depot Landing.....	480			721	
St. Albans.....		502			795	Wittenburg.....	480			722	
St. Aubert.....		459,505			569,804	Wolf Point.....	101			811	
St. Charles.....		501			792,793						
St. George.....	103				831						
St. Joseph.....	103				831,832						
St. Joseph to Sioux City, Iowa.....	103,104				833-842						
St. Joseph to Kansas City.....	102,103				825-832						

NEBRASKA.

Ainsworth.....	110			796	Bassett.....	110		796	
Alda.....	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	
Apex.....	109			792		Central City.....	109		651	
Ayr.....	109			650		Chadron.....	110		798,799	

Index to elevations and descriptions of bench marks—Continued.

NEBRASKA—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.	Place.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	Rept. 1899, App. 8.	
Chadron to Orin Junction, Wyo.	110			799, 800			Nacora	109			793		
Chadron to Page	109, 110			795-799			Nenzil	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		Ocnee	109			652		
Cowles	109				649		Omaha	104			837, 838		
Crawford	110			799			Orchard	109			794		
Crookston	110			796, 797			Paddock	109			651		
Dakota City	109			793			Page	109			794		
Doniphan	109				650		Page to Chadron	109, 110			795-799		
Duncan	109				652		Page to Norfolk	109			793, 794		
Eli	110			797			Pierce	109			794		
Emerson	109			792			Plainview	109			794		
Emmet	110			795			Platte Center	109			652		
Fort Robinson	110			799			Ridge	109			792		
Foster	109			794			Rivers	109			650		
Georgia	110			797			Rushville	110			798		
Gordon	110			797, 798			Savage	109			794		
Grand Island	109				650, 651		Shelton	109			651		
Glen	110			799			Silver Creek	109			651		
Guide Rock	109				649		South Sioux City	109			793		
Hadar	109			793			Stuart	110			795		
Hansen	109				650		Superior	109			649		
Hastings	109				650		Tarnov	109			652		
Harrison	110			799, 800			Thacher	110			796		
Havens	109				651		Thummel	109			651		
Hay Springs	110			798			Valentine	110			796		
Hope	109			792			Van Tassel	110			800		
Hoskins	109			792			Wakefield	109			792		
Hubbard	109			793			Wayne	109			792		
Humphrey	109				652		Whitney	110			799		
Irwin	110			797			Winside	109			792		
Johnstown	110			796			Woodlake	110			796		
Lockwood	109				651		Wood River	109			651		
Long Pine	110			796									
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		
Conasconk 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		
Keyport		456		553			Seabright		457		553, 558		
Matawan		456		553			Somerville	84			559		
Metuchen	84			558			South Amboy		456		553		
Morgan		457		558			South Plainfield	84			558		
Navesink H. g. h. lands		456, 457		558									

NEW YORK.

Addison		559		861			Allegany		559		860		
Addison Junction		550		717			Almond		559		860		
Adrian		559		861			Amboy		545		692		
Afton		559		862			Amsterdam		539, 541		682		
Albany	538, 541		661, 677	848			Andover		542		663, 672		
Albany to Buffalo	541-549		677-703				Angola		559		860		
Albion		548		700			Aqueduct Station		563, 564		748		
Alexandria Bay		552		857, 858			Ardsley		541		671, 672		
Alfred		559		860					554		720		

Index to elevations and descriptions of bench marks—Continued.

NEW YORK—Continued.

Index to elevations and descriptions of bench marks—Continued.

NEW YORK—Continued.

