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RESULTS OF SPIRIT LEVELING
IN WEST VIRGINIA

1909 AND 1910

R. B. MARSHALL, CHIEF GEOGRAPHER

WORK DONE IN COOPERATION WITH THE STATE OF
WEST VIRGINIA



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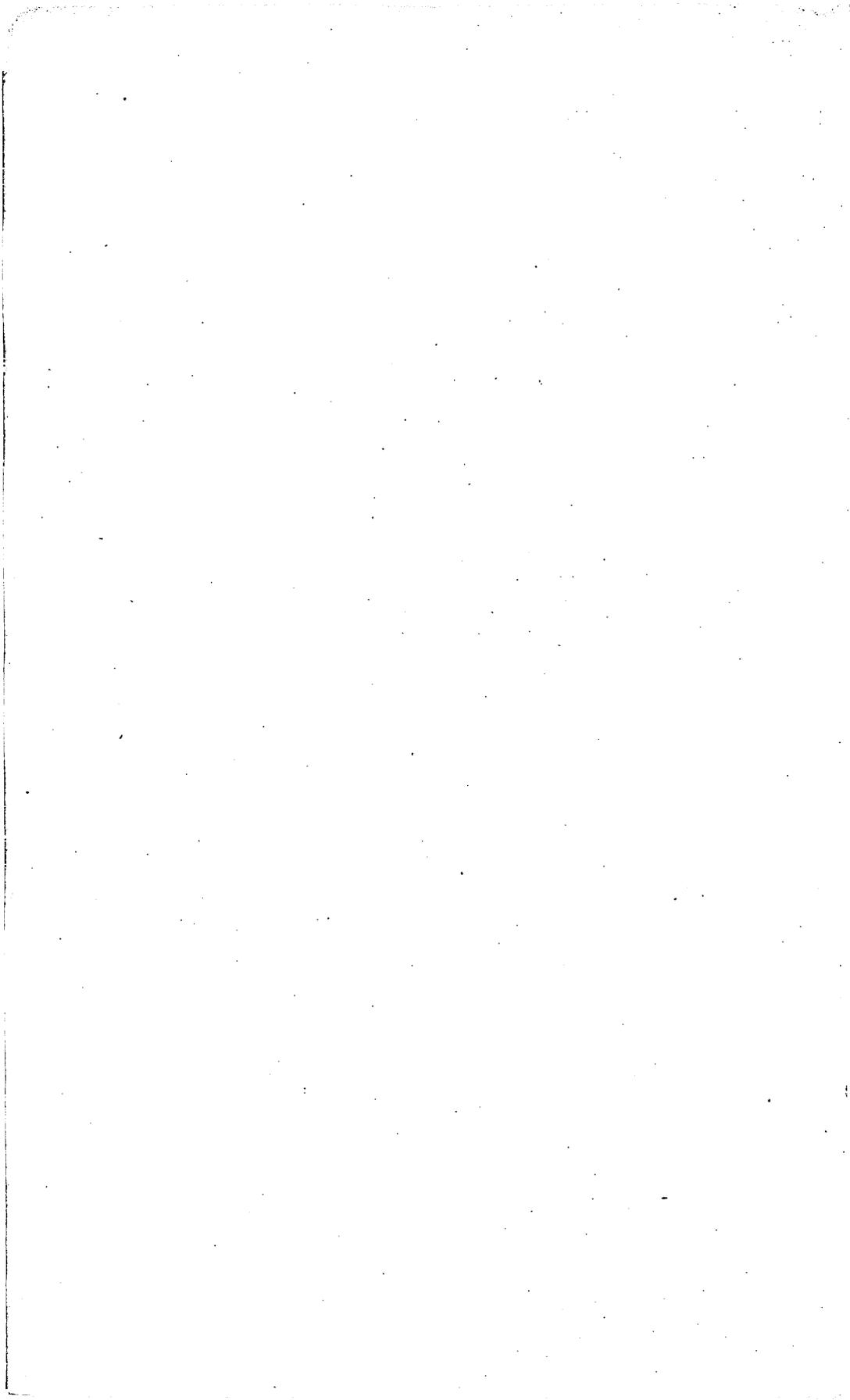


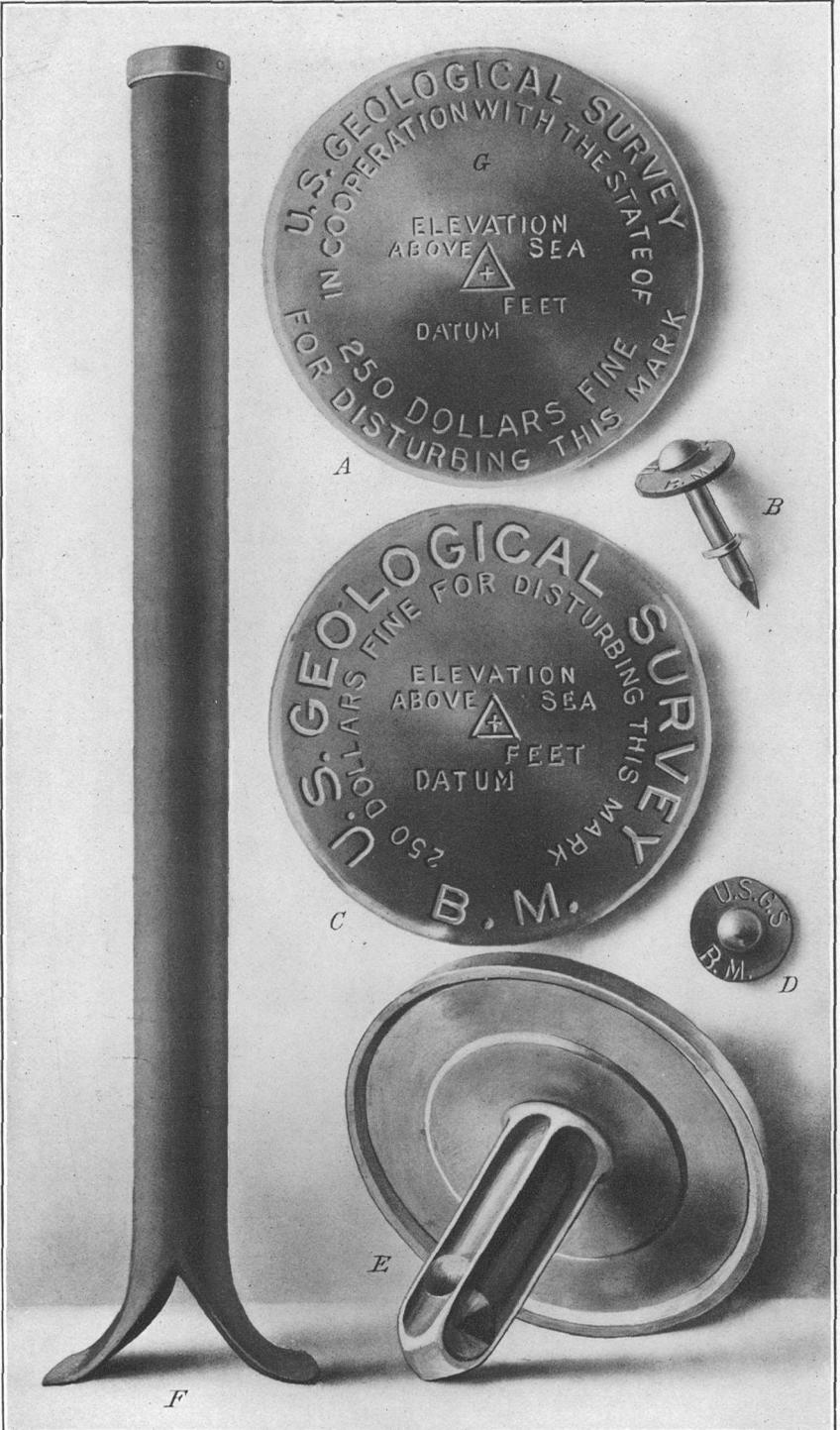
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GEOLOGICAL SURVEY BENCH MARKS.

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

RESULTS OF SPIRIT LEVELING IN WEST VIRGINIA, 1909 AND 1910.

R. B. MARSHALL, Chief Geographer.

INTRODUCTION.

Corrections.—The following results of spirit leveling are supplemental to and accord with the elevations contained in Bulletin 399 and are in agreement with the 1903 adjustment of precise leveling. Corrections to Bulletin 399 should be noted as follows:

Page 13, Williamsport, the bench mark described has been destroyed. A new bench mark established by the Cumberland Valley Railroad Co. in the top of the south heading of the new culvert has an elevation of 363.094 feet.

Page 17, Newburg, the bench mark described has been destroyed. A new one has been established, the description of which is the same as that of the old bench mark except that the tablet is of aluminum and has been set about 75 feet across a creek. Its elevation is 1,230.017 feet.

Pages 59 and 60, elevations in Gilbert 15' quadrangle have been corrected by leveling in 1909 and 1910. The new values are given in this publication, pages 17-20.

Page 60, name of Oceana special quadrangle has been changed to Pineville quadrangle, and elevations of bench marks 6 and 7 miles, respectively, east of Cyclone, have been corrected as given in this publication, page 30.

Page 64, bench mark at Arvilla has been disturbed and the elevation as given is unreliable.

Personnel.—The field work of 1909 and 1910 was done under the supervision of Frank Sutton, geographer, under the general direction of R. B. Marshall, chief geographer. Credit is given to the different levelmen in the introduction to each list. The office work of computation, adjustment, and preparation of lists was done mainly by S. S. Gannett, geographer, and D. H. Baldwin, topographer, under the general direction of E. M. Douglas, geographer.

Classification.—The elevations are classified as precise or primary according to the methods employed in their determination. For precise level lines instruments and rods of the highest grade are used, each line is run both forward and backward, and every precaution is taken to guard against error. The allowable divergence between the

forward and the backward lines in feet is represented by the formula $0.017\sqrt{D}$, in which D is the distance in miles between bench marks. For primary lines standard Y levels are used; lines are run in circuits or are closed on precise lines, with an allowable closing error in feet represented by $0.05\sqrt{D}$, in which D is the length of the circuit in miles, sufficient care being given to the work to maintain this standard. For levels of both classes careful office adjustments are made, the small outstanding errors being distributed over the lines.

Bench marks.—The standard bench marks are of two forms. The first form is a circular bronze or aluminum tablet (C and E , Pl. I) $3\frac{1}{2}$ inches in diameter and one-quarter inch thick, having a 3-inch stem, which is cemented in a drill hole in solid rock in the wall of some public building, a bridge abutment, or other substantial masonry structure. The second form (F , Pl. I), used where masonry or rock is not available, consists of a hollow wrought-iron post $3\frac{1}{2}$ inches in outer diameter and 4 feet in length. The bottom is spread out to a width of 10 inches in order to give a firm bearing on the earth. A bronze or aluminum-bronze cap is riveted over the top of the post, which is set about 3 feet in the ground. A third style of bench mark with abbreviated lettering (B and D , Pl. I) is used for unimportant points. This consists of a special copper nail, $1\frac{1}{2}$ inches in length, driven through a copper washer seven-eighths inch in diameter. The tablets as well as the caps on the iron posts are appropriately lettered, and State cooperation is indicated by the addition of the State name (G , Pl. I).

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

Datum.—All United States Geological Survey elevations are referred to mean sea level, which is the level that the sea would assume if the influence of winds and tides were eliminated. This level is not the elevation determined from the mean of the highest and the lowest tides, nor is it the half sum of the mean of all the high tides and the mean of all the low tides, which is called the half-tide level. *Mean sea level is the average height of the water, all stages of the tide being considered.* It is determined from observations made by means of tidal gauges placed at stations where local conditions, such as long,

narrow bays, rivers, and like features, will not affect the height of the water. To obtain even approximately correct results these observations must extend over at least one lunar month, and if accuracy is desired they must extend over several years. At ocean stations the half-tide level and the mean sea level usually differ but little. It is assumed that there is no difference between the mean sea level as determined from observations in the Atlantic Ocean, the Gulf of Mexico, or the Pacific Ocean.

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

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

Accident (Md.-Pa.-W. Va.).	Glenwood (W. Va.-Ohio).
Antietam (Md.-Va.-W. Va.).	Guyandot (W. Va.-Ohio).
Arnoldsburg.	Hancock (W. Va.-Md.-Pa.).
Athalia (Ohio-W. Va.).	Harpers Ferry (Va.-W. Va.-Md.)
Belington.	Harrisville.
Belleville (W. Va.-Ohio).	Hinton.
Beverly (W. Va.-Va.).	Holbrook.
Blacksville (W. Va.-Pa.).	Huntersville.
Bruceton (W. Va.-Pa.).	Huntington (W. Va.-Ohio-Ky.).
Buckhannon.	Kanawha Falls.
Burnsville.	Kenna.
Cameron (W. Va.-Ohio-Pa.).	Keno (Ohio-W. Va.).
Centerpoint.	Kenova (Ky.-W. Va.-Ohio).
Charleston.	Kingwood.
Charleston special.	Lewisburg (Va.-W. Va.).
Christiansburg (Va.-W. Va.).	Littleton (W. Va.-Pa.).
Clarington (Ohio-W. Va.).	Mannington (W. Va.-Pa.)
Clarksburg.	Marietta (Ohio-W. Va.).
Clay.	Midkiff.
Clendenin.	Milton.
Dublin (Va.-W. Va.).	Monterey (Va.-W. Va.).
Elizabeth.	Montgomery.
Elkins.	Morgantown (W. Va.-Pa.).
Fairmont.	New Martinsville (W. Va.-Ohio).
Fayetteville.	New Matamoras (Ohio-W. Va.).
Flintstone (Md.-W. Va.-Pa.).	Nicholas.
Franklin (W. Va.-Va.).	Oakland (Md.-W. Va.).
Frostburg (Md.-W. Va.-Pa.).	Oceana (W. Va.-Va.-Ky.).
Gassaway.	Otter.
Glenville.	Parkersburg (Ohio-W. Va.).

Parsons.	Steubenville (Ohio-W. Va.-Pa.).
Pawpaw (Md.-W. Va.-Pa.).	Sutton.
Peytona.	Sutton special.
Philippi.	Tazewell (Va.-W. Va.).
Piedmont (W. Va.-Md.).	Thornton.
Pocahontas (Va.-W. Va.).	Vadis.
Point Pleasant (W. Va.-Ohio).	Walton.
Pomeroy (Ohio-W. Va.).	Warfield (W. Va.-Ky.-Va.).
Raleigh.	Wayne.
Ravenswood (W. Va.-Ohio).	Wellsville (Ohio-W. Va.-Pa.).
Ripley.	Weston.
Romney (W. Va.-Va.-Md.).	West Union.
St. Albans.	Wheeling (W. Va.-Ohio-Pa.).
St. George.	Winchester (Va.-W. Va.).
St. Marys (W. Va.-Ohio).	Winfield.
Spencer.	Woodstock (Va.-W. Va.).
Staunton (Va.-W. Va.).	

PRECISE LEVELING.

Ingleside, Packs Ferry, and Peterstown 15' quadrangles (Dublin, Hinton, and Pocahontas 30' quadrangles).

MERCER AND SUMMERS COUNTIES.

The following elevations make up the West Virginia portion of the unadjusted results of a line of precise levels run from Hinton, W. Va., south along highways to Glenlyn, Va., thence west along Norfolk & Western Railway to Graham, Va., based upon an elevation at Hinton determined by precise leveling. The leveling was done by two parties, which joined at a point 2 miles west of Oakvale. Yard rods and prism levels were used. The total length of the double line is 57.8 miles and the total divergence was 0.155 foot. For the elevations at Glenlyn and Graham, Va., see the Virginia list.

The leveling was done in 1909, in the Packs Ferry and Peterstown 15' quadrangles by C. H. Semper, and in the Ingleside quadrangle by T. A. Green.

PACKS FERRY 15' (HINTON 30') QUADRANGLE.

Hinton south along highway to point 1 mile south of Crumps Bottom.

	Feet.
Hinton, in northwest corner of Chesapeake & Ohio Ry. station; aluminum tablet stamped "1386".....	1,385.212
Belleview, 1 mile south of, east of road; point on rock marked "U. S. □ B. M. 1440".....	1,440.08
Belleview, 3.8 miles south of, 350 feet east of road, at J. N. Hayne's farmhouse, in cement well curb; aluminum tablet stamped "1409".....	1,408.968
Belleview, 5.7 miles south of, in southwest corner of J. H. Blankenship's house; aluminum tablet stamped "1402".....	1,402.204
Belleview, 6.7 miles south of, west of road, 800 feet south of Webb's house; spike in root of sycamore tree.....	1,395.62
Belleview, 7.8 miles south of, east of road, 100 feet north of sawmill site; large rock marked "U. S. □ B. M. 1427".....	1,426.71

Bellevue, 8.8 miles south of, in stone chimney of E. F. Farley's house; aluminum tablet stamped "1446".....	Feet. 1, 446. 136
Warford, 150 feet south of store, east of road; large rock marked "U. S. □ B. M. 1411".....	1, 410. 66
Warford, 1 mile south of, north margin of road; rock 7 by 5 feet marked "U. S. □ B. M. 1453".....	1, 453. 096
Warford, 2.9 miles south of, in stone chimney of J. H. Dickison's house; aluminum tablet stamped "1446".....	1, 446. 143
Crumps Bottom, in southwest corner of G. W. Harmon's house; aluminum tablet stamped "1510".....	1, 510. 063
Crumps Bottom, 1 mile south of, east margin of road, 450 feet below falls; stone marked "U. S. □ B. M. 1451".....	1, 451. 01

PETERSTOWN 15' (DUBLIN 30') QUADRANGLE.

Point 1 mile south of Crumps Bottom south along highway to Glenlyn, Va., thence west along Norfolk & Western Ry. to point 1.9 miles west of Oakvale.