Place.	Elevation.			Description.			Place.	Elevation.			Description.		
	This publication.	Rept. 1903.	Rept. App. 3.	This publication.	Rept. 1903.	Rept. App. 3.		This publication.	Rept. 1903.	Rept. App. 3.	This publication.	Rept. 1903.	Rept. App. 8.
Fort Ann.	550, 553			712, 715			Hornellsville to Elmira.	559			724, 725		861
Fort Covington	551			719			Hornellsville to Salamanca.	559			727		
Fort Edward	550, 553			710, 711, 715			Horseheads.	559			727, 728		861
Fort Frederick	550			717			Howes Cave.	559			699, 700		863
Fort Hamilton	456, 580	244	807, 809	555			Hudson.	555			723		
Fort Hunter	539, 541, 542		{ 663, 673, 682				Hudson to Castleton.	555			724, 725		
Fort Miller	550, 553		709, 710				Hulberton.	548			727		
Fort Montgomery	550		717				Hyde Park.	84	456	243	244		556
Fort Plain	539, 541, 543		{ 664, 673, 684				Ilion.	539, 541, 543			666, 675, 686, 687		
Fort Ticonderoga	550		716				Indian Castle.	539, 541, 543			685, 694, 695		
Fort Wadsworth	456				554		Ingalls Crossing.	541			748		
Fowlerville	543		746				Irvington.	564			720		
Fox Ridge	549		705				Jordan.	545			692, 693		863
Frankfort.	539, 541, 543		{ 666, 675, 687		851		Kelleys.	559			690		
Friendship.	559				860		Kirkville.	544			740		
Fulton	540, 541		669, 676				Kirkwood.	562			748		
Fultonville.	539, 541, 542, 543		{ 663, 664, 682, 683		850		Knowlesville.	548			656, 659		
Garrison	554		722				Langdon.	561			660		
Gasport	548		701				Lake View.	563			665, 669		
Genesee Junction	563		745				La Salle.	537, 538			666, 674, 685, 686		
Genesee Valley Junction	563		746				Lewiston.	537, 538			686, 694		
Germantown	555		724				Lewiston Heights.	537			695		
Gifford	456				554		Leonardsville.	562			744		
Glens Falls.	553		711				Linlithgo.	555			724		
Governors Island	456				555, 556		Lisbon.	551			854		
Grass River	551		853				Little Falls.	539, 541, 543			665, 674, 685, 686		
Great Kills.	456		554				Little Valley.	558			860		
Greenbush (Rensselaer)	555		726		848		Liverpool.	550			706		
Greenbush (Rensselaer) to Oswego.	540, 541		670-676				Livingston Creek.	555			724		
Greenbush (Rensselaer) to Poughkeepsie.	554, 555		722-726				Lock Berlin.	546			695		
Greenbush (Rensselaer) to Troy.	555		726, 727				Lockport.	538, 546			659, 701, 702		
Greenbush (Rensselaer) to Vischers Ferry.	555						Long Eddy.	562			741		
Green Island	541		681				Long Island City.	456			557		
Guynard	562		677				Lordville.	562			741		
Hancock	562		742				Louisville Landing.	551			853		
Hancock to Binghamton	561, 562		741				Loyd.	562			742		
Hancock to Poughkeepsie.	562		741-743				Lyons.	546			695, 696		
Hancock to Sidney	562		743				Macedon.	547			697		
Hankins.	562		741				Manlius.	544			690		
Harpersville.	559				862		Maryland.	559			862		
Herkimer.	539, 541, 543		{ 665, 674, 686				Maywood.	562			743		
Higginsville.	540, 544		667, 689		852		Meadville.	546			694		
Highlands.	554, 562		721, 742				Mechanicsville.	550, 552			707, 713, 714		
Hinmanville.	541		676				Medina.	548			700, 701		
Hinsdale.	559				860		Memphis.	545			692		
Hogansburg.	551				852		Middleport.	548			713		
Hogansburg to Coopersville.	550, 551		717-719				Middletown.	562			701, 742		
Hogansburg to Tibbets Point.	551, 552				852-859		Mindenville.	539, 541, 543			665, 674, 685		
Holley.	548		699				Minetto.	540			696, 697		
Holmesville.	562		744				Model City.	537			654		
Honeoye Junction.	563		746				Mohawk.	539, 543			665, 666, 686		
Hornellsville.	559, 563		747		861		Montezuma.	545, 546			694		
Hornells vilie to Charlotte.	562, 563		745-747				Montrose.	554			721		

Index to elevations and descriptions of bench marks—Continued.

NEW YORK—Continued.

Elevation.		Description.						Elevation.		Description.					
Place.	This publication.	Rept. 1903.	This publication.	Rept. 1903.	Rept. 1899.	Place.	This publication.	Rept. 1903.	This publication.	Rept. 1903.	Rept. 1899.				
	App. 3.	App. 3.		App. 3.	App. 8.		App. 3.	App. 3.		App. 3.	App. 8.				
	pages.	pages.	pages.	pages.	pages.		pages.	pages.	pages.	pages.	pages.				
Tivoli.....		554, 555		724		Warners.....		545		692					
Tonawanda.....		537, 549		656, 657, 658, 702, 726, 727, 671, 677, 706		Washington Mills.....		562		743					
Troy.....		540, 541, 555		726, 727, 706-713		Waterford.....		550, 552		706,					
Troy to Greenbush (Rensselaer).....		555		706-713		Watervliet.....		538, 541		707, 713					
Troy to Whitehall.....		550				Waverly.....		559		661, 677				861	
Tunnel.....		559				Wayneport.....		547					697		
Tuscarora.....		563		746		Weedsport.....		545, 549		693, 704					
Unadilla.....		559				Wells Bridge.....		559					862		
Union.....		559				Wellsburg.....		559					861		
Utica.....		539, 540, 541, 543, 562		666, 675, 687, 688, 693, 694, 696-670		West Downing.....		543					860		
Utica to Oswego.....		540		674, 675, 687, 693, 694, 696-670		West Edmeston.....		562		683					
Utica to Sidney.....		562		743, 744		West Monroe.....		540		744					
Utica to Vischers Ferry.....		538, 539		602-666		West Seneca.....		563		744					
Verplanck.....		554		721		West Troy.....		540		669					
Vischers Ferry.....		538, 541, 542		661, 662, 671, 679		Whites.....		563		748					
Vischers Ferry to Greenbush (Rens- selaer).....		538		661		Whitehall.....		550, 554		712,					
Vischers Ferry to Utica.....		538, 539		662-666		Whitehall to Crown Point.....		550		713, 716					
Waddells Point.....		551				Whitehall to Troy.....		550		716, 717					
Waddington.....		551				Whitehall to Water- ford.....		552-554		716-716					
Waites Crossing.....		564		749		Whitesboro.....		540, 543		666, 688					
Walden.....		562		742		Wilburs Basin.....		550		714					
Walton.....		562		743		Willes Point.....		456					558		