Crumps Bottom, 2 miles south of, east margin of road, 75 feet north of very large boulder; rock 5 by 5 feet marked "U. S. □ B. M. 1441".....	1, 441. 36
Mercer, salt well, 40 feet south of road leading into store yard, in center of highway, in large stone; aluminum tablet stamped "1470".....	1, 470. 466
Mercer, 2 miles south of salt works, on west margin of road, 300 feet north of log house and barn; rock marked "U. S. □ B. M. 1483".....	1, 483. 39
Mercer, 3.2 miles south of salt works, 10 feet southeast of Dicks Hollow crossing, 250 feet north of L. R. French's house, on west margin of road, in top of sand rock; aluminum tablet stamped "1510".....	1, 510. 007
Mercer, 5.3 miles south of salt works, at Bluff post office boat landing, 20 feet west of river, 15 feet east of highway, in large flat rock; aluminum tablet stamped "1466".....	1, 465. 931
Mercer, 6.3 miles south of salt works, 500 feet south of State line, on west margin of highway by small drain; low stone marked "U. S. □ B. M. 1490".....	1, 489. 80
Mercer, 8.4 miles south of salt works, 1,400 feet south of schoolhouse, east margin of road; square cut on rock marked "U. S. B. M. 1496".....	1, 495. 83
Mercer, 8.7 miles south of salt works, in southwest corner of Dr. G. A. Shumate's brick house; aluminum tablet stamped "1571".....	1, 571. 564
Mercer, 10.3 miles south of salt works, at east end of old railroad grade, where grade crosses highway, on west margin of road; large rock marked "U. S. □ B. M. 1505".....	1, 504. 65
(For elevations at Glenlyn, Va., see Virginia list.)	
Wills, in front of station; top of rail.....	1, 624. 5
Glenlyn, 3 miles west of, 100 feet west of milepost "C 364," in top of north end on east side of bridge abutment; aluminum tablet stamped "1644".....	1, 643. 830
Oakvale, in front of station; top of rail.....	1, 712. 2
Oakvale, 45 feet west of station, 20 feet north of track, in top of railroad culvert; aluminum tablet stamped "1712".....	1, 712. 199
Oakvale, 1.9 miles west of, 2.3 miles east of Hardy, opposite milepost "C 358" 2 feet north of east bound track; top of rail set vertically in ground.....	1, 782. 35

INGLESIDE 15' (POCAHONTAS 30') QUADRANGLE.

Point 1.9 miles west of Oakvale west along Norfolk & Western Ry. to Bluefields.

Hardy, 0.2 mile east of, 250 feet west of milepost 351, north of railroad, in west edge of sandstone culvert; aluminum tablet stamped "1868".....	1, 867. 860
Hardy, in front of station; top of rail at crossing.....	1, 884. 22
Ingleside, 0.8 mile east of, at milepost 352, on south end of east abutment of railroad bridge 829; chiseled square.....	1, 917. 98

	Feet.
Ingleside, in front of station; top of rail.....	1,950.17
Ingleside, 0.2 mile west of, 300 feet east of milepost 353, on west end of sandstone culvert; chiseled square.....	1,959.41
Blake, 200 feet southwest of signal tower, in south end of east abutment of railroad bridge 832; aluminum tablet stamped "2009".....	2,009.607
Ada, 1.6 miles east of, 300 feet west of milepost 357, north of railroad, 20 feet south of gate across trail, in limestone rock; aluminum tablet stamped "2155".....	2,154.887
Ada, in front of station; top of rail.....	2,223.7
Bluefields, 3.1 miles east of, 100 feet east of milepost 360, on north side of railroad, in west end of sandstone culvert; aluminum tablet stamped "2331".....	2,330.968
Bluefields, 2.1 miles east of, 50 feet west of milepost 361, on rock; chiseled square.....	2,413.20
Bluefields, 100 feet south of station, at front entrance to New Altamont Hotel, in first step above pavement; aluminum tablet stamped "2563".....	2,563.129
Bluefields, in front of station; top of rail.....	2,558.43

PRIMARY LEVELING.

Iaeger, Ingleside, Pocahontas special, and Welch 15' quadrangles (Pocahontas, Raleigh, and Tazewell 30' quadrangles).

MCDOWELL, MERCER, AND WYOMING COUNTIES.

The following elevations were determined by primary leveling extended from Graham, Va., and Catlettsburg, Ky., points of the precise level net. For additional elevations in West Virginia in the Princeton and Pocahontas quadrangles refer to the precise-level list, Hinton, W. Va., to Graham, Va. (pp. 8-10).

Most of the leveling was done in 1909, in the Iaeger and Welch quadrangles by T. A. Green and C. H. Semper; in the Pocahontas special quadrangle by Green, Semper, and S. E. Taylor; and in the Ingleside quadrangle by Semper. Additional leveling in the Iaeger and Welch quadrangles was done in 1910 by S. E. Taylor.

INGLESIDE 15' (POCAHONTAS 30') QUADRANGLE.

Montcalm north along Norfolk & Western Ry. and Virginian Ry. to Glatto.

	Feet.
Montcalm, 1.3 miles north of, 85 feet south of milepost 10, 180 feet south of south end of tunnel, 20 feet east of track, in large rock; aluminum tablet stamped "2210".....	2,210.375
Rock, in front of station; top of rail.....	2,221.1
Rock, 1.8 miles north of, 570 feet north of milepost 13, east side, south end, in top of railroad culvert; aluminum tablet stamped "2277".....	2,276.762
Matoaka, 513 feet east of station, in east end of face of south abutment of Virginian Ry. overhead crossing; aluminum tablet stamped "2362".....	2,362.448
Matoaka, in front of Norfolk & Western Ry. station; top of rail.....	2,362.6

POCAHONTAS SPECIAL 15' (POCAHONTAS 30') QUADRANGLE (WEST VIRGINIA PORTION).

Point 1.1 miles east of East Vivian east along Norfolk & Western Ry. to State line.

East Vivian, in front of station; top of rail.....	1,515.5
East Vivian, 1.1 miles east of, in north end of east abutment of railroad bridge 883; aluminum tablet stamped "1555".....	1,554.837

	Feet.
Eckman, in front of station; top of rail.....	1, 593. 4
Eckman, 0.3 mile east of, at milepost 388, north end of east abutment of railroad bridge 880; chiseled square.....	1, 604. 00
Keystone, front entrance to Alahambra Hotel, in east end of step above pavement; aluminum tablet stamped "1645".....	1, 645. 311
North Fork, 1 mile east of, 200 feet east of milepost 385, on north end of bridge seat of west abutment of railroad bridge 874; chiseled square....	1, 759. 96
Powhatan, in front of station; top of rail.....	1, 799. 8
Upland, 50 feet south of railroad, at northwest corner of footbridge over Elkhorn Creek, 100 feet north of company store; aluminum tablet stamped "1843".....	1, 843. 296
Elkhorn, at milepost 383, on west end of north abutment of footbridge over Elkhorn Creek; chiseled hole.....	1, 881. 87
Elkhorn, 1 mile east of, at milepost 382, on north end of bridge seat of east abutment of railroad bridge 867; chiseled square.....	1, 948. 45
Ennis, west of station, at road crossing; top of rail.....	1, 995. 9
Ennis, 0.6 mile east of, 950 feet east of milepost 381, in north end of east abutment of arch over Elkhorn Creek and wagon road; aluminum tablet stamped "2032".....	2, 031. 834
Lick Branch, in front of station; top of rail.....	2, 051. 6
Lick Branch, at road crossing just east of company store, in cut; copper bolt marked "B. M. No. 64".....	2, 058. 25
Maybeury, in front of station; top of rail.....	2, 171. 0
Coaldale, 350 feet west of post office, 125 feet east of telegraph station, north of railroad, in sandstone ledge; aluminum tablet stamped "2339"....	2, 339. 416
Coaldale, 0.4 mile east of, at top of divide over long tunnel, 12 feet south of property line post in center of divide; top of rail section.....	2, 652. 00
Ruth, in front of station; top of rail.....	2, 392. 3
Ruth, 0.6 mile east of, on southeast corner of concrete foundation for block signal; chiseled square.....	2, 358. 23
Cooper, 300 feet west of tunnel, on north end of east abutment of railroad bridge 854; chiseled square.....	2, 309. 28
Bluestone, in front of station; top of rail.....	2, 285. 3
Bluestone, in north end of east abutment of railroad bridge 851; aluminum tablet stamped "2283".....	2, 283. 248
Nemours, road crossing at mail crane; top of rail.....	2, 296. 5
Nemours, 300 feet west of milepost 372, in north end of east abutment of railroad bridge 848; aluminum tablet stamped "2300".....	2, 299. 616
Flattop, 300 feet west of milepost 371, on north end of east abutment of railroad bridge 844; chiseled square.....	2, 309. 10

Cooper northeast along Norfolk & Western Ry. to Montcalm.

Cooper, 300 feet west of tunnel, on north end of east abutment of railroad bridge 854; chiseled square marked "No. 44 U. S. B. M. 2309".....	2, 309. 382
Cooper, 0.6 mile north of, 60 feet north of milepost 2, 4 feet west of track, in side cut; marked square on top of rock.....	2, 264. 53
Bramwell, in front of station; top of rail.....	2, 252. 7
Simmons, in front of station; top of rail.....	2, 249. 6
Simmons, 0.1 mile north of, 20 feet east of track, in top of northwest foundation of water tank; aluminum tablet stamped "2247".....	2, 247. 330
Flipping, 0.2 mile south of, in top of west abutment on north side of highway bridge over Bluestone River; aluminum tablet stamped "2225"....	2, 224. 777
Flipping, in front of station sign; top of rail.....	2, 220. 9
Montcalm, opposite station; top of rail.....	2, 213. 8

	Feet.
Giatto northwest along Virginian Ry. to Micajah tunnel.	
Giatto, in front of station; top of rail.....	2, 373. 1
Giatto, 1.1 miles west of, 55 feet west of milepost 18, 6 feet south of Norfolk & Western Ry., in top of rock; aluminum tablet stamped "2417" ..	2, 416. 932
Clark, in south foundation pier of Virginian Ry. water tank; aluminum tablet stamped "2487" ..	2, 487. 121
Clark, in front of station; top of rail.....	2, 522
Clark, 0.7 mile northwest of, 8 feet west of railroad, on sandstone ledge; chiseled square.....	2, 466. 93
Clark, 3 miles northwest of, 930 feet west of the west end of Micajah Tunnel of Virginian Ry., 15 feet south of railroad, 5 feet south of stone culvert, in sandstone ledge; aluminum tablet stamped "2239 1909" ..	2, 238. 689
Vivian northeast up Main Fork of Bottom Creek and down Whiteoak Branch of Pinnacle Creek to mouth.	
East Vivian, 110 feet east of milepost 391, north side of railroad; chiseled square.....	1, 510. 84
Vivian, 1 mile northeast of, junction of county road and tramway up main fork of Bottom Creek, 40 feet west of stream crossing, on sandstone rock; chiseled square.....	1, 660. 75
Vivian, 3.4 miles northeast of, at south end of mound in creek bed, on sandstone boulder; chiseled square.....	1, 993. 98
Vivian, 4.6 miles northeast of, 75 feet east of house of Thomas Inglett at foot of hill, on sandstone boulder; chiseled square.....	2, 153. 67
Vivian, 5.5 miles northeast of, at road forks, on top of ridge, 700 feet west of house of Mr. Williams, 15 feet south of road, in sandstone ledge; aluminum tablet stamped "2432 1909" ..	2, 432. 020
Vivian, 6.7 miles northeast of, 50 feet north of road forks, in low gap, north side of county road, on sandstone ledge; chiseled square.....	2, 289. 77
Vivian, 8 miles northeast of, north side of county road down Whiteoak Branch of Pinnacle Creek, 15 feet west of small drain across road; aluminum tablet stamped "2028 1909" ..	2, 027. 943
Herndon, 7.4 miles west of, 15 feet south of county road at junction of Payne Fork with Whiteoak Branch of Pinnacle Creek, on large rock; chiseled square.....	1, 760. 91
Milepost 11 east along Norfolk & Western Ry. to Black Wolf mine:	
Dearing (Black Wolf mine), 5.5 miles south of Gary, 858 feet south of milepost 12, north end of pier supporting tipple, 8 feet west of track; aluminum tablet stamped "1504" ..	1, 504. 037
Black Wolf mine east along Norfolk & Western Ry. to Anawalt (single spur line).	
Gary, 6.4 miles south of, 45 feet north of milepost 13; top of south end on west side of railroad culvert marked "U.S.B.M. 1511" ..	1, 510. 63
Pageton, 465 feet north of station, in top of west side of south abutment of railroad bridge 2214 on branch line to mine; aluminum tablet stamped "1577" ..	1, 577. 244
Pageton, in front of station; top of rail.....	1, 584. 3
Pageton, 2.3 miles south of, top of south end of retaining wall at mine, 12 feet south of milepost 17, 10 feet west of track; marked square.....	1, 679. 00
Anawalt, in south end of west face of stone foundation of coal company store; aluminum tablet stamped "1716" ..	1, 715. 828

Point near Herndon southeast along highway and Virginian Ry. to Micajah tunnel.

Clark, 6.5 miles northwest of, on west side of county road, about 600 feet north of private road to west, in sandstone ledge; aluminum tablet stamped "2709 1909".....	Feet. 2, 708. 177
Clark, 5.5 miles northwest of, 60 feet west of crossroads, in low gap, 10 feet south of county road, on sandstone rock; chiseled square.....	2, 416. 58
Clark, 3.5 miles northwest of, 110 feet west of county road, in low gap over Micajah tunnel of Virginian Ry, on sandstone ledge; chiseled square....	2, 450. 01

Point on State line 2 miles north of Smith Store, Va., north down South Fork of Tug River to Dearing.

Dearing, 7 miles south of, in West Virginia, 2.2 miles north of Smith's store, Va., on east side of road, 50 feet south of forks, in sandstone ledge; aluminum tablet stamped "2528 VA 1909".....	2, 527. 635
Dearing, 5.8 miles south of, on straight bend of road to southwest, on north side of road, on sandstone rock; chiseled square.....	2, 014. 59
Dearing, 4.8 miles south of, 615 feet north of mouth of Laurel Branch, 5 feet west of road, on sandstone boulder; chiseled square.....	1, 717. 71
Dearing, 3 miles south of, 0.8 mile northwest of Taylor's store, east side of road, 30 feet south of Jump Branch, in flat sandstone rock; aluminum tablet stamped "1620 1909".....	1, 619. 692
Dearing, 0.7 mile south of, on west side of road, 20 feet south of stream crossing, highest point on oblong sandstone rock; marked circle.....	1, 506. 13

Bluestone southwest along Norfolk & Western Ry. branch to State line crossing (part of double line to Pocahontas, Va.).

Bluestone, in north end of east abutment of railroad bridge 851; aluminum tablet stamped "2283".....	2, 283. 248
Virginia-West Virginia State line crossing, at road crossing, north of long tunnel; top of rail; warning post marked "U.S. 2308".....	2, 308. 0

WELCH 15' (TAZEWELL 30') QUADRANGLE.**Serpell east along Norfolk & Western Ry. to East Vivian.**

Serpell, in front of station; top of rail.....	1, 062. 8
Serpell, 1.3 miles east of, 400 feet east of milepost 414, in east end of culvert over running stream; aluminum tablet stamped "1077".....	1, 076. 402
Roderfield, in front of station; top of rail.....	1, 094. 9
Roderfield, 1.9 miles east of, 400 feet southwest of milepost 411, in south end of west abutment of new railroad bridge over Tug River; aluminum tablet stamped "1134".....	1, 134. 062
Claren, in front of station; top of rail.....	1, 133. 8
Twin Branch, 200 feet east of mouth of tunnel, 80 feet west of station, in north end of east abutment of railroad bridge 902; aluminum tablet stamped "1178".....	1, 177. 735
Davy, 100 feet southwest of milepost 407, south end of east bridge seat of railroad bridge 901; chiseled square.....	1, 180. 03
Davy, in front of station; top of rail.....	1, 191. 3
Davy, 1.25 miles east of, 275 feet east of mouth of tunnel, in south end of east abutment of railroad bridge 899-A; aluminum tablet stamped "1225".....	1, 224. 509
Davy, 3.8 miles east of, on south end of bridge seat of east abutment of railroad bridge 997; chiseled square.....	1, 263. 01

Davy, 4.6 miles east of, 250 feet west of double tunnel, 60 feet west of milepost 401, in north end of east abutment of railroad bridge 895; aluminum tablet stamped "1281".....	Feet. 1, 281. 265
Welch, on south end of east abutment of railroad bridge 893; chiseled square.....	1, 298. 96
Welch, on west side of front entrance to First National Bank, in fourth tier of stone above foundation; aluminum tablet stamped "1304".....	1, 303. 434
Welch, in front of station; top of rail.....	1, 300. 7
Huger, in front of station; top of rail.....	1, 332. 4
Huger, 0.7 mile east of, in northwest corner of concrete arch over wagon road; aluminum tablet stamped "1361".....	1, 361. 293
Huger, 2.8 miles east of, 130 feet east of milepost 394, 50 feet east of Cirrus Coal & Coke Co. store, on concrete well curb; top of screw.....	1, 446. 57
West Vivian, railroad junction west of, in south end of west abutment of railroad bridge 885-A over Elkhorn Creek; aluminum tablet stamped "1476".....	1, 475. 423

Welch, southeast along Norfolk & Western Ry. to milepost 11.

Welch, on south end of east abutment of railroad bridge 893; chiseled square marked "No. 25 U. S. B. M. 1299".....	1, 298. 958
Welch, 3.1 miles south of, 4 feet north of milepost 3, 280 feet south of railroad bridge 2,202, on face of side corner; aluminum tablet stamped "1349".....	1, 349. 006
Wilcoe, in front of station; top of rail.....	1, 379. 4
Kennon, opposite station platform, on east side of track, at road crossing, in top of north end of railroad culvert; aluminum tablet stamped "1395".....	1, 395. 172
Kennon, in front of station; top of rail.....	1, 395. 8
Gary, in front of station; top of rail.....	1, 401. 1
Gary, 0.4 mile south of, 40 feet south of milepost 7, 10 feet west of track, on top of rock; square marked "U.S.B.M. 1412".....	1, 411. 66
Gary, 2.5 miles south of, 765 feet south of milepost 9, 35 feet south of railroad crossing, 12 feet east of track, in top of large rock; aluminum tablet stamped "1454".....	1, 453. 871

Atwell southeast up Dry Fork along Norfolk & Western Ry. to Berwind (continuance of a single spur line from Jaeger).

Atwell, 1.6 miles southeast of, 1,855 feet south of milepost 15, in west side of south abutment of railroad bridge 2277; aluminum tablet stamped "1268".....	1, 267. 775
English, in front of station; top of rail.....	1, 292. 2
English, 0.4 mile southeast of, south of milepost 18, 20 feet west of track, on large rock used as an anchor for smoke stack guy; aluminum tablet stamped "1296".....	1, 296. 055
English, 1.3 miles southeast of, 65 feet south of milepost 19, 20 feet east of track, on large rock; square marked "U.S.B.M. 1313".....	1, 312. 59
English, 3.2 miles southeast of, 493 feet north of milepost 21, top of railroad culvert at south end of west abutment of; aluminum tablet stamped "1335".....	1, 334. 308
War, in front of station; top of rail.....	1, 341. 7
English, 5.3 miles southeast of, at milepost 23, top of south abutment on west side of railroad bridge 2280; square marked "U.S.B.M. 1377".....	1, 377. 15
English, 6.2 miles southeast of, 611 feet north of milepost 24, top of north end of west abutment of railroad culvert; aluminum tablet stamped "1403".....	1, 402. 383

English, 7.9 miles southeast of, in west side of top of south abutment of railroad bridge over Jacob Fork; square marked "U.S.B.M. 1452".....	Fect. 1, 451. 32
Berwind, in front of station; top of rail.....	1, 482. 8
Berwind, 0.1 mile southeast of, 270 feet south of milepost 27, in top in center of west side of railroad culvert; aluminum tablet stamped "1487".....	1, 486. 917

Rift, W. Va., up Jacob Fork to Big Creek, thence up Big Creek to Squirejim post office (unchecked spur line).

English, 7.9 miles southeast of; west side of south abutment of railroad bridge over Jacob Fork, top; square marked "U.S.B.M. 1452".....	1, 451. 32
Rift, 1.1 miles east of, 200 feet northwest of forks of Big Creek and Jacob Fork of Dry Fork, 5 feet north of wooden tramway, in sandstone rock; aluminum tablet stamped "1453".....	1, 452. 851
Rift, 2.5 miles east of, 2 feet south of tramway; chiseled square on sandstone rock marked "U. S. B. M. 1498".....	1, 498. 50
Rift, 4 miles east of, 3 feet north of tramway; chiseled square on sandstone ledge marked "U. S. B. M. 1532".....	1, 532. 08
Rift, 5.6 miles east of, 175 feet south of forks of Long Branch and Big Creek, 20 feet south of tramway, in sandstone rock; aluminum tablet stamped "1576".....	1, 576. 076
Squirejim, 4 miles northwest of, 5 feet north of trail; chiseled square on sandstone rock marked "U.S.B.M. 1603".....	1, 603. 14
Squirejim, 3 miles northwest of, 40 feet south of trail; point on top of large sandstone rock marked "U.S.B.M. 1650".....	1, 649. 77
Squirejim, 1.7 miles northwest of, 450 feet south of house at mouth of hollow, 30 feet east of road; chiseled square on sandstone marked "U.S. B.M. 1700".....	1, 699. 93
Squirejim, 1 mile northwest of, 80 feet south of house at stream forks, 10 feet east of road; chiseled square on sandstone rock marked "U.S.B.M. 1714".....	1, 714. 38
Squirejim, 600 feet north of, 40 feet east of road, 125 feet west of school-house, in sandstone ledge; aluminum tablet stamped "1805".....	1, 805. 086

IAEGER QUADRANGLE (TAZEWELL 30' QUADRANGLE).

Point 0.8 mile east of Panther south along tramway up Panther Creek to Meethouse Fork of Panther Creek.

Panther, 0.8 mile east of, in south end of east bridge seat of railroad bridge 915 over Short Pole Creek; aluminum tablet stamped "944".....	943. 096
Panther, in front of station; top of rail.....	944
Panther, 0.4 mile south of, 10 feet east of tramway; chiseled square on sandstone ledge marked "941".....	941. 21
Panther, 1.4 miles south of, opposite Trap Fork, 10 feet east of tramway; chiseled square on sandstone rock marked "972".....	971. 998
Panther, 2 miles south of, 100 feet north of junction of Trace Fork and Panther Creek, 8 feet east of iron tramway, in sandstone ledge; aluminum tablet stamped "988".....	988. 475
Panther, 3.9 miles south of, 5 feet west of tramway opposite small branch to left, on sandstone boulder; chiseled square marked "1052".....	1, 052. 02
Panther, 5.1 miles south of, 7 feet north of iron tramway, on sandstone boulder; chiseled square marked "1097".....	1, 097. 26
Panther, 5.9 miles south of, 70 feet northeast of junction of George Fork and Panther Creek, 25 feet east of tramway, in large sandstone rock; aluminum tablet stamped "1134".....	1, 133. 716

	Feet.
Panther, 7.4 miles south of, south end of cleared bottom, 35 feet east of tramway, on sandstone rock; chiseled square marked "1186".....	1, 186. 02
Panther, 8.2 miles south of, in creek bed; point on top of large sandstone rock marked "1199".....	1, 199. 36
Panther, 8.9 miles south of, 80 feet north of junction of Meethouse Fork and Panther Creek, in large sandstone rock at end of iron tramway; aluminum tablet stamped "1232".....	1, 232. 081

Mohawk southeast and east along Norfolk & Western Ry. to Serpell.

Mohawk, 1.1 miles southeast of; point on telegraph pole marked "932.54" (railroad bench mark).....	934. 40
Panther, west of station, at road crossing; top of rail.....	944. 1
Panther, 0.8 mile east of, in south end of east bridge seat of railroad bridge 915 over Short Pole Creek; aluminum tablet stamped "944".....	943.096
Panther, 2.5 miles east of, 35 feet east of milepost 427, on sandstone boulder; chiseled square.....	958. 54
Hull, in front of station; top of rail.....	961. 0
Hull, 350 feet east of station, 50 feet north of railroad, in west end of sandstone culvert; aluminum tablet stamped "960".....	959. 414
Bridge 913, north side, in east bridge seat; top of bolt (railroad bench mark).....	960. 86
Hull, 1.7 miles east of, 40 feet south of milepost 424, on rock; chiseled square.....	969. 92
Iaeger, at junction of main line and Dry Fork branch of Norfolk & Western Ry., in east end of north abutment of railroad bridge over Tug River; aluminum tablet stamped "981".....	980. 370
Iaeger, 1 foot south of tablet; top of iron bolt (railroad bench mark).....	981. 44
Iaeger, in front of station; top of rail.....	982. 1
Bridge 911, on east abutment (railroad bench mark).....	984. 98
Iaeger, 2.1 miles east of, north end of west abutment of railroad bridge 910; aluminum tablet stamped "996".....	995. 374
Iaeger, 3 miles east of, 850 feet east of milepost 419, north end of west abutment of railroad bridge 909; chiseled square.....	1, 008. 58
Wilmore, on north end of west abutment of railroad bridge 908 (railroad bench mark).....	1, 022. 73
Wilmore, 350 feet west of telegraph office and milepost 417, 100 feet north of railroad, 10 feet north of fence corner, in sandstone boulder; aluminum tablet stamped "1036".....	1, 035. 942
Wilmore, in front of station; top of rail.....	1, 038. 1
Wilmore, 1 mile east of, 15 feet east of milepost 416, on east end of sandstone culvert; chiseled square.....	1, 051. 14

Iaeger southeast along Norfolk & Western Ry. up Dry Fork to Atwell (single spur line).

Iaeger, junction of main line and Dry Fork branch of Norfolk & Western Ry., in east end of north abutment of railroad bridge over Tug River; aluminum tablet.....	980. 370
Iaeger, 3.1 miles south of, 854 feet south of milepost 3, west of track, in top of railroad culvert; aluminum tablet stamped "1024".....	1, 024. 153
Iaeger, 4 miles south of, 20 feet south of milepost 4, 6 feet west of track, on top of large rock; square; marked "U.S.B.M.1038".....	1, 036. 30
Ritter, in front of station; top of rail.....	1, 043. 3
Ritter, 1.2 miles south of, in top of south abutment, west end of railroad bridge 2275; aluminum tablet stamped "1061".....	1, 060. 394

Ritter, 2.4 miles south of, 45 feet south of milepost 7, west of track, top of railroad culvert; square marked "U.S.B.M.1088".....	Feet. 1,087.54
Carlos, in front of station sign; top of rail.....	1,092.9
Carlos, 1.8 miles south of, 90 feet south of milepost 9, 10 feet east of track, in top of railroad culvert; aluminum tablet stamped "1132".....	1,131.937
Bradshaw, in front of milepost 11; top of rail.....	1,179.5
Bradshaw, 0.9 mile southeast of, 534 feet north of milepost.12, 6 feet west of track, in top of railroad culvert; aluminum tablet stamped "1199".....	1,198.855
Atwell, in front of station; top of rail.....	1,237.1

**Gilbert, Holden, Logan, Louisa, Matewan, Naugatuck, and Williamson 15' quadrangles
(Kenova, Oceana, and Warfield 30' quadrangles).**

LOGAN, MINGO, WAYNE, AND WYOMING COUNTIES.

The following elevations were determined by primary leveling extended from Graham, Va., and Catlettsburg, Ky., points of the precise level net.

The leveling was done in the Gilbert quadrangle in 1896 by Hargraves Wood, and in 1909 by J. H. Wilson and T. A. Green; in the Louisa, Matewan, Naugatuck, and Williamson quadrangles in 1909 by T. A. Green; and in the Holden, Logan, and Naugatuck quadrangles in 1910 by S. E. Taylor. One bench mark in the Naugatuck quadrangle was set in 1907 by E. S. Dawson.

GILBERT 15' (OCEANA 30') QUADRANGLE.

Man northeast up Buffalo Creek (double spur line).

Man, 0.25 mile above mouth of Buffalo Creek, opposite Martin Doss' place and 60 feet above foot log, on west side of Buffalo Creek, in rock; copper bolt stamped "U. S. G. S. 728 Ft. B. M.".....	Feet. 729.102
Buffalo Creek, 2 miles above mouth of; nail in root of sycamore tree on east side of road.....	785.60

Man up Rockhouse Branch (single spur line).

Man, 2 miles southwest of, 1 mile above mouth of Rockhouse Creek, west side of creek, in rock near south end of cliff; copper bolt stamped "U.S. G.S. 792 Ft. B. M.".....	793.331
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Up Big Huff Creek from mouth to Beech Branch.

Man, 1 mile south of, east side of and 300 feet above mouth of Big Huff Creek, in rock; copper bolt stamped "U.S.G.S. 727 Ft. B. M.".....	728.537
Big Spring Branch, 1,800 feet above crossing of; nail in root of sycamore on north side of road.....	794.09
Cyclone, opposite Henchman's house, in rock; copper bolt stamped "U.S. G.S. 854 Ft. B. M.".....	855.492
Lem Brown's place; nail in root of poplar tree on south side of road.....	994.51

Point near Man south along road up Guyandot River to Gilbert.

Guyandot River, 200 feet above Wayne McDonald's store; nail in root of small sycamore tree on west side of road.....	760.72
Spice Creek, 0.5 mile above, 1 mile below Jim Justice's place; nail in root of white walnut tree on north side of road.....	771.60
Gilbert, 1 mile below, 200 feet above old mill race where wagon road crosses river; nail in root of sycamore tree with spreading roots.....	804.97

Gilbert south up Gilbert and down Ben Creeks to Wharnccliffe.

	Feet.
Gilbert, opposite Alexander Stafford's store, in field; iron post stamped "832".....	833. 146
Gilbert Creek, 1 mile above mouth of, in creek and road at first crossing above Zat Ellis's house; rock marked "B. M.".....	848. 62
Gilbert Creek, 0.5 mile above Horsepen Creek, 600 feet below Scott Bliss's; nail in root of beech tree on east side of road.....	892. 06
Ben Creek, head of right fork below deserted cabin, on east side of road near rock cut at foot of mountain; chisel mark on rock.....	1, 201. 07
Wharnccliffe, 4 miles northeast of, 300 feet below Laurel Branch, on east side of road, opposite T. E. Brown's house, Ben Creek; iron post stamped "1020".....	1, 021. 315
Ben Creek, 200 feet above Spring Fork Branch, at Michael Hatfield's; nail in root of black oak tree on west side of road.....	890. 82

Elevation at Wharnccliffe redetermined by leveling of 1909.

Wharnccliffe, 0.5 mile south of, corner of State line between Kentucky, Virginia, and West Virginia; iron post stamped "825".....	826. 697
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Wharnccliffe southeast up Big Sandy River and Long Pole Creek (single spur line).

Dotson, 4 miles east of, up Long Pole Creek, 1,200 feet below Oak Branch, on south side of road; iron post stamped "1050".....	1, 051. 819
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Along Island Creek from Little Creek to Three Forks.

Oilville, 4.4 miles southeast of, 1.8 miles south of Lewis Chafin's place, 350 feet south of coal chute, on east side of road; point on arch of triangular shaped rock marked "U. S. \square B. M. 953".....	952. 44
Crane's sawmill, 0.5 mile south of, 400 feet north of Anne Hatfield's house, 10 feet west of river, in arch of large sandstone boulder; aluminum tablet stamped "1048".....	1, 047. 776

Point near Calico east along road down Horsepen Fork to Gilbert.

Calico, 0.6 mile north of, 5 feet west of road, 400 feet north of private coal chute, in sandstone outcrop; aluminum tablet stamped "1505 W. Va. 1909".....	1, 504. 447
Calico, at forks of road, west of post office, on west side of road, 50 feet north of forks; point on sharp projection of sandstone outcrop marked "U.S. \square B.M. 1610".....	1, 609. 161
Calico, 1 mile east of, 25 feet south of road, 150 feet south of coal opening; copper nail in root of 1-foot beech tree marked "U.S.B.M. 1390".....	1, 389. 52
Calico, 2 miles east of, on west side of road, on south side of creek, near telephone pole 15 feet south of road; highest point on oblong sandstone rock marked "U.S.B.M. 1198".....	1, 197. 84
Calico, 3 miles east of, on west side of road, 300 feet west of rock wall at mouth of Coon Branch, in sandstone boulder 3 by 3 by 3 feet; bronze tablet stamped "1108 W. Va. 1909".....	1, 107. 310
Calico, 5.4 miles east of, at junction of Horsepen and Browning forks of Gilbert Creek, 30 feet north of front entrance to Farrell schoolhouse, 20 feet west of elm tree 3 feet in diameter, in sandstone rock; bronze tablet stamped "937 W. Va. 1909".....	936 580
Horsepen, 0.8 mile east of, on north side of road, on west side of ford; highest point on sandstone boulder 4 by 3 by 2 feet marked "U.S.B.M. 852".....	851. 74
Horsepen, 1.8 miles east of, on north side of road, 450 feet east of blacksmith shop; highest point on brown sandstone rock marked "U.S.B.M. 823".....	822. 93

Gilbert north down Guyandot River and up Elk Creek to Trace Branch.

	Feet.
Gilbert, 1.9 miles northwest of, on north side of road, on lower projection of east end of ragged sandstone outcrop; bronze tablet stamped "814 W. Va. 1909"	813. 388
Gilbert, 4 miles northwest of, at point where river turns sharply to west; highest point on sandstone rock on west side of road marked "U.S.B.M. 778"	777. 93
Gilbert, 5.3 miles northwest of, south side of Sylvia Branch, west side of road, at point where road turns sharply up hollow, in sandstone outcrop; bronze tablet stamped "776 W. Va. 1909"	775. 407
Christian, forks of road at mouth of Elk Creek, 75 feet south of Elk Creek, 60 feet north of Vance's store; copper nail in root on west side of holly tree 1 foot in diameter marked "U.S.B.M. 763"	763. 02
Christian, 0.6 mile northeast of, on north side of second stream crossing above schoolhouse, in sandstone ledge; bronze tablet stamped "780 W. Va. 1909"	780. 015
Christian, 3.6 miles northeast of, 8 feet north of road, 400 feet east of Ike Vance's place, in sandstone rock; bronze tablet stamped "1002 W. Va. 1909"	1, 002. 135
Christian, 5.7 miles northeast of, on north side of road, 200 feet east of hollow from north, 50 feet west of bars across road; point on sandstone rock marked "U.S.B.M. 1232"	1, 231. 95
Christian, 6.5 miles northeast of, north side of trail, west side of stream crossing, 200 feet west of old rock chimney, in sandstone ledge; bronze tablet stamped "1333 W. Va. 1909"	1, 333. 047

Gilbert southeast along road up Guyandot River and Left Fork to Indian Ridge.

Gilbert, 2.8 miles southeast of, on sandstone ledge on left side of road, 790 feet above mouth of branch; bronze tablet stamped "912"	912. 016
Justice, 2.3 miles above, in sandstone rock on right side of road, 170 feet south of forks of road from Little Cub Creek, and 1,250 feet north of mouth of Lizard Branch; aluminum tablet stamped "1070"	1, 070. 342
Hanover, 150 feet south of post office, in sandstone rock on left side of road; bronze tablet stamped "1057"	1, 055. 987
Hanover, 2.1 miles south of, 25 feet from road on right-hand side of road up Muzzle Fork and 0.3 mile from mouth; copper nail in root of beech tree ..	1, 094. 35
Hanover, 3.3 miles south of, at foot of pine tree with big rock embedded in roots, 1,250 feet above schoolhouse, in rock on left side of road; bronze tablet stamped "1187"	1, 186. 939
Jaeger, 4.5 miles northwest of, 500 feet south of where road crosses Indian Ridge, on left side of road, in sandstone rock; bronze tablet stamped "1582"	1, 582. 009

Wharncliffe southeast along Norfolk & Western Ry. to Mohawk.