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
Catawba.	565	754	Morehead City to Caswell, Tenn.	564-566	751-756
Chapel Hill.	565	753	Morganon.	565	754
Claremont.	565	754	Morrisville.	565	752
Clark.	564	751	Mud Cut.	565	754
Clayton.	565	752	Nebo.	565	754
Cleveland.	565	753	Nelson.	565	752
Conrad.	565	753	Newbern.	564	751
Cove Creek.	564	751	Newport.	564	751
Connelly Springs.	565	754	Newton.	565	754
Durhain.	565	752	Old Fort.	565	754
Dover.	561	751	Olivette.	565	755
Drexel.	565	754	Paint Rock.	566	755
Efland.	565	753	Plott.	565	753
Elmwood.	565	753	Princeton.	565	752
Falling Creek.	564	752	Pomona.	565	753
Garner.	565	752	Raleigh.	565	752
Gibsonville.	565	753	Riverdale.	564	751
Glen Alpine.	565	754	Robeson.	565	752
Goldsboro.	565	752	Rose.	565	752
Graham.	565	753	Round Knob.	565	754
Greensboro.	563	753	Salisbury.	565	753
Greens.	565	754	Selma.	565	752
Havelock.	564	751	Statesville.	565	753
Hickory.	565	754	Swannanoa.	565	754
High Point.	565	753	Thomasville.	565	753
Hildebran.	565	754	Tuscarora.	564	751
Hillsboro.	565	753	University Station.	565	752
Hot Springs.	566	755	Wilsons Mills.	565	752
Isomtown.	565	753			

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.	114	pages.	154	pages.		pages.	114	pages.	153, 154	pages.
Blackmer.....						Fairmount.....					

OHIO.

Akron.....	123		229		660	Columbus Grove.....		533		656
Alexandria.....		533		244	654	Coolville.....	84			563
Alexis.....		532		228		Crescentville.....	534			663
Alliance.....	123		228			Creston.....	124		230	
Alliance to Struth- ers.....	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			Cummingsville.....	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	215	807, 565, 666
Bedford.....	567			762	656	Dennison.....	121			
Belmore.....	532					Deshler.....	124	532		656
Beloit.....	568			764	563	Deshler to Chicago Junction.....	124		232-234	
Belpre.....	84					Duvalts.....	120		213	
Belpre to Chilli- cothe.....	84				563, 564	East Akron.....	568		762	
Belpre to Grafton, W. Va.....	84					East Akron Jct. to Cleveland.....	567		762	
Birds Run.....	121		214		562, 563	East Akron Jct. to East Akron Jct. to Canton.....	567			
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	East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Boughtonville.....	124		231, 232			East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Brice.....	121		213			East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Cambridge.....	121		214			East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Canavaerville.....	84				563, 564	East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Canal Dover.....	124		235			East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Canal Fulton.....	124		234			East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Canton.....	569			765		East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Canton to E. Ak- ron Junction.....		568		762, 763		East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Carlisle.....		533, 534				East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Carrollton.....		533				East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Carthage.....		534				East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Cassels.....	121		214			East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Chicago Junction.....	124		232			East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Chicago Jct. to Greenwich.....	124		231-232			East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Chicago Jct. to Greenwich.....	124		231-232			East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Chillicothe.....	84, 120		212		564	East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Chillicothe to Bel- pre.....	84				563, 564	East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Chillicothe to Cin- cinnati.....	84				564, 565	East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Chillicothe to Portsmouth.....	120		211, 212			East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Chillicothe to Val- ley Crossing.....	120		212, 213			East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Cincinnati.....	84	534			{ 565, 664, 665, 666	East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Cincinnati to Chilli- cothe.....	84				564, 565	East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Cincinnati to Har- riman Jct., Tenn.....		526-528		622-630		East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Circleville.....	120		212, 213			East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Cleveland.....		567		761-762		East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Cleveland to E. Ak- ron Junction.....		567		761, 762		East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Clifford.....	120		212			East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Clinton.....	124		229			East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Clinton Valley.....	84					East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Columbus.....	120		213			East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			
Columbus to Val- ley Crossing.....	120		213			East Akron Jct. to East Akron Jct. to East Akron Jct. to Warwick.....	124			

Index to elevations and descriptions of bench marks—Continued.

OHIO—Continued.