Wharncliffe, railroad bridge over Ben Creek; bridge seat of east abutment (railroad bench mark—railroad elevation 820.39 feet).....	823. 52
War Eagle, south end east abutment of railroad bridge over Turkey Creek; aluminum tablet stamped "875"	874. 210
Alnwick, in front of station; top of rail	894. 2
Wyoming, in front of station; top of rail	929. 0
Wyoming, 0.2 mile east of, 110 feet east of milepost 432, in northeast corner of railroad culvert; aluminium tablet stamped "927"	926. 448

Wharncliffe west along Norfolk & Western Ry. to Glenalum.

	Feet.
Wharncliffe, 1.1 miles west of, railroad bridge 920; south end of bridge seat of east abutment.....	816. 12
Glenalum, in front of station; top of rail.....	810. 1
Glenalum, 240 feet west of station, railroad bridge 921; north end of west abutment.....	807. 24

MATEWAN 15' (WARFIELD 30') QUADRANGLE.

Sycamore northeast along road via Ragland and Oilville to Island Creek.

Merrimac, west of, 50 feet north of railroad, on north side of wagon road, in sandstone ledge; aluminum tablet stamped "677 1909".....	676. 701
Sycamore, 3 miles north of, summit at head of Lick Creek, on west side of road, 40 feet south of divide, in sandstone ledge; aluminum tablet stamped "1436 W. Va. 1909".....	1, 435. 253
Sycamore, 3.9 miles north of, on west side of road, 150 feet north of stream crossing, 12 feet southwest of telephone pole marked "U.S.B.M. 867," on sandstone rock; chiseled square.....	866. 54
Rockhouse, at junction of Pigeon and Rockhouse creeks, 50 feet northwest of footbridge over Pigeon Creek, in sandstone ledge; aluminum tablet stamped "740 1909".....	739. 527
Rockhouse, 1.9 miles east of, on north side of creek, 200 feet west of school-house at hollow; point on sandstone outcrop marked "U.S.B.M. 807".....	806. 96
Ragland post office, north side of road, 50 feet east of grist mill, 75 feet northwest of Lewis Varney's house; highest point on flat sandstone boulder 1 by 3 by 4 feet marked "U.S.B.M. 854".....	853. 42
Ragland, 0.2 mile east of, on south side of wagon road, 20 feet north of creek, 100 feet east of road, running north to Elk Creek, in sandstone boulder; aluminum tablet stamped "860 W. Va. 1909".....	859. 761
Ragland, 1.8 miles east of, 300 feet west of Christopher Chofin's, on south side of road; point on south end of large sandstone boulder 4 by 7 by 5 feet marked "U.S.B.M. 950".....	949. 68
Ragland, 3.1 miles east of, 75 feet south of road, on south side of creek, 50 feet east of hollow leading south at Harley Curry's place, in large flat sandstone rock; aluminum tablet stamped "1025 W. Va. 1909".....	1, 024. 385
Ragland, 5.1 miles northeast of, at divide at head of Cow Creek (Mingo-Logan County line); point on west end of sandstone outcrop running directly across divide marked "U.S.B.M. 1709".....	1, 708. 72
Ragland, 6.1 miles northeast of, south side of road, 300 feet east of Victor Curry's house, in large sandstone boulder; aluminum tablet stamped "1384 W. Va. 1909".....	1, 383. 530
Ragland, 8.4 miles northeast of, north side of road, south side of creek, at east end of old log, 50 feet west of footbridge; highest point on triangular sandstone rock marked "U.S.B.M. 1067".....	1, 066. 83
Oilville, 0.3 mile east of, on south side of road, 5 feet north of fence, 150 feet west of Dave Robertson's house, in sandstone rock; aluminum tablet stamped "947 W. Va. 1909".....	946. 830
Oilville, 2 miles east of, at forks of road at junction of Cow and Island Creeks; point on northwest corner of stone property line post; marked "U.S.B.M. 840".....	840. 02
Oilville, 2.5 miles east of, 0.5 mile south of junction of Cow and Island creeks, on east side of road, 350 feet north of Lewis Chofin's house, in large sandstone boulder; aluminum tablet stamped "859 W. Va. 1909".....	858. 431

Three Forks south up Island Creek to point near Calico.

Crane's sawmill, 3.2 miles south of, west side of road, point on flat sandstone rock on edge of stream marked "U.S.B.M. 1331".....	Feet. 1, 330. 46
Calico along highway west down Pigeon Creek to Mary Taylor's house, thence southwest to Matewan.	
Calico, 0.8 mile west of, at forks of road, 12 feet south of dead beech tree just east of forks; highest point on sandstone rock marked "U.S. □ B.M. 1420" .	1, 419. 42
Calico, 2 miles southwest of, 150 feet east of old church, 50 feet south of road, on south side of creek, in sandstone outcrop; aluminum tablet stamped "1269 W. Va. 1909"	1, 268. 818
Calico, 4.8 miles southwest of, 40 feet south of road, 50 feet east of small stream running south, in sandstone rock; aluminum tablet stamped "1119 W. Va. 1909"	1, 118. 204
Calico, 7 miles southwest of, on south side of road, 900 feet west of Fulton Hatfield's house; highest point on sharp sandstone rock marked "U.S. B.M. 1007"	1, 006. 09
Varney, 0.9 mile west of, on south side of road, 75 feet west of sandstone boulder 6 by 6 by 7 feet, in south end of sandstone outcrop crossing road; aluminum tablet stamped "959 W. Va. 1909"	958. 242
Varney, 3.8 miles west of, 5 feet south of road, on north side of creek, 400 feet east of road running southwest to Matewan at Mary Taylor's house, in sandstone rock; aluminum tablet stamped "860 W. Va. 1909"	859. 066
Red Jacket, northeast corner of pumping station at mine, on north face; aluminum tablet stamped "739 W. Va. 1909"	738. 995

Devon north up Beech Creek and over divide to point near Calico.

Devon, 0.7 mile west of, in north end of west abutment of railroad bridge No. 924 over Beech Creek; aluminum tablet stamped "753 1909".....	752. 991
Walker's mill, 2.5 miles northeast of, 115 feet north of mouth of Grapevine Fork, on east side of road, 60 feet northeast of store kept by Smith Hatfield, in sandstone rock; bronze tablet stamped "904 W. Va. 1909".....	903. 925
Hinch, 250 feet east of Bill Kenneda's house, on east side of road, 350 feet west of forks of road, in sandstone rock, 30 feet north of elm tree 36 inches in diameter; bronze tablet stamped "1212 W. Va. 1909"	1, 211. 566
Hinch, 1.1 miles northeast of, on east side of road, at northeast corner of fence around garden; highest point on sandstone rock 2 by 2 by 2 feet, marked "U.S.B.M. 1505"	1, 504. 22
Hinch, 2.9 miles northeast of, 30 feet east of road, on east side of creek, in sandstone outcrop; bronze tablet stamped "1496 W. Va. 1909"	1, 495. 435
Hinch, 3.5 miles northeast of, at forks of road, 0.8 mile west of Calico, at Rice Browning's place, 10 feet south of dead beech tree; point on sandstone rock marked "U.S.B.M. 1420"	1, 419. 424

Glensalum northwest along Norfolk & Western Ry. to East Williamson.

Glensalum, 2 miles west of, in north end of bridge seat of west abutment of railroad bridge 922; aluminum tablet stamped "790"	789. 298
Lindsey, in front of station; top of rail.....	783. 8
Lindsey, 0.2 mile west of, 240 feet west of milepost 443, on north end of east abutment of railroad bridge 923; chiseled square marked "U.S.B.M. 779"	779. 11

	Feet.
Lindsey, 1.4 miles west of, 730 feet west of milepost 444, on north side of railroad, in sandstone ledge; aluminum tablet stamped "778".....	777. 890
Lindsey, 3.2 miles west of, 75 feet east of milepost 446, on sandstone ledge; chiseled square marked "U.S.B.M. 760".....	759. 38
Devon, 0.7 mile west of, in north end of west abutment of railroad bridge 924; aluminum tablet stamped "753".....	752. 991
Devon, 1.6 miles west of, on sandstone ledge (railroad bench mark).....	751. 50
Cedar, in front of station; top of rail; mail crane marked "U.S. 746".....	745. 2
Cedar, 0.4 mile west of, at railroad junction, in northeast corner of north abutment of railroad bridge 2,141 over Tug River; aluminum tablet stamped "743".....	743. 110
Vulcan, 1.1 miles west of, at Freeborn's station, in north end of east abutment of railroad bridge over Tug River; aluminum tablet stamped "727".....	726. 850
Delorme, in front of station; top of rail.....	726. 5
Delorme, 0.2 mile west of, at milepost 454, in top of center rack for extra rail; nail marked "U.S.B.M. 726" (railroad bench mark).....	725. 60
Thacker, in front of station; top of rail.....	715. 3
Thacker, 644 feet northwest of station, in north end of west abutment of railroad bridge 927; aluminum tablet stamped "712".....	711. 795
Thacker, 3.4 miles northwest of, in west end of bridge seat of, north abutment of Pike Collier electric railroad bridge over Tug River; aluminum tablet stamped "701".....	700. 392
Northwest corner of same abutment (railroad bench mark).....	704. 28
Matewan, north end of east abutment of railroad bridge 928; chisel mark (railroad bench mark).....	696. 16
Matewan, in front of station; top of rail.....	697. 8
State line, West Virginia-Kentucky, in center of railroad bridge 929 over Tug River; top of rail.....	695. 22
Matewan, 1.4 miles northwest of north end of west abutment of railroad bridge 929 over Tug River, Kentucky side of bridge, 100 feet east of Hatfield tunnel; chiseled square marked "U.S.B.M. 693".....	692. 78
Matewan, 1.6 miles northwest of, in north end of west abutment of railroad bridge 930, State line bridge over Tug River; aluminum tablet stamped "691".....	690. 337
Merrimac, in front of station; top of rail.....	680. 6
Merrimac, 0.2 mile northwest of, at coal tipple, in southwest foundation for water tank; aluminum tablet stamped "680".....	679. 959
Merrimac, 1.3 miles northwest of, 75 feet south of milepost 466, on sandstone boulder; chiseled square.....	674. 18
Merrimac, 2.2 miles northwest of, 300 feet east of milepost 467, 75 feet north of railroad, on north side of county road, in sandstone ledge; aluminum tablet stamped "677".....	676. 701

WILLIAMSON QUADRANGLE.

Williamson northwest along Norfolk & Western Ry. to Nolan.

Williamson, 200 feet east of station, at southwest corner of guardrail over subway, on sandstone coping; chiseled square marked "665".....	664. 27
Williamson, at southwest corner of intersection of Fifth Avenue and Harvey Street, in top of stone post; bronze meridian tablet stamped "675".....	674. 682
Williamson, at courthouse; U. S. Army engineers' bench mark No. 30 (Army engineers' elevation 660.774).....	660. 376
Williamson, 2.2 miles northwest of, 826 feet west of tunnel, on north side of railroad, on east side of county road crossing, east end of culvert; chiseled square marked "657".....	656. 24

Chattaroy, 400 feet east of station, 35 feet east of milepost 474, on north side of railroad, in sandstone ledge; aluminum tablet stamped "654".....	Feet. 653. 868
Chattaroy, in front of station; top of rail.....	654. 9
Hatfield, in front of station; top of rail.....	652. 0
Hatfield, 0.8 mile northwest of, 500 feet east of milepost 477, 60 feet north of railroad, east side of county road, in sandstone ledge; aluminum tablet stamped "650".....	649. 915
Nolan, 75 feet north of station, on sandstone boulder; chiseled square.....	647. 97

NAUGATUCK QUADRANGLE.

Nolan northwest along Norfolk & Western Ry. to Yorkville.

Nolan, 2.3 miles northwest of, 130 feet northwest of road crossing, 100 feet west of milepost 480, 70 feet north of deserted house, in sandstone boulder 15 by 108 by 10 feet; aluminum tablet stamped "645".....	644. 777
Naugatuck, at east end of siding, 25 feet south of railroad, 100 feet west of old road crossing, in sandstone culvert; aluminum tablet stamped "638".	637. 728
Naugatuck, 0.9 mile northwest of, 10 feet south of road crossing, on sandstone rock; chiseled square; warning post marked "U.S.B.M. 635".....	634. 52
Naugatuck, 1.9 miles northwest of, 200 feet north of railroad crossing, 75 feet west of wagon road, in sandstone rock; aluminum tablet stamped "639".....	638. 508
Naugatuck, 3.4 miles northwest of, 60 feet east of tunnel, on south side of tracks, on sandstone rock; chiseled square.....	629. 98
Kermit, at road crossing, at milepost east of, on north side of railroad, on west side of wagon road, on sandstone rock; chiseled square marked "628"	628. 03
Kermit, 600 feet east of station, on west side of sandstone culvert, in third tier of stone below top; aluminum tablet stamped "623".....	622. 640
Kermit, in front of station; top of rail.....	627. 8
Kermit, 2.5 miles northwest of, 100 feet north of railroad, 300 feet northeast of railroad crossing, 50 feet north of wagon road, 5 feet south of gate, in sandstone rock; aluminum tablet stamped "621".....	620. 505
Crum, 0.3 mile east of, 50 feet north of railroad, on south side of county road, 100 feet northwest of milepost "Naug. 11," in sandstone boulder; aluminum tablet stamped "619".....	618. 902
Crum, 1.95 miles northwest of, 750 feet west of mouth of tunnel, on north end of west abutment of railroad bridge 755 over Bull Creek; chiseled square marked "611".....	610. 97
Jennie, 10 feet south of northwest entrance to railroad tunnel, 150 feet east of road crossing; aluminum tablet stamped "615".....	614. 526
Millet, 1.6 miles northwest of, in east end of north abutment of railroad bridge 756 over Camp Creek; aluminum tablet stamped "603".....	602. 200
Webb, in front of station; top of rail.....	600. 5
Webb, 1.8 miles northwest of, 105 feet north of milepost "Naug. 20," on north side of wagon road, on east side of Coon Hollow, in sandstone rock; aluminum tablet stamped "594".....	594. 105

Near Preston.

Preston, 0.6 mile east of, 800 feet east of Wells Branch station, in northwest abutment of bridge 975 over Missouri Branch mouth; aluminum tablet stamped "704".....	704. 665
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Naugatuck north along old line of Norfolk & Western Ry. to point 0.8 mile north of Canterbury.

Naugatuck, 230 feet north of station, on northeast foundation for east water tank; chiseled square marked "636".....	Feet. 635. 66
Blocton, in front of station; top of rail.....	633. 8
Blocton, 0.3 mile east of, 110 feet east of road crossing, 8 feet south of railroad track; chiseled square on large sandstone rock marked "U.S.B.M. 637".....	636. 65
Blocton, 1.7 miles east of, 10 feet north of railroad; chiseled square on sandstone ledge marked "640".....	639. 98
Blocton, 2.4 miles east of, 1,150 feet west of Eugene post office, 35 feet south of road crossing, in sandstone rock; aluminum tablet stamped "634".....	633. 900
Eugene, in front of station; top of rail.....	638. 8
Lenore, in front of station; top of rail.....	641
Lenore, 1 mile northeast of, 12 feet west of railroad track; chiseled square on sandstone rock in small hollow to west.....	643. 33
Rapp, in front of station; top of rail.....	646
Lenore, 2.6 miles northeast of; top of east end of north abutment of railroad bridge 939.....	666. 93
Lenore, 3 miles north of, in east bridge seat of north abutment of railroad bridge 941; aluminum tablet stamped "672".....	672. 066
Canterbury, at water tank; top of rail.....	686
Canterbury, 0.8 mile north of, railroad bridge 942 over Tom Run; west end of north abutment.....	699. 20

Point 2.2 miles south of Breeding northwest along Norfolk & Western Ry. to Preston.

Kirk, in front of station; top of rail.....	873
Buttercup, in front of station; top of rail.....	867
Breeden, 2.2 miles southeast of; top of east end of south abutment of railroad bridge 951.....	856. 61
Breeden, 1.1 miles southeast of, 5 feet west of railroad track, in cut on sandstone rock; chiseled square.....	837. 85
Breeden, 800 feet east of, in top of south end of east abutment of railroad bridge 956; aluminum tablet stamped "818".....	818. 378
Breeden, in front of station; top of rail.....	816
Wilsondale, 3.3 miles southeast of, on south end of east abutment of railroad bridge 960, at branch to north; chiseled square.....	798. 36
Wilsondale, 2.7 miles southeast of, on south end of east abutment of railroad bridge 964 over Poor Branch; chiseled square.....	786. 42
Mingo-Wayne County line; top of rail; marked "780".....	780
Wilsondale, 1.8 miles southeast of, 8 feet north of railroad and 740 feet west of Mingo and Wayne County line, in sandstone ledge; aluminum tablet stamped "781".....	780. 979
Wilsondale, 300 feet west of, 10 feet north of railroad track; chiseled square on sandstone rock.....	761. 34
Doane, 3 miles southeast of, in top of west bridge seat of south abutment of railroad bridge 967 over Gourd Branch; aluminum tablet stamped "746".....	745. 901
Doane, 2.6 miles southeast of, 30 feet south of railroad track, 103 feet west of milepost "N 514;" chiseled square on sandstone rock.....	718. 78
Doane, 1.4 miles southeast of, on west end of railroad bridge 971 over Twelvepole Creek; chiseled square.....	738. 76
Doane, 0.4 mile east of, 10 feet north of railroad track, in sandstone rock; aluminum tablet stamped "722".....	722. 375

	Feet.
Doane, in front of station; top of rail.....	721
Wells Branch, 2 miles southeast of, on east side of north abutment of railroad bridge 974 over Arkansas Branch; chiseled square.....	717. 87
Wells Branch, 1.1 miles southeast of, 10 feet north of railroad track; chiseled square on sandstone ledge.....	711. 64
Preston, 0.6 mile east of, 800 feet east of Wells Branch station, in northwest abutment of bridge 975 over mouth of Missouri Branch; aluminum tablet stamped "704".....	704. 665

Lenore station east along country road up Pigeon Creek 3 miles.