Place.	Elevation.			Description.			Place.	Elevation.			Description.		
	This publication.	Rept. 1903.	This publication.	Rept. 1903.	Rept. 1899.	Rept. App. 8.		This publication.	Rept. 1903.	This publication.	Rept. 1903.	Rept. 1899.	Rept. App. 8.
Kirkwood.....		533				658	Seventeen.....	121			215		
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 Green- wich.....	124			231		
Macedonia.....		567			762		Sullivan to War- wick.....	124			230		
Marietta.....	126			243			Sundale.....	121			214		
Martinsville.....	84					564	Swanders.....	533			658		
Massillon.....	124			234, 235			Tadmor.....	533			660		
Messenger.....	123			229			Taornport.....	121			213		
Miamisburg.....		533				661	Thursfon.....	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 Junc- tion.....	84					564	Truro.....	121			213		
Myersville.....		568			762		Turkeyfoot Junc- tion.....	123			229		
Návarre.....	124			235			Tuscarawas.....	121			215		
New Berlin.....		568			762, 763		Uhrichsville to War- wick.....	124, 125			234-236		
New Comerstown.....	121			215			Uhrichsville to Zanesville.....	121			214, 215		
New Concord.....	121			214			Valley Crossing.....	120			213		
New Philadelphia.....	124, 125			235			Valley Crossing to Chillicothe.....	120			212, 213		
New Salem.....	121			213			Valley Crossing to Columbus.....	120			213		
Newton.....	124			230			Valley Crossing to Zanesville.....	121			213, 214		
Niles.....	123			228			Vera.....	120			212		
North Baltimore.....	124			234			Wakefield.....	120			212		
North Bend.....		534				666	Wapakoneta.....	533			657		
North Jackson.....	123			228			Warwick.....	124			230		
Nova.....	124			231			Warwick to East Akron Junction.....	123, 124			229, 230		
Omega.....	120			212			Warwick to Sulli- van.....	124			230		
Ottawa.....		533				656	Warwick to Uhrichsville.....	124, 125			234-236		
Overpeck.....		534				662	Waverly.....	120			212		
Pauls.....	124			234			West Cairo.....	532			657		
Perrysburg.....		532				655	Weston.....	532			655		
Piketon.....	120			212			White Cottage.....	121			214		
Piqua.....		533				658, 659	Whitfield.....	533			660		
Point Pleasant.....		534				662	Winston Springs.....	534			664		
Portsmouth.....	120			212			Woods Dale.....	534			662		
Portsmouth to Chillicothe.....	120			211, 212			Youngstown.....	123			229		
Port Union.....		534				663	Zaleski.....	84			564		
Port Washington.....	121			215			Zanesville.....	121			214		
Ramey.....	124			231			Zanesville to Uhrichsville.....	121			214, 215		
Rees.....	120			213			Zanesville to Valley Crossing.....	121			213, 214		
Remington.....	84					665							
Renick.....	120			211									
Rensselaer.....		534				664							
Republie.....	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		
Blison.	108		780			Marlow.	108		777		
Caddo.	108		780			Medford.	108		781		
Chickasha.	108		778			Minco.	108		778	779	
Clyde.	108		781			Nimokah.	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		
Gibson.	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. 1903, App. 4.	Rept. 1903, App. 3.		This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, 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			Telocastet.	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			Annville.	84				560
Allegheny Tunnel.	105				872	Aqueduct.	104				868
Allegrrippus.	105				872	Ardara.	105				874
Allentown.	84				559	Ardenheim.	105				871
Allison Park.	123		225			Bagdad.	105				598
Alters Run Bridge.	104				868	Bailey.	104				868
Altoona.	105				872	Bakerstown.	123				225
Anderson.	104				870	Baird.	108				867

Index to elevations and descriptions of bench marks—Continued.

PENNSYLVANIA—Continued.

Place.	Elevation.			Description.			Place.	Elevation.			Description.		
	This publication.	Rept. 1903.	This publication.	Rept. 1903.	Rept. 1899.	Rept. App. 8.		This publication.	Rept. 1903.	This publication.	Rept. 1903.	Rept. App. 3.	Rept. App. 8.
Banning	122			222			Cove Creek	104			222		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		360				865
Benvenue to Ellwood City	123		224-226				Dougal	106			602		
Benvenue to Foley	122, 123		220-224				Downieville	123			225		
Bessemer	108, 122		224			867	Duncannon	104					868
Bidwell	122		221				Durward	104					869
Big Spring Run	105				873		East Brady		560				865
Birmingham	105				871		Easton		84				864
Bixler Water Station	104				869		East Sandy		500				
Blacks Run		560			865		Edenburg	123			227		
Blair Furnace	105				872		Edgecliff		560				865
Blairsville	105, 106			509			Eldri	106			598, 599		
Blairsville Intersection		105			873		Ehrenfeld	105					872
Blairsville Intersection to Brad-dock		105			863, 864		Elfynwild	123			225		
Blairsville Intersection to Harrisburg		104, 105			868-873		Elizabeth Furnace	105					872
Blairsville Intersection to West Penn Junction		105, 106		598, 599			Elgin		564		749, 750		
Bolivar	105				873		Ellwood City	123			226		
Bolivar Junction	105, 106			599			Ellwood City to Benvenue	123			224-226		
Bow	106			599			Ellwood City to Monaca	123			227		
Braddock	107, 122		224		868		Ellwood City to Struthers, Ohio	123			226, 227		
Braddock to Blairsville Intersection	105				873, 874		Emlenton		560				865
Braddock to Ben-ton's Ferry, W. Va.	107, 108				866-868		Erie		560				863, 864
Bradenville	105				873		Erie to Leboeuf		560				863, 864
Brandon		560			865		Eureka	122			223		
Bridgeport	105				870		Evans City	123			225		
Brilliant		560			866		Fairchance	108					867
Brinton	105				874		Fairhope	107			738		
Broad Ford	122		222				Fields		561		738		
Broad Ford Junc-tion	122		222				Fishers Ferry	106			601		
Bryant	123		225				Foley	107			738		
Callery Junction	123		225				Foley to Benvenue	122, 123			220-224		
Canton		561		738			Foley to Cumber-land, Md.	107			737, 738		
Carlisle	84				560		Fombell	123			226		
Carney	105				874		Fort Hill	122			221		
Casselman	122		221				Fostoria	105					872
Celia	123		226				Franklin		560		740		
Chambersburg	84				560		Franklin to Irvine-ton		561		740, 741		
Charleroi	108				867		Franklin to Leboeuf		560				864
Chewton	123		226				Franklin to West Penn Junction		560				864, 865
Christy Park	122		223				Garland		564		750		
Clarks Ferry	106			600			Garrett	122			220, 221		
Coal Valley	108				867		Gallitzin	105					872
Cochranton		560			864		Geiger Point	106			600		
Columbia Cross-roads		561		738			Geneva	123			227		
Colza		564		750			George	105					874
Conemaugh	105				873		Georgetown	106			601		
Conemaugh via-duct	105				873		Gibsonia	123			225		
Confluence	122		221				Glencoe	122			220		
Connellsville	122		222				Glenshaw	123			225		
Cooks Mills	107				737		Glenwood	122			224		
Corry		564		750			Goehring	123			226		
Corydon		561		739			Granville	104					870
Coulter	122		223				Grapeville	105			741		874
Cove	104				868		Graftztown	122			223		
							Grazierville	105					872
							Great Bend (War-ren Co.)		561		739		
							Great Bend (Sus-quehanna Co.)		562				
							Greensburg	105					874
							Greencastle	84					560
							Griffin	122			223		

Index to elevations and descriptions of bench marks—Continued.