Lenore, 115 feet north of station; chiseled square on sandstone ledge.....	650. 08
Lenore, 1.6 miles east of, 100 feet southeast of dwelling house, 6 feet south of center of road; chiseled square on sandstone rock.....	637. 26
Lenore, 2 miles east of, 5 feet south of county road; chiseled square on sandstone rock.....	655. 67
Lenore, 3 miles east of, 5 feet north of county road; chiseled square on sandstone ledge.....	653. 03

HOLDEN QUADRANGLE.

Point 2.2 miles north of Canterbury north along old line of Norfolk & Western Ry. to point 0.2 mile east of Kirk.

Canterbury, 2.2 miles north of, 580 feet east of mouth of hollow from north, 5 feet north of railroad track; chiseled square on sandstone ledge.....	775. 08
Canterbury, 3.1 miles north of, 5 feet north of railroad track, 250 feet west of hollow to north, in sandstone rock; aluminum tablet stamped "818".....	818. 136
Canterbury, 4 miles northeast of, 100 feet east of large hollow to north, 8 feet south of railroad track; chiseled square on sandstone ledge.....	865. 97
Hale, at southwest corner of station, top of sandstone.....	909. 48
Dingess, 1.4 miles south of, 8 feet west of railroad, in sandstone ledge; aluminum tablet stamped "949".....	949. 053
Dingess, 115 feet east of station, east side of wagon road; chiseled square on sandstone ledge.....	1, 007. 02
Kirk, 3.4 miles southeast of, 8 feet south of railroad, 200 feet south of junction of Dingess Trace and Twelvepole Creek; bronze tablet stamped "944".....	944. 405
Kirk, 3.4 miles southeast of, 8 feet south of railroad track; chiseled square on sandstone rock.....	943. 91
Kirk, 2.4 miles southeast of, chiseled square on top of north end of west abutment of railroad bridge.....	908. 45
Kirk, 1.4 miles east of; chiseled square on north end of east abutment of railroad bridge 945.....	894. 21
Kirk, 0.2 mile east of, in top of north bridge seat of east abutment of railroad bridge 948; aluminum tablet stamped "873".....	873. 010

Point 3.4 miles southeast of Kirk at forks of Dingess Trace and Twelvepole Creek up Dingess Trace over country road northwest to Chapmanville, thence southeast to point 2.2 miles south of Chapmanville, thence to point 1 mile west of Logan, thence to point 4 miles east of Lenore.

Kirk, 3.4 miles southeast of, 200 feet south of Dingess Trace and Twelvepole Creek, 8 feet south of railroad, in sandstone rock; bronze tablet stamped "944".....	944. 405
Dingess, 3.1 miles north of, on south side of road, 100 feet east of dwelling house; chiseled square on sandstone ledge.....	1, 075. 34

	Feet.
Dingess, 4.1 miles north of, 5 feet west of county road; chiseled square on sandstone ledge.....	1,209.49
Dingess, 5.1 miles north of, 16 feet east of center of wagon road, 1,400 feet south of Coon Branch, in sandstone ledge; aluminum tablet stamped "956".....	955.827
Whirlwind, 2 miles southwest of, on south side of road; chiseled square on sandstone ledge.....	967.38
Whirlwind, 0.25 mile north of, 150 feet north of road forks at junction of Bull Work and Big Hart Creeks, 20 feet east of road in creek bed, in sandstone ledge; aluminum tablet stamped "723".....	723.042
Whirlwind, 1.3 miles north of; top of sandstone rock at hollow to left of road.....	681.65
Whirlwind, 2 miles north of, 1,000 feet south of Hoover Fork of Big Hart Creek, east side of road and east side of creek; chiseled square on sandstone ledge.....	666.04
Whirlwind, 3.1 miles north of, 200 feet south of forks of Buck Fork and Big Hart Creek, east side of creek; aluminum tablet stamped "648".....	647.805
Junction of Smokehouse Fork and Big Hart Creek, 1.2 miles east of, on west side of creek bed, 3 feet above surface of water; chiseled square on sandstone rock.....	652.58
Junction of Smokehouse Fork and Big Hart Creek, 2.2 miles east of, in sandstone ledge, north side of county road, 200 feet northwest of house and store; aluminum tablet stamped "682".....	682.526
Junction of Smokehouse Fork and Big Hart Creek, 3.4 miles east of; chiseled square on sandstone rock north side of wagon road.....	700.10
Shively, 1.8 miles north of, 50 feet west of road forks at junction of Trace and Smokehouse forks, 13 feet inside fence around small bottom, in sandstone rock; aluminum tablet stamped "758".....	758.112
Shively, 2.5 miles north of, on south side of road, 50 feet west of divide between Smokehouse Fork and Crawley Creek; chiseled square on sandstone rock.....	984.20
Shively, 2.8 miles north of, 5 feet north of county road; chiseled square on sandstone rock.....	857.04
Shively post office, 3.8 miles north of, 20 feet west of center of road; chiseled square on sandstone rock.....	648.08
Forks of Pitt Branch and Crawley Creek, 180 feet east of, 25 feet south of wagon road, in large sandstone rock; bronze tablet stamped "635".....	635.149
Chapmanville, 3 miles west of, 500 feet north of Striker Fork; chiseled square on sandstone rock 10 feet east of road.....	622.63
Chapmanville, 1.3 miles west of, 12 feet north of railroad track; chiseled square on sandstone rock.....	641.83
Chapmanville, in south side of southeast concrete pillar for railroad station platform; bronze tablet stamped "647".....	646.895
Chapmanville, 2.1 miles south of, 35 feet north of railroad crossing, 5 feet west of railroad track; chiseled square on sandstone rock.....	652.52
Chapmanville, 2.8 miles south of, 600 feet west of Godby crossing, 8 feet north of railroad track, in sandstone ledge; bronze tablet stamped "655".....	653.908
Logan, 1 mile west of, on south side of east abutment of railroad bridge over Island Creek, 200 feet north of forks of Island Creek and Copperas Mine Fork; chiseled square.....	666.62
Logan, 2 miles southwest of, 8 feet south of railroad track; top of sandstone rock.....	676.50
Logan, 2.8 miles southwest of, 300 feet northwest of mouth of Whitman Fork, in south bridge seat of west abutment of railroad bridge over Copperas Mine Fork of Island Creek; bronze tablet stamped "690".....	689.467

	Feet.
Holden, 300 feet east of station, north end of west abutment of wagon bridge over Truce Fork at mouth; chiseled square marked "735".....	733. 73
Holden, 1 mile southwest of, on west side of stream, 350 feet north of hollow to right of road; chiseled square on sandstone ledge.....	802. 27
Holden, 1.6 miles southwest of, on north side of stream, 250 feet north of hollow to left of road; chiseled square on sandstone ledge.....	850. 87
Holden, 1.9 miles southwest of, on north side of road, 100 feet north of stream forks to north, 150 feet east of house, in sandstone rock; bronze tablet stamped "885".....	883. 710
Holden, 2.7 miles southwest of, 200 feet west of stream forks, at foot of hill; point on sandstone rock.....	1, 021. 27
Holden, 3.5 miles southwest of, 90 feet west of divide between Trace Fork of Island Creek and Trace Fork of Pigeon Creek; chiseled square on sandstone rock.....	1, 401. 89
Holden, 4.5 miles southwest of, 7 feet north of center of wagon road, 200 feet west of hollow to right, in sandstone ledge; bronze tablet stamped "1033".....	1, 031. 627
Holden, 5.9 miles southwest of, 250 feet southeast of schoolhouse, 35 feet south of road; chiseled square on sandstone rock.....	877. 60
Holden, 7.7 miles southwest of, 90 feet south of road, 300 feet west of old splash dam; chiseled square on sandstone rock.....	787. 13
Holden, 8.2 miles southwest of, 1,700 feet southeast of house at hollow to right, in sandstone ledge 20 feet east of creek bed and on east side of road; bronze tablet; stamped "762".....	760. 873
Myrtle, 1.5 miles north of, 300 feet west of large hollow to right, on sandstone rock on north side of creek.....	722. 41
Myrtle, 0.8 mile west of, on north side of creek, between creek and road; chiseled square on sandstone rock.....	690. 91
Myrtle, 2.3 miles west of, on south side of creek and just opposite hollow to right of road; chiseled square on sandstone rock.....	662. 52
Forks of Trace Fork and Pigeon Creek, 4 miles east of Lenore, on north side of county road, in sandstone ledge; aluminum tablet stamped "645".....	645. 071
Lenore, 4 miles east of, 80 feet east of forks of Trace Fork and Pigeon Creek, on north side of county road, in sandstone ledge; aluminum tablet stamped "645".....	645. 071

LOGAN QUADRANGLE.

Point 0.4 mile north of Pecks Mill south along railroad to Logan.

Pecks Mill, 0.4 mile north of, 10 feet east of railroad track; chiseled square on sandstone ledge.....	661. 12
Pecks Mill, in front of station, top of rail.....	660
Pecks Mill, 1 mile south of, 10 feet east of railroad track; chiseled square on sandstone ledge.....	661. 20
Ralumco, in front of station; top of rail.....	661
Pecks Mill, 2.1 miles south of, 700 feet south of Ralumco station, 10 feet east of railroad track, in sandstone ledge; bronze tablet stamped "662".....	660. 809
Henlawson, in front of station; top of rail.....	667
Henlawson, 0.6 mile south of, 10 feet east of railroad track; chiseled square on sandstone rock.....	666. 91
Peach Creek, in front of station; top of rail.....	663. 7
Peach Creek station, 0.4 mile south of, railroad bridge over stream to east; northeast corner of south abutment.....	668. 46
Logan, in front of station; top of rail.....	674. 8
Logan, in south side of west entrance to courthouse; bronze tablet stamped "683".....	681. 656
Logan, stone step of Gyan Drug Co.'s building, marked "680".....	679. 120

LOUISA QUADRANGLE.

Yorkville northwest along Norfolk & Western Ry. to Louisa, Ky.

	Feet.
Yorkville, 600 feet east of post office, in east end of south abutment of railroad bridge 758 over Lost Creek; aluminum tablet stamped "589".....	588. 857
Glenhayes, in front of station; top of rail.....	590. 8
Glenhayes, 1.2 miles northwest of, 150 feet east of milepost "Naug. 26," on west end of sandstone culvert; chiseled square marked "588".....	587. 27
Glenhayes, 2.25 miles northwest of, 50 feet north of milepost "Naug. 27," in sandstone boulder; aluminum tablet stamped "595".....	594. 265
Salt peter, in front of station; top of rail.....	582. 4
Salt peter, 200 feet northwest of station, 75 feet north of railroad, on south side of wagon road, in sandstone boulder 20 by 15 by 8 feet; aluminum tablet stamped "574".....	574. 044
Salt peter, 1.9 miles northwest of, 250 feet north of railroad, 500 feet northeast of milepost "Naug. 32," in Jerry Bartram's field, in sandstone rock; aluminum tablet stamped "579".....	578. 324
Salt peter, 3.2 miles northwest of, on north end of west abutment of railroad bridge 759; chiseled square.....	575. 32
Fort Gay, on west end of north abutment of toll bridge over Big Sandy River; chiseled square.....	576. 19
Louisa, Ky., at lock No. 3 (United States Army Engineer's bench mark No. 13, Engineers' elevation, 569.570 feet).....	569. 172

Bald Knob, Mullens, and Pineville quadrangles.

BOONE, LOGAN, RALEIGH, AND WYOMING COUNTIES.

The elevations in the following list are based upon the 1903 adjustment by the Coast and Geodetic Survey and are in accord with the values given in Bulletin 399.

Most of the leveling was done in 1910 by J. B. Metcalfe, jr., but that in the south part of the Mullens quadrangle was done in 1909 by S. E. Taylor, and that in the northwest corner of the Pineville quadrangle in 1896-7 by Hargraves Wood.

PINEVILLE QUADRANGLE.

Davy (Hallsville post office) north along public roads to Oceana.

	Feet.
Davy, 0.8 mile east of, 100 feet southeast of milepost 406; chiseled square on rock.....	1, 213. 870
Davy, 100 feet southwest of milepost 407, on south end of east bridge seat of railroad bridge 901; chiseled square.....	1, 180. 03
Davy, 2.7 miles north of, 2 feet west of road and about 250 feet south of top of gap; oval chiseled on rock.....	1, 783. 85
Davy, 2.7 miles north of, 4 feet east of road and about 3 feet below it, 250 feet south of gap in mountain, in rock; aluminum tablet stamped "1777".....	1, 776. 880
Davy, 4.9 miles north of, about 200 feet west of schoolhouse and 20 feet southeast of old cabin, 3 feet east of road; cross on rock.....	1, 393. 63
Davy, 5.9 miles north of, 3 feet north of road, 500 feet west of old splash dam; cross on top of rock.....	1, 334. 11
Brier, 150 feet north of post office, east side of road; cross on rock.....	1, 251. 56
Brier, 150 feet north of post office, 10 feet east of road, about 4 feet above level of same, in ledge of rock; aluminum tablet stamped "1255".....	1, 255. 469
Indian and Brier creeks, surface of water at junction of; May, 1910.....	1, 205
Indian and Brier creeks, 50 feet northeast of junction of, on south side of road, in root of red oak tree; nail.....	1, 214. 97

	Feet.
Davy, 7.8 miles north of, 250 feet west of point where drain crosses road, 4 feet north of road; chiseled oval on rock	1, 226. 40
Davy, 8.8 miles north of, about 800 feet northeast of Indian Creek crossing, 200 feet southwest of hilltop, north side of road; cross on rock	1, 193. 69
Baileysville, 0.3 mile north of, 6 feet west of road, at mouth of small drain, in ledge of rock; aluminum tablet stamped "1139"	1, 138. 714
Baileysville, 1 mile north of, south side of road, in top of gap; cross on rock	1, 442. 68
Baileysville, 2 miles north of, 40 feet north of schoolhouse, 50 feet south of road forks and creek crossing; cross on rock	1, 254. 54
Baileysville, 2.9 miles north of, 100 feet north of sharp turn in road where trail leaves road to left and goes up Clear Fork, 6 feet east of road, in ledge of rock; aluminum tablet stamped "1205"	1, 204. 692
Baileysville, 4.8 miles north of, in front of H. W. Sanders's residence, 3 feet west of road, 4 feet north of gate to yard; cross on second stone step marked "1211.5"	1, 211. 65
Baileysville, 6.4 miles north of, about 12 feet below level of road, 30 feet west of road, 10 feet south of large white oak tree, about 700 feet south of where road comes back on Clear Fork, in rock; aluminum tablet stamped "1221.5"	1, 221. 711
Baileysville, 7.1 miles north of, 150 feet north of where road crosses Clear Fork on east bank of creek, 150 feet southwest of house; cross on corner stone	1, 228. 92
Oceana, 400 feet east of post office, 50 feet south of Oceana high school building, south side of southwest corner of office of school building, north side of street, about 3.5 feet above level of ground, in brick wall; aluminum tablet stamped "1259"	1, 259. 218

Oceana east and south along roads to Pineville.

Oceana, 1.2 miles east of, at junction of Laurel and Clear Fork creeks, 20 feet south of store, in forks of road; cross on rock	1, 261. 56
Oceana, 3.5 miles east of, 6 feet west of road, between road and Laurel Fork, about 250 feet west of G. E. Walker's house; cross on rock	1, 329. 39
Oceana, 3.5 miles east of, 6 feet west of road and between same and Laurel Fork, about 250 feet west of G. E. Walker's house, in rock; aluminum tablet stamped "1331"	1, 331. 166
Oceana, 5.6 miles southeast of, 4 feet west of road, about 300 feet north of house on opposite side of Laurel Fork; nail in root of beech tree	1, 357. 77
Oceana, 5.6 miles southeast of, about 300 feet north of house, in bend of Laurel Fork, on opposite side of creek, about 12 feet above level of road, in rock; aluminum tablet stamped "1363"	1, 363. 168
Jesse, 15 feet north of post office, in southwest corner of road; nail in root of walnut tree (railroad bench mark)	1, 365. 55
Jesse, 2 miles southeast of, 100 feet south of where road crosses Elkins Fork, about 0.5 mile from top of Elkins Gap, southeast of road; nail in root of white oak stump	1, 767. 28
Jesse, 3.6 miles southeast of, 6 feet south of forks to southwest, at foot of mailbox; cross on rock	1, 711. 26
Rockview, 100 feet northwest of post office, 8 feet west of road and about 5 feet above it, in rock; aluminum tablet stamped "1628"	1, 627. 919
Jesse, 6.8 miles southeast of, 15 feet northwest of ford over Rock Castle Creek, 25 feet southeast of old log building; cross on sharp pointed rock	1, 378. 42
Pineville, 250 feet northeast of schoolhouse building, between two roads that fork at schoolhouse, in rock; aluminum tablet stamped "1323"	1, 323. 727

Baileysville northeast along public roads to point 2.5 miles south of Pineville.

	Feet.
Brier Creek, 1.3 miles southeast of, south side of road, about 500 feet east of prominent bend in road to left; nail in root of large sycamore tree.	1, 217. 03
Brier Creek, 2.6 miles east of, south side of road and 6 feet east of drain; cross on rock.	1, 224. 36
Brier Creek, 2.6 miles east of, 50 feet northeast of road, about same distance east of drain, in ledge of rock; aluminum tablet stamped "1236".	1, 236. 080
Brier Creek, 3.4 miles southeast of, south side of road and 30 feet west of where Dry Branch crosses road; cross on rock.	1, 241. 22
Mulberry, 600 feet east of post office, 30 feet south of schoolhouse and 20 feet south of road, 10 feet north of branch; cross on rock.	1, 276. 49
Mulberry, 600 feet east of post office, 60 feet north of road, about 50 feet northwest of schoolhouse, in ledge of rock; aluminum tablet stamped "1282".	1, 282. 149
Mulberry, 2 miles east of, south side of road, about 1 mile from top of gap, west side of gap; cross on ledge of rock.	1, 548. 64
Mulberry, 3 miles east of, 140 feet east of gap, south side of road; cross on rock.	1, 805. 78
Mulberry, 3 miles east of, 6 feet north of road, 160 feet east of gap, in vertical ledge of rock; aluminum tablet stamped "1807".	1, 807. 324
Mulberry, 4 miles east of, north side of road, 0.3 mile from foot of mountain; cross on large rock.	1, 404. 47
Mulberry, 5 miles east of, 10 feet north of ford over Pinnacle Creek, about 7 feet above level of water; nail in root of sycamore tree.	1, 315. 55
Pineville, about 1 mile south of, 250 feet northeast of junction of Guyandot River and Pinnacle Creek, 10 feet east of road forks, in ledge of rock; aluminum tablet stamped "1308".	1, 308. 411
Pineville, 2.5 miles east of, 8 feet north of road by persimmon tree, in clearing 500 feet east of woods; cross on rock.	1, 223. 81

McGraws west along roads to Jesse.¹

McGraws, 1.5 miles west of, just at foot of mountain, 6 feet south of fork of second-class road to northeast, opposite blacksmith shop; cross on ledge of rock.	1, 556. 28
McGraws, 2.6 miles west of, 250 yards northeast of Laurel Fork, 6 feet south of road and 18 feet west of creek; cross on rock.	1, 420. 73
McGraws, 4 miles west of, 300 feet west of Allen Branch, 8 feet north of road, about 3 feet above level of road, in rock; bronze tablet stamped "1413".	1, 409. 881

Beech Branch up Big Huff Creek to Trace Fork.

Cyclone, 6 miles east of, 600 feet below Lower Gap Branch, on east side of road up Big Huff Creek, 100 feet above D. H. Cook's store; iron post stamped "1068".	1, 069. 100
Road fork, 1 mile above; nail in root of tall sycamore tree 50 feet to right of road up Big Huff Creek.	1, 221. 05

From its mouth up Toney Fork 2 miles (single spur line).

Cyclone, 7 miles east of, south side of Toney Fork of Huff Creek, about 2 miles above mouth, in ledge of rock; copper bolt stamped "U. S. G. S. 1234 Ft. B. M.".	1, 235. 989
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¹ An excessive error has been distributed in this line.

From its mouth up Trace Branch of Elk Creek northeast over Divide and down Elk Trace to Big Huff Creek.

Christian, 7.5 miles northeast of, on south side of road, at ruins of old house; point on sandstone rock marked "U. S. B. M. 1574"	Feet. 1, 573. 88
Lower Gap Branch, 600 feet below, on south side of road up Big Huff Creek; iron post stamped "1068"	1, 069. 100

MULLENS QUADRANGLE.

Point 2.5 miles south of Pineville east to Virginian Ry. at point 2.3 miles south of Mullens.

Pineville, 3.5 miles east of; south side of road, 600 feet west of Sugar Creek, just east of small drain; cross on large flat rock	1, 334. 80
Pineville, 5 miles east of, 15 feet southwest of bend in road where it rounds end of spur, about 0.25 mile south of schoolhouse, in rock; aluminum tablet stamped "1378"	1, 378. 431
Pineville, 5.3 miles east of, north side of road by gate, 100 feet southwest of house; cross on rock	1, 358. 02
Pineville, 8 miles east of, about 300 feet east of trail to south over river, 8 feet north of road, in rock; aluminum tablet stamped "1369"	1, 369. 643
Pineville, 10.2 miles east of, 2 feet south of road, about 200 feet southwest of Dogwood Spring; cross on rock	1, 388. 57
Pineville, 10.5 miles east of, 10 feet south of road, 50 feet south of large chestnut tree, 200 feet west of bridge; nail in root of maple tree (railroad bench mark)	1, 383. 78
Pineville, 11.4 miles east of, south end of east abutment to Virginian Ry. bridge over Barker Creek, about 450 feet west of main line of railroad, in top face; aluminum tablet stamped "1396"	1, 396. 401

Mullens south along Virginian Ry. to Herndon.

Mullens, 3.5 miles south of, 12 feet south of Virginian Ry. track, in sharp curve to left; oval on large flat rock	1, 460. 96
Mullens, 4.8 miles south of, at Taft's siding, 3.5 feet west of Virginian Ry. track, on top face of northwest abutment to railroad over Barker Creek; cross in concrete	1, 518. 02
Bud, 400 yards southeast of post office, 12 feet southeast of Virginian Ry., in top face of southeast abutment to railroad bridge over Barker Creek, in concrete; aluminum tablet stamped "1593"	1, 593. 846
Bud, 3.1 miles south of, 6 feet north of Virginian Ry. track; cross on ledge of rock	1, 778. 44
Herndon, about 500 feet northwest of water tank, 10 feet south of Virginian Ry. track, in top face of southeast abutment of railroad bridge over creek, in rock; aluminum tablet stamped "1878"	1, 878. 625

Mullens northeast along Virginian Ry. to Tams (Gulf post office).

Mullens, at bank building, top of north stone banister of steps of bank entrance, in rock; aluminum tablet stamped "1418"	1, 418. 692
Mullens, 3.1 miles east of, 5 feet south of railroad, about 2 feet below level of same, on lower face of southwest abutment to culvert, in concrete; aluminum tablet stamped "1474"	1, 474. 484
Mullens, 3.8 miles east of, 6 feet south of railroad, southeast corner of truss over Allen Fork; top of bolt through guard rail	1, 492. 91
Mullens, 7.2 miles east of, 8 feet west of railroad, about 300 feet north of old splash dam, in ledge of rock; aluminum tablet stamped "1561"	1, 561. 186

Mullens, 10.8 miles northeast of, 15 feet west of Virginian Ry. track, about 0.25 mile north of Berry bridge, in rock on bank; aluminum tablet stamped "1648"	Feet. 1,648.355
Tams (Gulf post office), 40 feet west of station platform, 200 feet north of truss over Bailey Branch, about 6 feet above track, in wall of rock; aluminum tablet stamped "1735"	1,735.654

Mullens north along Virginian Ry. to Lester.

Mullens, 3.8 miles north of, northwest corner of top step to northeast abutment of bridge over Slab Fork, about 200 feet north of tunnel	1,560.63
Maben, 60 feet southeast of station, in end of concrete water conveyor from mill pond; bronze tablet stamped "1586"	1,586.595
Maben, 2.8 miles north of, southeast abutment to bridge over Old Slab Fork; southeast corner of third step down	1,673.60
Maben, 2.8 miles north of, 8 feet south of railroad, on second step down of southeast abutment of bridge over Old Slab Fork, in rock; bronze tablet stamped "1673"	1,674.110
Slab Fork, in front of station; top of rail	1,904
Slab Fork, 1 mile north of, about 250 yards south of switch, 6 feet east of railroad track; cross on ledge of rock marked "1986"	1,986.93
Lester, 120 feet west of railroad, about 400 feet southwest of station, north side of street, in store building; bronze tablet stamped "2030"	2,030.713

Maben northwest along Ritter's narrow-gage railroad to McGraws (an excessive error has been distributed in this line).

Maben, 4 miles northwest of, in top of gap, 6 feet west of narrow gauge railroad, in ledge of rock; bronze tablet stamped "2172"	2,173.195
Maben, 7.3 miles northwest of, 150 feet west of railroad crossing, 7 feet south of railroad, in ledge of rock; aluminum tablet stamped "1806"	1,806.412
Maben, 8.2 miles northwest of, about 200 feet southeast of road crossing, north end of small cut and 125 feet southeast of truss; cross on ledge of rock	1,794.51
McGraws, about 200 yards south of post office, 20 feet north of drain, 8 feet west of road; oval chiseled on ledge of rock	1,751.29
McGraws, 0.6 mile west of, just in Glen Gap, 6 feet south of road; cross on rock	1,974.24

Pinnacle Creek east along Micajah Ridge to tunnel.

Herndon, 5.5 miles west of, 75 feet north of house of Cosby Lambert, 5 feet south of county road, in sandstone ledge; aluminum tablet stamped "2255 1909"	2,254.180
Herndon, 4.7 miles west of, north side of road, 50 feet east of road forks, 75 feet west of schoolhouse, nail in wooden plug set in top of stone post; marked "U. S. B. M. 2373"	2,372.63
Herndon, 3.4 miles southwest of, 400 feet northwest of house in low gap, 200 feet south of road to west, west side of county road, on sandstone ledge; chiseled square	2,351.70
Herndon, 2.9 miles southwest of, west side of county road, 900 feet southwest of house of Mr. Steele, in sandstone ledge; aluminum tablet stamped "2392 1909"	2,391.679
Herndon, 1.7 miles west of, just north of county road, on sandstone rock; chiseled square	2,445.45

BALD KNOB QUADRANGLE.**Mouth of Whiteoak Creek up Coal River to Hazy Creek.**

Orange, 0.5 mile north of post office, south side of Whiteoak Creek, 300 feet west of mouth of Little Whiteoak Creek, 0.2 mile east of mouth of Whiteoak Creek, in rock cliff; aluminum tablet stamped "734".....	Feet. 732. 963
Mouth of Whiteoak Creek, 1.6 miles south of, 300 feet east of sharp bend in road to east, 2 feet south of road; cross on ledge of rock.....	748. 79
Mouth of Whiteoak Creek, 2.8 miles south of, 3 feet west of river; nail in root of sycamore tree.....	751. 27
Mouth of Whiteoak Creek, 6.3 miles south of, 6 feet east of road, 100 feet south of ford over river, about 0.25 mile south of Serg Creek; cross on rock.....	788. 95
Mouth of Whiteoak Creek, 7.3 miles south of, northwest corner of concrete culvert of Chesapeake & Ohio Railway over Bear Hollow, in top face; bronze tablet stamped "817".....	815. 983
Jarrolds Valley, 1 mile south of, on northeast corner of concrete abutment of bridge over Little Marsh Fork, in lower face; aluminum tablet stamped "855".....	855. 404
Jarrolds Valley, 3.2 miles south of, 6 feet west of railroad grade, 150 feet north of culvert, in sharp curve to right; cross on rock.....	900. 06
Jarrolds Valley, 3.8 miles south of, on east top face of culvert over branch, in concrete; aluminum tablet stamped "918".....	916. 834
Jarrolds Valley, 5.5 miles south of, about 0.5 mile above Hecla post office, 6 feet east of road and between same and Marsh Fork; spike in root of beech tree.....	942. 27
Jarrolds Valley, 6.1 miles south of, 200 feet west of road, about 10 feet west of Marsh Fork, about 0.25 mile north of Hazy Creek, in ledge of rock, near old sycamore snag; bronze tablet stamped "956".....	954. 950

Williamsport quadrangle.**BERKELEY COUNTY.**

The elevations in the following list are based upon the 1903 adjustment of precise leveling.

The leveling was done by J. M. Harris in 1908 and by C. H. Semper in 1910.

WILLIAMSPORT QUADRANGLE.**Potomac River southwest along Cumberland Valley R. R. to Martinsburg.**

Williamsport, 1.5 miles southwest of, near west end of railroad bridge No. 82-1, top of rail.....	Feet. 380. 8
Surface of water in Potomac River under bridge No. 82-1, August 5, 1908.....	325
Williamsport, 2.3 miles southwest of, southwest corner of west bridge seat of railroad bridge No. 82-2, in top of; aluminum tablet stamped "363".....	362. 570
Williamsport, 3.4 miles southwest of, top of west foundation of water tank and north end of; marked "G.S. □ B.M. 361".....	361. 40
Falling Waters, 500 feet east of, northeast corner of east bridge seat of railroad bridge No. 85; marked "G.S. □ B.M. 359".....	359. 06
Falling Waters, in front of station; top of rail.....	372. 3
Falling Waters, 0.6 mile southwest of, in top of center of south head wall of concrete box culvert under railroad at telephone pole 85/31; aluminum tablet stamped "404".....	404. 233

Bedington, 1,020 feet east of station, north side of track, in railroad concrete culvert; aluminum tablet stamped "387"	Feet. 387.324
Bedington, in front of station; top of rail	392.5
Bedington, 270 feet west of station, south side of track; in top of railroad culvert; copper bolt (Pennsylvania R. R. bench mark)	392.036
Bedington, 0.3 mile south of, east side of north abutment of railroad bridge over creek, top of mud wall; marked "U.S. \square B.M. 396"	395.96
Berkeley, 1,500 feet north of station, overhead bridge, in front face of east abutment; aluminum tablet stamped "471"	471.36
Berkeley, in front of station; top of rail	477.6

APPENDIX.

PRECISE LEVELING BY COAST AND GEODETIC SURVEY AND BALTIMORE & OHIO RAILROAD.

Blacksville, Cameron, Clarington, Elizabeth, Fairmont, Flintstone, Hancock, Harrisville, Keyser, Kingwood, Littleton, Mannington, Martinsburg, Middleton, Parkersburg, Pawpaw, Piedmont, Thornton, West Union, Wheeling, and Williamsport quadrangles.

BERKELEY, DODDRIDGE, HAMPSHIRE, HARRISON, JEFFERSON, MARION, MARSHALL, MINERAL, MONONGALIA, MORGAN, PRESTON, RITCHIE, TAYLOR, WETZEL, AND WOOD COUNTIES.

The following descriptions and elevations are extracted from reports of the Coast and Geodetic Survey and are here republished by permission of the Superintendent of that bureau. The bench marks were established by the Coast and Geodetic Survey and by the Baltimore & Ohio Railroad Co., and were included in the 1907 adjustment by the Coast and Geodetic Survey. The elevations are not likely to be changed by any future adjustment.

For convenient reference, as results in Bulletin 399 are based on the 1903 adjustment, the elevations of bench marks established previous to 1903 are given by both the 1903 and 1907 adjustments, in order to show the relative values by the two adjustments.

MIDDLETON QUADRANGLE.

Bench marks established at Harpers Ferry.

Harpers Ferry, on north side of tracks, almost directly across from Harpers Ferry signal tower, in capstone of north wing of west abutment of bridge; copper bolt (B. & O. bench mark 56A)	Feet. 285.432
(1903 adjusted value=285.628.)	
Harpers Ferry, about 0.5 mile west of, 180 feet west of milepost "Baltimore 82 miles," in native rock on south side of tracks; copper bolt (B. & O. R. R. bench mark 57)	290.818
(1903 adjusted value=291.014.)	

MARTINSBURG QUADRANGLE.

Harpers Ferry northwest along Baltimore & Ohio R. R. to Martinsburg.

Engle, 1.8 miles east of, about 70 feet east of milepost "Baltimore 83 miles," in native rock on north side of tracks, about 8 feet from tracks; copper bolt (B. & O. bench mark 58)	309.940
(1903 adjusted value=310.139.)	
Engle, about 0.7 mile east of, on south side of tracks, in middle of coping of bridge 45; copper bolt (B. & O. bench mark 59)	354.745
(1903 adjusted value=354.946.)	

	Feet.
Engle, about 0.2 mile west of, about 30 feet west of milepost "Baltimore 85 miles," in native rock on south side of tracks; copper bolt (B. & O. bench mark 60).....	386. 541
(1903 adjusted value=386. 744.)	
Engle, about 1.2 miles west of, about 600 feet east of milepost "Baltimore 86 miles," in native rock on north side of tracks; copper bolt (B. & O. bench mark 61).....	411. 223
(1903 adjusted value=411.433.)	
Duffields, about 1 mile east of, in south end of east wall of culvert 45G; copper bolt (B. & O. bench mark 62).....	440. 896
(1903 adjusted value=441. 103.)	
Duffields, about 50 feet east of milepost "Baltimore 88 miles," in west end of north coping of culvert 45L; copper bolt (B. & O. bench mark 63).....	484. 269
(1903 adjusted value=484. 479.)	
Shenandoah Junction, about 0.3 mile west of, about 400 feet west of milepost "Baltimore 89 miles," in native rock on south side of tracks; copper bolt (B. & O. bench mark 64).....	530. 635
(1903 adjusted value=530. 848.)	
Shenandoah Junction, about 1.5 miles west of, about 500 feet west of milepost "Baltimore 90 miles," opposite telegraph pole 90-4 in a ledge of rock on north side of tracks; copper bolt (B. & O. bench mark 65).....	560. 324
(1903 adjusted value=560. 539.)	
Hobbs, near, about 200 feet west of milepost "Baltimore 91 miles," in north end of west abutment of bridge 45; copper bolt (B. & O. bench mark 66)..	583. 929
(1903 adjusted value=584. 145.)	
Kearneysville, about 0.3 mile south of, about 75 feet east of milepost "Baltimore 92 miles," in rock on north side of tracks; copper bolt (B. & O. bench mark 67).....	564. 417
(1903 adjusted value=564. 635.)	
Kearneysville, about 1.2 miles north of, opposite milepost "Baltimore 93 miles," section of rail set vertically in ground (B. & O. bench mark 68)..	528. 360
(1903 adjusted value=528. 580.)	
Van Clevesville, about 1.2 miles southeast of, opposite milepost "Baltimore 94 miles," section of rail set vertically in ground (B. & O. bench mark 69)..	497. 544
(1903 adjusted value=497.767.)	
Van Clevesville, about 0.2 mile south of, almost directly behind milepost "Baltimore 95 miles," in a large rock on north side of tracks; copper bolt (B. & O. bench mark 70).....	478. 086
(1903 adjusted value=478.311.)	
Van Clevesville, about 0.8 mile northwest of, 250 feet west of milepost "Baltimore 96 miles," in rock on south side of tracks; copper bolt (B. & O. bench mark 71).....	450. 599
(1903 adjusted value=450.827.)	
Van Clevesville, about 1.8 miles northwest of, about 500 feet west of milepost "Baltimore 97 miles," in west end of south coping of a culvert; copper bolt (B. & O. bench mark 72).....	403. 934
(1903 adjusted value=404.164.)	
Opequon, near, about 600 feet east of milepost "Baltimore 98 miles," on north side of tracks, on west end of coping of culvert at telegraph pole 97/34; copper bolt (B. & O. bench mark 73).....	384. 060
(1903 adjusted value=384.291.)	
Martinsburg, 0.7 mile east of, 240 feet west of milepost "Baltimore 99 miles," in middle of north coping of bridge 49.2; copper bolt (B. & O. bench mark 74).....	399. 334
(1903 adjusted value =399.568.)	