PENNSYLVANIA—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.
Gufsey	122		pages.	223			Lower Hillville	560	pages.	865	865
Haggerly Run	105				872		Loyalhanna	105			873
Halifax	106			600			Loyalsock	106			603
Harmony	123		226				McKeesport	122		223	
Harmony Junction	123		226				McKimm's	123		226	
Harrisburg	84, 104				560, 848		McSpadden	122		221	
Harrisburg to Blairsville Inter- section	104, 105				868-873		McVeytown	105			870
Harrisburg to Hagerstown, Md.	84						Macungie	84			559
Harrisburg to Raritan Bay, N.J.	84				558-560		Mahantango	106			601
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			Marketeton	122		221	
Highland	122		224				Mars	123		225	
Hoblitzell	107			737			Mayfield	123		227	
Hornewood	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	
Inglenook	106			600			Millerstown	104			869
Irvineton		561, 564		740, 751			Mill Rift		562		742
Irvineton to Frank- lin		561		740, 741			Millwood	105			873
Irvineton to Le- boeuf		564		749-751			Milton	106		602	
Irvineton to Sela- manaca, N. Y.		561		739-740			Mineral Point	105			873
Irwin	105				874		Monaca	123	227, 244	763	
Jacksons Crossing	105		561		870		Monaca to Ellwood City	123			
Jackstown	105						Montandon	106		602	
Jacobe Creek	122		223				Monterey		560		865
Johnstown	105						Monggomery	106			865
Juniata Bridge	104						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	
Kinzuia		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 Junc- tion	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				860		Ohioopyle	122			869
Leboeuf		560, 564		749	864		Old Ferry Station	104			
Leboeuf to Erie		560			863-864		Old Furnace	123		226	
Leboeuf to Frank- lin		560					Oleopols.		561		740
Leboeuf to Irvine- ton		564		749-751			Outcrop	108			866
Leechburg	105			598			Pack Saddle	105			873
Lewistown Junc- tion		104			869		Parker		560		865
Lilly	105				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	
Loshs Run	104				868		Piney Run	105			873
Lovell		564		750			Pinkerton	122		221	

Index to elevations and descriptions of bench marks—Continued.

PENNSYLVANIA—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.
Ralston.	pages.	561	pages.	738		Troy.	pages.	561	pages.	738
Rankin.	122		224			Trunkeyville.		561		740
Reading.	84					Tunnelton.	106			599
Red Bank.		560				Turtle Creek.	105			874
Reduction.	122		223			Tuscarora.	104			869
Rimerton.		560				Tuttletown.		561		739
River View.	108					Tyrone.	105			871
Roaring Branch.		561		738		Union City.		564		749
Roaring Run.	105			598		Union Furnace.	105			871
Roach.		564		730		Uniontown.	108			867
Robesonia.	84					Upper Middletown.	108			867
Rockland.		560				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				Vanderlanders.				
Ryde.	105			809	870	Bridge.	105			870
Saegerstown.		560				Vandyke.	104			869
St. George.		560				Venango.		560		864
Salina.	105, 106			598		Versailles.	122		223	
Salisbury Junction.	122		220			Vineyard Station.	105			870
Saltsburg.	106			599		Vista.	122		223	
Samson.		560				Wall.	105			874
Sand Patch.	122		220			Warrior Ridge.	105			871
Sang Hollow.	105					Warren.		561		739
Scott Haven.	122		223			Watsonstown.	106		602, 603	
Selinsgrove Junction.	106			601		West Brownsville Junction.	108			867
Shaner.	122		223			West Coolang Park.		562		742
Shamrock.	84			560.		West Ellwood Jct.	123		227	
Sharpsburg.	123		224, 225			West Penn Jct.	105	560		598
Shermans Creek.	104					West Penn Jct. to Blairsville Int.	105, 106			598, 599
Shippensburg.	84					West Penn Jct. to Franklin.		560		864, 865
Shoemaker.	105					West Ellwood City.				
Shuindia.		562		742		West Pittsburg.	123		226	
Six pes.	122		221			West Newton.	122		223	
Smithton.	122		223			Wheeling Jct.	122		224	
Snedekerville.		561		738		White Rock.	106			599
Social Hall.	106			599		Wildwood.	123	560	225	866
South Connellsburg.	122		222			Wilmore.	105			872
South Oil City.		561		740		Williams.	107			737
Spring Creek.		564		750		Williamsport.	106	561		603, 604, 739
Stewarton.	122		222			Williamsport to Elmira.		561		738, 739
Sugar Creek.		560				Williamsport to Harrisburg.				
Sugar Run.	561			864		Wittmer.	106			599, 604
Summit.	123		227	739		Womelsdorf.	123			
Sunbury.	106			763		Woods Run.	108			867
Susquehanna.		562		741		Woodvale.	105			873
Suter.	122		223			Youngsville.		564		751
Thompsonstown.	104					Zelienople.	123		226	
Thomson.	108			869						
Tidioute.		561		867						
Tionesta.		561		870						
Tippencanoe.	108									
Tipton.	105									
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 to Evansville, Minn.	114		152-158	
Harrisburg.	115		164		Watertown to Sioux City, Iowa.	114, 115		158-167	
Hazel.	114		159		Wentworth.	115		162	
Hudson.	115		165		White Rock.	114		154, 155	
Jefferson.	115		166, 167						
Lake Preston.	115		160, 161						
Madison.	115		161, 162						