Martinsburg, about 0.2 mile west of station, about 280 feet east of milepost "Baltimore 100 miles," in middle of north coping of an arch; copper bolt (B. & O. bench mark 75).....	Feet. 432. 911
(1903 adjusted value=433.147.)	
Martinsburg, about 1.5 miles northwest of, opposite milepost "Baltimore 101 miles," section of rail set vertically in ground (B. & O. bench mark 76).....	469. 660
(1903 adjusted value=469.899.)	

WILLIAMSPORT QUADRANGLE.**Martinsburg north along Baltimore & Ohio R. R. to Back Creek.**

Martinsburg, about 2.5 miles northwest of, about 800 feet west of milepost "Baltimore 102 miles," in native rock on the north side of tracks; copper bolt (B. & O. bench mark 77).....	490. 259
(1903 adjusted value=490.500.)	
Tabb, near, about 40 feet east of milepost "Baltimore 103 miles," in native rock; copper bolt (B. & O. bench mark 78).....	527. 080
(1903 adjusted value=527.323.)	
Tabb, near, about 200 feet west of milepost "Baltimore 104 miles," in a large rock on north side of tracks; copper bolt (B. & O. bench mark 79)..	522. 637
(1903 adjusted value=522.883.)	
Tabb, about 1.2 miles northwest of, opposite milepost "Baltimore 105 miles;" section of rail set vertically in ground (B. & O. bench mark 80)..	518. 101
(1903 adjusted value=518.349.)	
North Mountain, about 1.2 miles southeast of, about 500 feet west of milepost "Baltimore 106 miles," between tracks in the bridge seat of the east abutment of bridge 52; copper bolt (B. & O. bench mark 81).....	506. 938
(1903 adjusted value=507.188.)	
North Mountain, about 0.2 mile south of station, 850 feet west of milepost "Baltimore 107 miles," between tracks in bridge seat of east abutment of bridge 52½; copper bolt (B. & O. bench mark 82).....	527. 896
(1903 adjusted value=528.149.)	
North Mountain, about 0.5 mile north of, opposite milepost "Baltimore 108 miles;" section of rail set vertically in ground (B. & O. bench mark 83)..	528. 471
(1903 adjusted value=528.726.)	
North Mountain, about 1.5 miles northwest of, about 100 feet east of milepost "Baltimore 109 miles;" section of rail set vertically in ground (B. & O. bench mark 84).....	504. 117
(1903 adjusted value=504.374.)	
Back Creek, near, opposite milepost "Baltimore 110 miles;" section of rail set vertically in ground (B. & O. bench mark 85).....	461. 841
(1903 adjusted value=462. 700.)	

HANCOCK QUADRANGLE.**Back Creek northwest along Baltimore & Ohio R. R. to Sir Johns Run.**

Back Creek, west of, in north end of the west abutment of bridge 53; copper bolt (B. & O. bench mark 86).....	426. 400
(1903 adjusted value=426.662.)	
Cherry Run, about 1.5 miles southeast of, opposite milepost "Baltimore 112 miles;" section of rail set vertically in ground between tracks (B. & O. bench mark 87).....	391. 637
(1903 adjusted value=391.900.)	
Cherry Run, about 0.6 mile east of, in south end of bridge seat of west abutment of bridge 54; copper bolt (B. & O. bench mark 88).....	384. 835
(1903 adjusted value=385.101.)	

Cherry Run, about 0.5 mile west of, opposite milepost "Baltimore 114 miles;" section of rail set vertically in ground (B. & O. bench mark 89).. (1903 adjusted value=396.865.)	Feet. 396. 597
Miller, near, opposite milepost "Baltimore 115 miles;" section of rail set vertically in ground (B. & O. bench mark 90)..... (1903 adjusted value=404.608.)	404. 338
Miller, near, opposite milepost "Baltimore 116 miles;" section of rail set vertically in ground (B. & O. bench mark 91)..... (1903 adjusted value=396.575.)	396. 303
Sleepy Creek, about 0.4 mile east of, opposite milepost "Baltimore 117 miles;" section of rail set vertically in ground (B. & O. bench mark 92).. (1903 adjusted value=399.461.)	399. 187
Sleepy Creek, between tracks in bridge seat of east abutment of bridge 55; copper bolt (B. & O. bench mark 92A)..... (1903 adjusted value=395.836.)	395. 560
Sleepy Creek, 0.5 mile west of, opposite milepost "Baltimore 118 miles;" section of rail set vertically in ground (B. & O. bench mark 93)..... (1903 adjusted value=401.527.)	401. 251
Sleepy Creek, about 1.5 miles west of, opposite milepost "Baltimore 119 miles;" section of rail set vertically in ground (B. & O. bench mark 94).. (1903 adjusted value=406.061.)	405. 782
Sleepy Creek, about 2.5 miles west of, opposite milepost "Baltimore 120 miles;" section of rail set vertically in ground (B. & O. bench mark 95)... (1903 adjusted value=407.229.)	406. 947
Hancock, about 2 miles east of, opposite milepost "Baltimore 121 miles;" section of rail set vertically in ground (B. & O. bench mark 96)..... (1903 adjusted value=405.341.)	405. 058
Hancock, about 1 mile east of, opposite milepost "Baltimore 122 miles;" section of rail set vertically in ground (B. & O. bench mark 97)..... (1903 adjusted value=409.366.)	409. 080
Hancock, west end of north coping of bridge 56; copper bolt (B. & O. bench mark 97A)..... (1903 adjusted value=417.675.)	417. 387
Hancock, about 0.2 mile west of, opposite milepost "Baltimore 123 miles;" section of rail set vertically in ground (B. & O. bench mark 98)..... (1903 adjusted value=419.034.)	418. 746
Hancock, about 1.2 miles southwest of, opposite milepost "Baltimore 124 miles;" copper bolt set vertically in ground (B. & O. bench mark 99).... (1903 adjusted value=417.507.)	417. 216
Round Top, about 1 mile northeast of, opposite milepost "Baltimore 125 miles;" section of rail set vertically in ground (B. & O. bench mark 100).. (1903 adjusted value=415.896.)	415. 602
Round Top, opposite milepost "Baltimore 126 miles;" section of rail set vertically in ground (B. & O. bench mark 101)..... (1903 adjusted value=426.927.)	426. 630
Round Top, about 1 mile southeast of, 150 feet east of milepost "Baltimore 127 miles;" in a rock outcrop on the north side of the tracks; copper bolt (B. & O. bench mark 102)..... (1903 adjusted value=426.670.)	426. 370
Sir Johns Run, about 0.5 mile north of; opposite milepost "Baltimore 128 miles;" section of rail set vertically in ground (B. & O. bench mark 103).. (1903 adjusted value=425.247.)	424. 944
Sir Johns Run, about 0.5 mile south of, 20 feet west of telegraph pole 128/38, in native rock on south side of tracks; copper bolt (B. & O. bench mark 104)..... (1903 adjusted value=427.006.)	426. 700

Sir Johns Run, about 0.5 mile south of, about 400 feet west of milepost "Baltimore 130 miles;" set in culvert coping on south side of tracks; copper bolt (B. & O. bench mark 105).....	Feet. 426. 600
(1903 adjusted value=426.909.)	

PAWPAW QUADRANGLE.

Great Cacapon west along Baltimore & Ohio R. R. to Little Cacapon.

Great Cacapon, 1 mile east of, about 200 feet east of milepost "Baltimore 131 miles," in large rock on north side of track; copper bolt (B. & O. bench mark 106).....	436. 335
(1903 adjusted value=436. 648.)	
Great Cacapon, near, between tracks in bridge seat of east abutment of bridge 57 across Great Cacapon river; copper bolt (B. & O. bench mark 107).....	435. 613
(1903 adjusted value=435.929.)	
Great Cacapon, about 1 mile west of, opposite milepost "Baltimore 133. miles;" section of rail set vertically in ground (B. & O. bench mark 108)..	452. 979
(1903 adjusted value=453.298.)	
Woodmont, 0.3 mile west of, opposite milepost "Baltimore 134 miles;" section of rail set vertically in ground (B. & O. bench mark 109).....	450. 436
(1903 adjusted value=450.759.)	
Lineburg, about 0.8 mile east of, opposite telegraph pole 135/4; copper bolt in rock on south side of tracks (B. & O. bench mark 110).....	454. 170
(1903 adjusted value=454.495.)	
Lineburg, about 0.2 mile west of, opposite milepost "Baltimore 136 miles;" section of rail set vertically in ground (B. & O. bench mark 111).....	458. 213
(1903 adjusted value=458.541.)	
Lineburg, about 1.2 miles south of, 25 feet east of milepost "Baltimore 137 miles," in a rock on south side of tracks; copper bolt (B. & O. bench mark 112).....	468. 730
(1903 adjusted value=469. 061.)	
Orleans Road, about 0.8 mile east of, opposite milepost "Baltimore 138 miles;" section of rail set vertically in ground (B. & O. bench mark 113)..	487. 851
(1903 adjusted value=488.186.)	
Orleans Road, about 0.3 mile south of, opposite milepost "Baltimore 139 miles;" section of rail set vertically in ground (B. & O. bench mark 114)..	504. 276
(1903 adjusted value=504.613.)	
Rockwells Run, near, 500 feet beyond milepost "Baltimore 140 miles;" in rock on south side of tracks; copper bolt (B. & O. bench mark 115)...	523. 003
(1903 adjusted value=523.343.)	
Doe Gully, opposite milepost "Baltimore 141 miles;" section of rail set vertically in ground (B. & O. bench mark 116).....	546. 651
(1903 adjusted value=546.995.)	
Doe Gully, about 1 mile south of, opposite milepost "Baltimore 142 miles;" section of rail set vertically in ground (B. & O. bench mark 117).....	544. 057
(1903 adjusted value=544.404.)	
Hansrotte, 1 mile northeast of, directly opposite milepost "Baltimore 143 miles;" in rock on south side of tracks; copper bolt (B. & O. bench mark 118).....	520. 465
(1903 adjusted value=520.815.)	
Hansrotte, near, opposite milepost "Baltimore 144 miles;" section of rail set vertically in ground (B. & O. bench mark 119).....	494. 219
(1903 adjusted value=494.572.)	

	Feet.
Hansrotte, about 1 mile west of, opposite milepost "Baltimore 145 miles;" section of rail set vertically in ground (B. & O. bench mark 120).....	497. 885
(1903 adjusted value=498.242.)	
Baird, near, opposite milepost "Baltimore 146 miles;" section of rail set vertically in ground (B. & O. bench mark 121).....	497. 643
(1903 adjusted value=498.003.)	
Baird, about 1 mile southwest of, opposite milepost "Baltimore 147 miles;" section of rail set vertically in ground (B. & O. bench mark 122).....	489. 894
(1903 adjusted value=490.256.)	
Magnolia, about 1 mile northwest of, opposite milepost "Baltimore 148 miles;" section of rail set vertically in ground (B. & O. bench mark 123)..	494. 073
(1903 adjusted value=494.440.)	
Magnolia, about 0.2 mile east of, 500 feet beyond milepost "Baltimore 149 miles;" on south side of tracks in east end of coping of bridge 47D; copper bolt (B. & O. bench mark 124).....	497. 631
(1903 adjusted value=498.004.)	
Magnolia, about 1 mile southeast of, opposite milepost "Baltimore 150 miles;" section of rail set vertically in ground (B. & O. bench mark 125)..	502. 075
(1903 adjusted value=502.447.)	
Magnolia, about 2 miles south of, opposite milepost "Baltimore 151 miles;" copper bolt in rock (B. & O. bench mark 126).....	511. 521
(1903 adjusted value=511.896.)	
Pawpaw, about 1 mile north of, opposite milepost "Baltimore 152 miles;" in a rock on south side of tracks; copper bolt (B. & O. bench mark 127)..	516. 225
(1903 adjusted value=516.603.)	
Pawpaw, about 0.8 mile north of, opposite milepost "Baltimore 153 miles;" section of rail set vertically in ground (B. & O. bench mark 128)..	526. 652
(1903 adjusted value=527.034.)	
Pawpaw, about 0.2 mile south of, opposite milepost "Baltimore 154 miles;" section of rail set vertically in ground (B. & O. bench mark 129).....	534. 069
(1903 adjusted value=534.454.)	
Pawpaw, 1.5 miles south of, opposite milepost "Baltimore 155 miles;" section of rail set vertically in ground (B. & O. bench mark 130).....	532. 071
(1903 adjusted value=532.459.)	
Little Cacapon, about 1 mile east of, about 500 feet east of milepost "Baltimore 156 miles," on south side of tracks in middle stone of coping of culvert; copper bolt (B. & O. bench mark 131).....	528. 852
(1903 adjusted value=529.243.)	

FLINTSTONE QUADRANGLE.

Little Cacapon west along Baltimore & Ohio R. R. to Patterson Creek.

Little Cacapon, near, about 600 feet east of milepost "Baltimore 157 miles," between tracks in bridge seat of west abutment of bridge 59; copper bolt (B. & O. bench mark 132).....	528. 055
(1903 adjusted value=528.449.)	
Okonoko, about 0.8 mile east of, opposite milepost "Baltimore 158 miles;" section of rail set vertically in ground (B. & O. bench mark 133).....	534. 479
(1903 adjusted value=534.876.)	
Okonoko, about 0.2 mile west of, about 800 feet east of milepost "Baltimore 159 miles;" copper bolt in north end of west abutment of bridge 60 (B. & O. bench mark 134).....	538. 369
(1903 adjusted value=538.769.)	
Okonoko, about 1.2 miles southwest of, opposite milepost "Baltimore 160 miles;" section of rail set vertically in ground (B. & O. bench mark 135)..	537. 083
(1903 adjusted value=537.486.)	

	Feet.
French, about 0.4 mile east of, opposite milepost "Baltimore 161 miles;" section of rail set vertically in ground (B. & O. bench mark 136).....	540. 787
(1903 adjusted value=541.194.)	
French, about 0.8 mile west of, between tracks; copper bolt in a bridge seat of the east abutment of bridge 61A (B. & O. bench mark 137).....	554. 005
(1903 adjusted value=554.416.)	
French, about 1.8 miles west of, near west end of a cut near where milepost "Baltimore 163 miles" would be if planted, in rock on south side of tracks; copper bolt (B. & O. bench mark 138).....	556. 221
(1903 adjusted value=556.634.)	
Green Spring, near, at milepost "Baltimore 164 miles," on south side of tracks in center of coping of culvert 62; copper bolt (B. & O. bench mark 139).....	551. 935
(1903 adjusted value=552.351.)	
Green Spring, about 1 mile west of, opposite milepost "Baltimore 165 miles;" section of rail set vertically in ground (B. & O. bench mark 140).....	559. 237
(1903 adjusted value=559.656.)	
Green Spring, about 2 miles west of, opposite milepost "Baltimore 166 miles;" section of rail set vertically in ground (B. & O. bench mark 141).....	562. 075
(1903 adjusted value=562.497.)	
Green Spring, about 3 miles west of, opposite milepost "Baltimore 167 miles;" section of rail set vertically in ground (B. & O. bench mark 142).....	559. 676
(1903 adjusted value=560.101.)	
Dans Run, opposite milepost "Baltimore 168 miles;" section of rail set vertically in ground (B. & O. bench mark 143).....	564. 852
(1903 adjusted value=565.281.)	
Dans Run, about 1 mile west of, opposite milepost "Baltimore 169 miles;" section of rail set vertically in ground (B. & O. bench mark 144).....	565. 879
(1903 adjusted value 566.310.)	
Patterson Creek Cut-Off, about 0.5 mile east of bridge, opposite milepost "Baltimore 170 miles;" section of rail set vertically in ground (B. & O. bench mark 145).....	567. 574
(1903 adjusted value=568.009.)	
Patterson Creek Cut-Off, south end of west abutment of railroad bridge over Patterson Creek (U. S. G. S. bench mark, 574 Patterson Creek).....	573. 805
(1903 adjusted value=574.242.)	
Patterson Creek Cut-Off, between tracks, in a bridge seat of the east abutment of bridge 63; copper bolt (B. & O. bench mark 145A).....	568. 935
(1903 adjusted value=569.372.)	
Patterson Creek, about 0.3 mile northwest of, opposite milepost "Baltimore 171 miles;" section of rail set vertically in ground (B. & O. bench mark 146).....	575. 163
(1903 adjusted value=575.601.)	

KEYSER QUADRANGLE.

Bench marks established along Baltimore & Ohio R. R. near Keyser.

Keyser, near, opposite telegraph pole 201/8 set between tracks in south abutment of bridge; copper bolt (B. & O. bench mark 22).....	800. 702
Keyser, near center of Keyser yards, opposite milepost 202; section of rail set vertically in ground (B. & O. bench mark 23).....	826. 999
Keyser, near, at northwest end of Keyser yards, opposite milepost 203; section of rail set vertically in ground (B. & O. bench mark 24).....	837. 595
Keyser, near, opposite milepost 204; section of rail set vertically between tracks (B. & O. bench mark 25).....	854. 580

PIEDMONT QUADRANGLE.

Bench marks established along Baltimore & Ohio R. R. near Piedmont.

	Feet.
Piedmont, near, in bridge seat of abutment at telegraph pole 204/30; copper bolt (B. & O. bench mark 26).....	871. 280
Piedmont, near, at telegraph pole 205/21, in abutment of bridge; copper bolt (B. & O. bench mark 26A).....	889. 273
Piedmont, 0.5 mile southeast of, opposite milepost 206; section of rail set vertically between tracks (B. & O. bench mark 27).....	906. 085
Piedmont, 0.5 mile southwest of, opposite milepost 207; section of rail set vertically in ground between tracks (B. & O. bench mark 28).....	932. 914
West Virginia Central Junction, 400 feet west of, in southwest end of bridge seat northwest abutment of bridge for siding over Potomac River; copper bolt (B. & O. bench mark 28A).....	948. 302

KINGWOOD QUADRANGLE.

Corinth west along Baltimore & Ohio R. R. to Rowlesburg.