Index to elevations and descriptions of bench marks—Continued.

TENNESSEE.

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.
Annadel.						Hinches Switch	567		761		
Ashport.	93		528		630	Hixson	528		634		
Athens.			566		756	Hodges	566		756		
Bailey.	87					Island No. 40	93				718
Bethel Springs.			464		596	Isham.	528		629		
Black Fox.			567		761	Jackson.	464				597
Blackoak.			528		631	Knoxville.	566		756		
Blue Springs.			566		757	Knoxville to Harriman Junction	528		630, 631		
Booths Point.	93				716	Lancing.	528		630		
Booths Point Landing.	93				716	La Grange.	87				641
Boyd's 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
Buntn.	87				642	McCarty.	567		761		
Cardiff.			528		632	McNairy.	464				596
Caswell.			566		756	Martin.	464				597
Caswell to Morehead City, N. C.	564-566			751-756		Mascot.	566		756		
Cave Springs.			528		634	Medina.	464				597
Charleston.			566		756	Memphis.	87, 93				642, 718
Chattanooga.			528, 567		634, 761	Memphis to Cairo, Ill.	93				715-718
Chattanooga to Cleveland.			567		761	Memphis to Corinth, Miss.	87				641, 642
Chattanooga to Decatur, Ala.			528, 529		634-639	Memphis to Friar Point, Miss.	90				698-700
Chattanooga to Harriman Junction.			528		631-634	Middleton.	87				641
Chewalla.	87				641	Milan.	464				597
Cleveland.			566		756	Morrstown.	566		755		
Cleveland to Brunswick, Ga.			566, 567		756-761	Moscow.	87				641
Cleveland to Chattanooga.			567		761	Mossy Creek.	566		756		
Cleveland to Wright.			566		756	Mott Landing.	93				716
Clinton.			528		631	Mouse Creek.	566		756		
Colerville.	87				642	Newport.	566		755		
Concord.			566		756	Nemo.	528		630		
Cypress Creek.	87				641	New River.	528		629		
Daisy.			528		633	Oakfield.	464				597
Dayton.			528		633	Oakdale.	528		630		
Deorio.			566		755	Oliver Springs.	528		631		
Dossett.			528		631, 637	Oneida.	528		629		
Elverton.			528		631	Ooltewah Junction.	567		761		
Emory Gap.			528		632	Paynes Landing.	93				717
Evensville.			528		633	Philadelphia.	566		756		
Falcon.			463		596	Pinson.	464				596
Forked Deer Island.	93				717	Pittsburg Landing.	532				708, 709
Fort Pillow Landing.	93				717	Pittsburg Landing to Riverton Junction, Ala.	531, 532				
Fulton.	93				717	Plum Point.	93.				707-709
Germantown.	87				717	Pocahontas.	87				71
Glen Alice.			528		632	Powell.	528		631		7
Glen Mary.			528		629	Ramer.	463				641
Grand Junction.	87				641	Randolph.	93				
Graysville.			528		633	Rankin.	566		755		
Greenfield.			464		597	Rathburn.	528		633		
Hales Point.	93				716	Reelfoot Landing.	93				716
Hamburg Landing.			532		708	Retro.	528		633		
Harriman.			528		630, 631	Riceville.	566		736		
Harriman Junction.			528		630	Richardsons Landing.	93				717
Harriman Junction to Chattanooga.			528		631-634	Robbins.	528		629		
Harriman Junction to Cincinnati, Ohio.			528-528		622-630	Rossville.	87		642		
Harriman Junction to Knoxville.			528		630, 631	Rockwood.	528		632		
Heiskell.			528		631	Roddy.	528		632		
Helenwood.			528		629	Sale Creek.	628		633		
Henderson.			464		596	Salsbury.	87				641
						Sharon.	464				597
						Sheffield.	528		632		
						Shelinound.	529		635		
						Spring City.	528		632		
						Sunbright.	528		630		
						Sweetwater.	566		756		

Index to elevations and descriptions of bench marks—Continued.

TENNESSEE—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.
Tasso.		566		756		White Pine.		566		755	
Falbot.		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.

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.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1904, App. 7.	Rept. 1903, App. 3.		
Lamarque.	pages.	117	pages.	175	791		San Marcos.	pages.	116	448			
Lampasas.		575					Sayers.	pages.	116	444, 445			
Lampasasto Temple.		575					Scofield.		575				789
Lasater.	109						Scroggins.	109					785
League City.	117		175				Sealy.	117		173			
L esburg.	109						Seguin.	116		449			
L etitia.	117		174				Smithville.	116		446			
L ittig.	116				443		Smithville to Holland.	116		442-446			
L ittle River.		575					Smithville to New Braunfels.	116					
L ockhart.	116			447, 448			Smithville to Galveston.	116		446-450			
L orena.		575					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.							Temple to Fort Worth.		575				788-790
New Ulm.	116			446-450			Temple to Holland.		575				791, 792
Nolanville.	117		173				Temple to L ampasas.		575				790, 791
Norwood.	109						Texas City Jct.	117		175			
Pickton.	109						Troy.		575				790
Pittsburg.	109						Upton.	116		446			
Plum.	117		172				Virgil.		574				787
Primros Spur.	117		172				Virginia Pt.	117		176			
Primrose.		574					Waco.		575				789
Redrock.	116			447			Waskom.	109					786
Reedville.	116			448			Waples.		575				788
Rhome.		573					Webster.	117		175			
Ringgold.	108						West.		575				789
Rockwall.	109						West Point.	117		172			
Rosanky.	116			446			Winnisboro.	109					785
Rowlett.	109												
Royse.	109												
Saginaw.		573											
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.	This publication.	Report 1903, App. 3.	This publication.	Report 1904, App. 6.	This publication.	Report 1903, App. 3.	
Bear River.	pages.	111	pages.	425	425		Honeyville.	pages.	111	425			
Brigham.		111		425			Hot Springs.	pages.	111				
Cache Junction.		111		425			Morgan.	pages.	111				
Castle Rock.		111		423			Ogden.	pages.	111				422, 423
Cornish.		111		425			Ransom.	pages.	111				425
Croydon.		111		423			Strawberry.	pages.	111				423
Devils Gate.		111		423			Uinta.	pages.	111				423
Dewey.		111		425			Wasatch.	pages.	111				423
Echo.		111		423			Willard.	pages.	111				425
Emory.		111		423			Wyuta.	pages.	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.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1903, App. 3.	This publication.	Rept. 1899, App. 8.	
Accotink.	pages.	468	pages.	629	629		Fort Monroe.	pages.	468				630
Alexandria.		468			630		Fredericksburg.	pages.	468				629
Ashland.		468					Guinea.	pages.	468				628
Brooke.		468			629		Lanexa.	pages.	468				631
Cameron Run.		468					L aurel.	pages.	468				628
Diascond.		468			631		Lee Hall.	pages.	468				630
Doswell.		468			628		Milford.	pages.	468				628

Index to elevations and descriptions of bench marks—Continued.

VIRGINIA—Continued.

WASHINGTON.

Elevation.				Description.				Elevation.				Description.				
Place.	This publication.	Report 1903.	This publication.	Report 1903.	Report 1905.	Place.	This publication.	Report 1903.	This publication.	Report 1905.	Report 1903.	Place.	This publication.	Report 1903.	Report 1905.	
	App. 3.	App. 3.		App. 3.	App. 3.		App. 3.	App. 3.		App. 3.	App. 3.		App. 4.	App. 4.	App. 3.	
Alalfa.	113	pages.	pages.	pages.	237	Maywood.	113	pages.	pages.	pages.	pages.	Maywood.	113	pages.	233	
Argo.	113				231	Nelson.	113					Argo.	113		235	
Auburn.	113				232	North Yakima.	113					Auburn.	113		236, 237	
Badger.	113				239	Palmer Junction.	113					Badger.	113		233	
Black River.	113				231	Pasco.	113					Black River.	113		239, 240	
Bonup.	113				234	Prosser.	113					Bonup.	113		238	
Bristol.	113				235	Ravensdale.	113					Bristol.	113		232, 233	
Byron.	113				238	Relief.	113					Byron.	113		239	
Canton.	113				233	Roza.	113					Canton.	113		236	
Canyon.	113				236	Status.	113					Canyon.	113		237	
Chandler.	113				238	Seattle.	113					Chandler.	113		231	
Clealum.	113				235	Seattle to Owyhee,	111-113					Clealum.	113			
Covington.	113				232	Idaho	111-113					Covington.	113		218-241	
Eagle Gorge.	113				233	Selah.	113					Eagle Gorge.	113		236	
Easton.	113			245	234	South Seattle.	113					Easton.	113		231	
Ellensburg.	113				235, 236	Stampede.	113					Ellensburg.	113		234	
Gibbon.	113				238	Teanaway.	113					Gibbon.	113		235	
Hot Springs.	113			245	233	Thomas.	113					Hot Springs.	113		232	
Hunts Junction.	113				230, 240	Thorop.	113					Hunts Junction.	113		235	
					241	Thrall.	113						Thrall.	113		236
Kennewick.	113				239	Toppenish.	113					Kennewick.	113		237	
Kent.	113				232	Umtanum.	113					Kent.	113		236	
Kiona.	113			238,	239	Wapato.	113					Kiona.	113		237	
Lester.	113			234		Wenas.	113					Lester.	113		236	
Mabton.	113				238	Weston.	113					Mabton.	113		234	
Martin.	113				234	Yakima City.	113					Martin.	113		237	

WEST VIRGINIA.

Index to elevations and descriptions of bench marks—Continued.

WEST VIRGINIA—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
Board Tree.	126		242		562	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				850	Martinsburg.	107		732		
Cherry Run.	107			733		Metz.	126		241		
Cogley.	126		242			Miller.	107		733		
Colfax.	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	Okonoko.	107		735		
Dans Run.	107			736		Opequan.	107		732		
Denver Station.	126		242			Orleans Road.	107		734		
Dog Gully.	107			735		Parkersburg.	84				563
Downs.	126	240, 241				Patterson Creek.	107		736		
Duffields.	107			732		Patterson Creek.	Cut-off.	107	736		
Engle.	107			731		Paw Paw.	107		735		
Fairmont.	125		240		866	Petroleum.	84				563
Farmington.	126		240			Piedmont.	125		237		
Fetterman.	125		239			Powells.	107, 125		239		866
French.	107			736		Riggs.	125		238		
Gaston Junction.	125		240			Rinard.	125		238		
Glen Easton.	126		242			Rockwells Run.	107		734		
Glover Gap.	126		241			Rodamers.	125		238		
Grafton.	84, 125		239		562	Roslys Rock.	126	242, 243			
Grafton to Am- blersburg.	84, 125	238, 239			562	Round Top.	107		734		
Grafton to Belpre, Ohio.	84		245		562, 563.	Rowlesburg.	84, 125	238, 244	245		562
Grafton to Bentons Ferry.	125	239-240			866	Shenandoah Junc- tion.	107		732		
Grafton to Am- blersburg.	84, 125	238, 239			562	Sir Johns Run.	107		734		
Great Cacapon.	107			734		Sleepy Creek.	107		733		
Green Spring.	107			736		Tabb.	107	238	732, 733		
Hammond.	125		239			Terra Alta.	125		239		
Hancock.	107			733, 734		Thornton.	125		239		
Hansrotte.	107			735		Tunnelton.	125		245		
Hardman.	125		239			Uffington.	107				866
Harpers Ferry.	107			731		Underwood Station.	126		240		
Hobbs.	107			732		Valley Falls.	107, 125		239		866
Hundred.	126		241			Van Clevesville.	107				866
Ironton.	125		239			Van Vorhis.	108				866
Independence.	125		239			West End.	125		245		
Katy.	126		240			West Union.	84				563
Kerneysville.	107			732		West Virginia Cen- tral Junction.	125		237		
Keyser.	84, 125	236, 237	244		562	Woodmont.	107		734		
Kingmont.	125		240			Woodruff.	126		242		

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		Pucketville.	94				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		Warner's Landing.	95				756
Milwaukee.		536		653		Winoona, Minn., opposite.	95				750
Morgans Coulee.	94			742							

Index to elevations and descriptions of bench marks—Continued.

WYOMING.

Place.	Elevation.					Place.	Elevation.				
	This publication.	Rept. 1903, App. 3.	Rept. 1904, App. 6.	Rept. 1903, App. 3.	Rept. 1899, App. 8.		This publication.	Rept. 1903, App. 3.	Rept. 1904, App. 6.	Rept. 1903, App. 3.	Rept. 1899, App. 8.
Ah Say.....	111		421		803	Keeline.....	110		422		800
Allen.....	110		424			Knight.....	111		424		646
Altamont.....	111				645	Laramie.....	110				
Athol.....	110					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		
Bridger.....	111		424			Node Ranch.....	110				800
Bryan.....	111		422			Orin Junction.....	110				802
Buckhorn.....	110				802	Orin Junction to Chadron, Nebr.....	110				799, 800
Carter.....	111		424			Orin Junction to Cheyenne.....	110				
Cassa.....	110				802	Otto.....	110				800-802
Cheyenne.....	110				808	Peru.....	111		422		646
Cheyenne to Denver, Colo.....	110				643-645	Point of Rocks.....	111		420, 421		
Cheyenne to Orin Junction.....	110				800-802	Rawlins.....	110				804
Cheyenne to Rock Creek.....	110				645-647	Red Buttes.....	110				646
Chugwater.....	110				801	Red Desert to Rock Creek.....	110				803-805
Church Buttes.....	111		424			Red Desert to Pocatello, Idaho.....	110, 111		421-426		
Como.....	110				803	Riner.....	110				804
Coopers Lake.....	110				646	Rock Creek.....	110				803
Creston.....	110				805	Rock Creek to Red Desert.....	110		420		647
Dale Creek.....	110				646	Rock Creek to Cheyenne.....	110				645-647
Daleys Ranch.....	110				8004	Rock Springs.....	111		421		
Dana.....	110				8004	Salt Wells.....	111		421		
Diamond.....	110				8001	Shawnee.....	110				800
Edson.....	110				8004	Sherman.....	110				646
Elkhurst.....	111		424			Silver Crown.....	110				
Evanston.....	111		423, 424			Solon.....	110		800, 801		
Fillmore.....	110				805	Spring Valley.....	111		424		
Fisher.....	110				800	Table Rock.....	111		420		
Fort Steele.....	110				804	Tipton.....	110		420		
Garrett.....	111		424			Uva.....	110				802
Glendo.....	110				802	Van Tassel.....	110				
Granger.....	111		422, 424			Volente.....	110				800
Granite Canyon.....	110				646	Walcott.....	110				801
Greenriver.....	111		422			Wamsutter.....	110				804
Greenville.....	110				804	Wendover.....	110				805
Hallville.....	111		421			Wheatland.....	110				802
Hampton.....	111		424			Wilcox.....	110				803
Hanna.....	110				803	Wilkins.....	111		422		
Harper.....	110				647	Wyoming.....	110				646
Hartville Junction.....	110				802						
Horse Creek.....	110				801						
Howell.....	110				646						
Iron Mountain.....	110				801						
Islay.....	110				801						

O