Corinth, 0.2 mile northwest of, in bridge at telegraph pole 238/20; copper bolt (B. & O. bench mark 59A).....	2, 434. 838
Rinard, near, opposite milepost 239; section of rail set vertically in ground between tracks (B. & O. bench mark 60).....	2, 452. 555
Riggs, 0.5 mile east of, 250 feet west of milepost 240 on arch culvert; copper bolt (B. & O. bench mark 61).....	2, 481. 523
Terra Alta, 1 mile southeast of, opposite milepost 241; section of rail set vertically in ground between tracks (B. & O. bench mark 62).....	2, 524. 106
Terra Alta, 500 feet east of station, opposite milepost 242; section of rail set vertically in ground between tracks (B. & O. bench mark 63).....	2, 545. 238
Terra Alta, 0.8 mile northwest of, in small bridge, at telegraph pole 242/35; copper bolt (B. & O. bench mark 64).....	2, 512. 747
Terra Alta, 1.5 miles west of, in foundation of south side of east portal of tunnel; copper bolt (B. & O. bench mark 65).....	2, 395. 471
Terra Alta, 3 miles southwest of, opposite milepost 245; section of rail set vertically in ground between tracks (B. & O. bench mark 66).....	2, 263. 209
Terra Alta, 4 miles southwest of, opposite milepost 246; section of rail set vertically in ground between tracks (B. & O. bench mark 67).....	2, 146. 947
Rodamers, 1 mile southwest of, telegraph pole 246/26, south side of west portal of Rodamers tunnel, in foundation; copper bolt (B. & O. bench mark 68).....	2, 091. 207
Amblersburg, 2.5 miles northeast of, opposite milepost 248; section of rail set vertically in ground between tracks (B. & O. bench mark 69).....	1, 928. 323
Amblersburg, 1.5 miles northeast of, opposite milepost 249; section of rail set vertically in ground between tracks (B. & O. bench mark 70).....	1, 811. 555
Amblersburg, 0.5 mile northeast of, opposite milepost 250; section of rail set vertically in ground between tracks (B. & O. bench mark 71).....	1, 697. 547
Amblersburg, telegraph pole 250/27, in bridge; copper bolt (B. & O. bench mark 72).....	1, 623. 627
Amblersburg, about 1 mile southwest of, west of tracks, at telegraph pole 251/30, 15 feet from north end of retaining wall; copper bolt (B. & O. bench mark 73).....	1, 516. 343
Rowlesburg, 1.8 miles northeast of, in bridge 91 at telegraph pole 252/17½; copper bolt (B. & O. bench mark 74).....	1, 473. 168
Rowlesburg, 1.2 miles northeast of, opposite milepost 253; section of rail set vertically in ground between tracks (B. & O. bench mark 74A).....	1, 450. 370

Rowlesburg, near, north of tracks in mud wall of east abutment of Cheat River bridge; copper bolt (B. & O. bench mark 75).....	Feet. 1,400.857
Rowlesburg, 1 mile west of, 40 feet east of telegraph pole 255/14; copper bolt set in rock (B. & O. bench mark 76).....	1,490.643
Rowlesburg, 1.5 miles west of, telegraph pole 255/25, in center of capstone, north end of long retaining wall east of tracks; copper bolt (B. & O. bench mark 76A).....	1,528.744
Rowlesburg, 2 miles northwest of, copper bolt set in east wing wall of north abutment of viaduct at telegraph pole 256/5 (B. & O. bench mark 77).....	1,581.092

Point near Rowlesburg along Baltimore & Ohio R. R. to point 3.2 miles west of Rowlesburg.

Rowlesburg, 4 miles east of, on coping stone of abutment at northwest corner of Baltimore & Ohio R. R. bridge over Salt Lick Creek; chiseled square, C. & G. S. bench mark L..... (1903 adjusted value = 1,624.164.)	1,623.664
Rowlesburg, at base of center pillar at west end of Baltimore & Ohio R. R. bridge over Cheat River; chiseled square, marked "B.M." C. & G. S. bench mark XXVIII..... (1903 adjusted value = 1,400.839.)	1,400.333
Rowlesburg, 3.2 miles west of, on top of "Buckhorn Wall," about 131 feet from its eastern end; chiseled square marked "B.M." C. & G. S. bench mark XXIX..... (1903 adjusted value = 1,717.467.)	1,716.956

FAIRMONT QUADRANGLE.

Grafton along Baltimore & Ohio R. R. to Bridgeport.

Grafton, on top of north side of central pier of Baltimore & Ohio R. R. bridge over Taggart's Valley Creek, a branch of the Monongahela River; chiseled square. C. & G. S. bench mark M..... (1903 adjusted value = 996.856.)	996.303
Grafton, about 5.5 miles west of, cut on corner stone of east end of trestle 2½; chiseled square marked "B.M." C. & G. S. bench mark XXXI..... (1903 adjusted value = 1,082.623.)	1,082.088
Bridgeport, on corner stone of west abutment of Baltimore & Ohio R. R. bridge; chiseled square marked "B.M." C. & G. S. bench mark XXXII..... (1903 adjusted value = 979.626.)	979.135

Grafton northwest along Baltimore & Ohio R. R. to Fairmont.

Grafton, on Parkersburg branch, in north end of bridge seat of east abutment of bridge over Tygart River; copper bolt (B. & O. bench mark 102).....	995.049
Grafton, 1 mile west of, near milepost 281; section of rail set vertically in ground between tracks (B. & O. bench mark 103).....	991.794
Fetterman, in bridge 102; copper bolt (B. & O. bench mark 103A).....	982.620
Fetterman, 0.5 mile north of, in northwest end of northeast wing wall, northwest abutment of bridge 103; copper bolt (B. & O. bench mark 104).....	988.797
Fetterman, 1.2 miles northwest of, at milepost 283; section of rail set vertically in ground between tracks (B. & O. bench mark 105).....	989.901
Fetterman, 1.8 miles northwest of, on culvert at telegraph pole 283/20; copper bolt (B. & O. bench mark 105A).....	982.195

	Feet.
Fetterman, 2.5 miles north of, on culvert at telegraph pole 284/11; copper bolt (B. & O. bench mark 106).....	980. 646
Bush, about 3 miles southeast of Valley Falls, bridge seat at northeast corner of girder bridge 104, 7 feet east of center of track, 4 feet below top of outer rail of curve; bronze tablet stamped "986 Pittsburg 1899." (B. & O. bench mark 107; U. S. G. S. bench mark).....	985. 048
Bush, near, on bridge at telegraph pole 235/28; copper bolt (B. & O. bench mark 107A).....	979. 827
Bush, 0.5 mile northwest of, on culvert at telegraph pole 286/10; copper bolt (B. & O. bench mark 108).....	981. 901
Valley Falls, about 1 mile east of, at milepost 287; section of rail set vertically in ground between tracks (B. & O. bench mark 109).....	982. 910
Valley Falls, 50 feet west of milepost 288 in native rock north of track; copper bolt (B. & O. bench mark 110).....	974. 153
Valley Falls, 1 mile northwest of, near milepost 289 in northwest end of southwest coping of arch bridge 105; copper bolt (B. & O. bench mark 111).....	944. 936
Hammond, 0.2 mile northwest of, on arch bridge 107; copper bolt (B. & O. bench mark 112).....	937. 853
Hammond, 1 mile west of, at telegraph pole 290/20; rail section set northwest of tracks (B. & O. bench mark 113).....	914. 434
Powells, 0.5 mile northwest of, on bridge 108, at telegraph pole 291/28; copper bolt (B. & O. bench mark 114).....	898. 424
Powells, 1.5 miles northwest of, 35 feet west of telegraph pole 292/14, in native rock; copper bolt (B. & O. bench mark 115).....	898. 887
Colfax, 1.2 miles southeast of, on arch culvert at telegraph pole 293/11; copper bolt (B. & O. bench mark 116).....	889. 443
Colfax, in center of north capstone of west coping of bridge 109; copper bolt (B. & O. bench mark 117).....	888. 517
Colfax, 1 mile northwest of, near southwest end of northwest coping of arch culvert at telegraph pole 295/17, copper bolt (B. & O. bench mark 118).....	885. 389
Bentons Ferry, 1 mile east of, in arch culvert at telegraph pole 296/20; copper bolt (B. & O. bench mark 119).....	887. 132
Bentons Ferry, at telegraph pole 297/22, in north end of east wing wall of north abutment of bridge 111; copper bolt (B. & O. bench mark 120).....	888. 355
Bentons Ferry, 160 feet west of signboard, bridge seat at southeast corner of small girder bridge 111, 4.5 feet below top of rail, 18.5 feet south of center of track; bronze tablet stamped "885 Pittsburg 1899" (U. S. G. S. bench mark).....	884. 546
Kingmont, north of tracks at telegraph pole 298/20; rail section (B. & O. bench mark 121).....	888. 303
Kingmont, 1 mile northeast of, on large arch culvert at telegraph pole 299/21; copper bolt (B. & O. bench mark 122).....	881. 560
Kingmont, 1.5 miles northeast of, on arch culvert at telegraph pole 299/37; copper bolt (B. & O. bench mark 122A).....	881. 332
Gaston Junction, in west end of bridge seat, north abutment of bridge 112 over Monongahela River; copper bolt (B. & O. bench mark 123).....	885. 248
Fairmont, between tracks in southwest end of pier for overhead highway bridge; copper bolt (B. & O. bench mark 124).....	886. 621
Fairmont, 1 mile west of, in northwest end of bridge seat, southwest abutment of Fairmont, Morgantown & Pittsburg Bridge over Monongahela River; copper bolt (B. & O. bench mark 125).....	884. 230
Fairmont, near, in south end of bridge seat of east abutment of bridge to Fairmont roundhouse; copper bolt (B. & O. bench mark 125A).....	868. 668

THORNTON QUADRANGLE.

Bench mark near Grafton.

Grafton, about 2 miles east of, on corner stone of abutment of small bridge; chiseled square. (B. & O. and C. & G. S. bench mark XXX)..... 1,023.475
(1903 adjusted value = 1,024.024.)

Austen west along Baltimore & Ohio R. R. to Grafton.

Rowlesburg, 3 miles west of, at telegraph pole 257/9; copper bolt set in rock (B. & O bench mark 78)..... 1,695.877
 Buckhorn, 0.2 mile northwest of, 40 feet southeast of telegraph pole 257/20, in northwest end of retaining wall, northeast of tracks; copper bolt (B. & O. bench mark 78A)..... 1,724.878
 Buckhorn, 1 mile northwest of, 40 feet northwest of telegraph pole 258/7; copper bolt set in rock (B. & O. bench mark 79)..... 1,799.779
 Anderson, about 0.2 mile west of, at milepost "Baltimore 259"; section of rail set vertically in ground between tracks (B. & O. bench mark 80).... 1,857.241
 Tunnelton, 0.8 mile southeast of, at milepost "Baltimore 260"; section of rail set vertically in ground between tracks (B. & O. bench mark 81).... 1,828.379
 Tunnelton, about 0.2 mile west of, in first step of retaining wall north of tracks at east portal of Kingwood tunnel; copper bolt (B. & O. bench mark 82)..... 1,826.434
 Tunnelton, about 1 mile west of, at west end of Kingwood tunnel; section of rail set vertically in ground between tracks (B. & O. bench mark 83).... 1,783.651
 West End, 300 feet west of, in abutment of bridge; copper bolt (B. & O. bench mark 83A)..... 1,742.710
 Austen, about 1 mile east of, 40 feet south of tracks, near telegraph pole 263/12; copper bolt set in rock (B. & O. bench mark 84)..... 1,627.886
 Austen, 0.2 mile east of, 50 feet west of Murray tunnel; copper bolt set in rock (B. & O. bench mark 85)..... 1,552.695
 Austen, 0.8 mile west of, at milepost 265; section of rail set vertically in ground between tracks (B. & O. bench mark 86)..... 1,443.864
 Newburg, near, at milepost 266; section of rail set vertically in ground between tracks (B. & O. bench mark 87)..... 1,338.506
 Newburg, near, in seat of bridge 95; copper bolt (B. & O. bench mark 88).. 1,244.992
 Independence, 1 mile southwest of, at milepost 269; section of rail set vertically in ground between tracks (B. & O. bench mark 90)..... 1,147.326
 Hardman, near, in seat of bridge 97; copper bolt (B. & O. bench mark 91). 1,108.151
 Ironton, 1 mile northeast of, nearly opposite milepost 271, in large rock about 100 feet southeast of tracks; copper bolt (B. & O. bench mark 92).. 1,101.465
 Ironton, near, at telegraph pole 271/37; copper bolt in rock 50 feet southeast of tracks (B. & O. bench mark 93)..... 1,074.795
 Ironton, 0.8 mile southwest of, in abutment of pipe culvert at telegraph pole 272/26; copper bolt (B. & O. bench mark 94)..... 1,064.449
 Thornton, 1 mile northeast of, at telegraph pole 273/25; section of rail set vertically in ground between tracks (B. & O. railroad bench mark 95).. 1,051.731
 Thornton, in abutment of bridge 99; copper bolt (B. & O. bench mark 96). 1,040.166
 Thornton, 0.8 mile southwest of, opposite telegraph pole 275/15; section of rail set vertically in ground between tracks (B. & O. bench mark 97).. 1,039.659
 Thornton, 1.6 miles west of, in southwest end of bridge seat of southeast abutment of bridge at telegraph pole 276/8; copper bolt (B. & O. bench mark 98)..... 1,034.079
 Thornton, 2.5 miles west of, nearly opposite telegraph pole 277/5; copper bolt set in rock (B. & O. bench mark 99)..... 1,034.126

Grafton, about 2 miles east of, east abutment of bridge 100, set between tracks in bridge seat; copper bolt (B. & O. bench mark 100)	Feet. 1, 021. 293
Grafton, 1.2 miles east of, at milepost 279; section of rail set vertically in ground between tracks (B. & O. bench mark 101)	1, 007. 141

WEST UNION QUADRANGLE.**Bridgeport along Baltimore & Ohio R. R. to point 10 miles west of West Union.**

West Union, about 2 miles east of, on top of pier at west end of Baltimore & Ohio R. R. bridge 21, over Middle Island Creek; chiseled square marked "B. M.," C. & G. S. bench mark XXXIII	799. 797
(1903 adjusted value=800. 186.)	
West Union, about 0.2 mile east of, on top of southwest corner of pier of Baltimore & Ohio R. R. bridge 23, over Middle Island Creek; chiseled square marked "U. S. C. & G. S.," C. & G. S. bench mark N	804. 478
(1903 adjusted value=804. 862.)	
West Union, about 10 miles west of, on southeast corner stone of pier of Baltimore & Ohio R. R. bridge 26; chiseled square marked "B. M.," C. & G. S. bench mark XXXIV	802. 468
(1903 adjusted value=802. 817.)	

HARRISVILLE QUADRANGLE.**Cornwall east along Baltimore & Ohio R. R. to point near Cairo.**

Cornwall station, about 0.2 mile east of, on coping stone of the east abutment of Baltimore & Ohio R. R. bridge 31, over Bonds Creek; chiseled square marked "B. M.," C. & G. S. bench mark XXXV	693. 562
(1903 adjusted value=693. 866.)	
Cairo, 1 mile east of, over Bonds Creek, on east abutment of Baltimore & Ohio R. R. bridge 35; chiseled square marked "B. M.," C. & G. S. bench mark XXXVI	685. 656
(1903 adjusted value=685. 954.)	

ELIZABETH QUADRANGLE.**Bench marks established near Petroleum.**

Petroleum, about 655 feet east of, on west abutment of Baltimore & Ohio R. R. bridge over Goose Creek; chiseled square marked "B. M.," C. & G. S. bench mark XXXVII	696. 663
(1903 adjusted value=696. 933.)	
Petroleum, about 1 mile west of, on northeast corner stone of abutment of Baltimore & Ohio R. R. bridge 44; chiseled square marked "B. M.," C. & G. S. bench mark XXXVIII	692. 904
(1903 adjusted value=693. 171.)	

PARKERSBURG QUADRANGLE.**Bench marks established near Parkersburg.**

Parkersburg, 2 miles east of, on foundation at northwest corner of Baltimore & Ohio R. R. bridge 52; square cut, C. & G. S. bench mark XXXIX	607. 255
(1903 adjusted value=607. 454.)	
Parkersburg, on water table, south front, near western corner of courthouse; chiseled square marked "U. S. C. & G. S. B. M."	615. 612
(1903 adjusted value, C. & G. S. bench mark O=615. 800.)	

BLACKSVILLE QUADRANGLE.

Barnesville west along Baltimore & Ohio R. R. to Underwood.

	Feet.
Barnesville, 0.5 mile east of, in south end of small culvert at telegraph pole 304/5; copper bolt (B. & O. bench mark 126).....	873. 544
Barnesville, 0.5 mile northwest of; copper bolt set in stone pier east of tracks at Fairmont Coal Co. shaft mine (B. & O. bench mark 127).....	878. 389
Barrackville, 1.5 miles east of, at telegraph pole 305/30; rail section set southeast of track (B. & O. bench mark 128).....	887. 438
Barrackville, 0.8 mile southeast of, close to north truss of bridge at telegraph pole 306/24, in bridge seat, west abutment; copper bolt (B. & O. bench mark 129).....	893. 945
Barrackville, at station, in south end of bridge seat, west abutment of bridge 115; copper bolt (B. & O. bench mark 130).....	901. 476
Barrackville, 1 mile southwest of, on bridge seat of abutment of bridge at telegraph pole 308/18; copper bolt (B. & O. bench mark 131).....	909. 237
Barrackville, 1.8 miles west of, in abutment of pipe culvert at telegraph pole 309/10; copper bolt (B. & O. bench mark 132).....	913. 367
Katy, near, just northeast of tracks, in bridge seat, northwest abutment, at telegraph pole 310/22; copper bolt (B. & O. bench mark 133).....	919. 178
Underwood (Farmington), 1.8 miles east of, in abutment on bridge 116 at telegraph pole 311/5; copper bolt (B. & O. bench mark 134).....	922. 463
Underwood (Farmington), 0.8 mile east of, at milepost 312; rail section set on southwest side of tracks (B. & O. bench mark 135).....	931. 767

MANNINGTON QUADRANGLE.

Underwood northwest along Baltimore & Ohio R. R. to Hundred.

Underwood (Farmington), in abutment of bridge 116½; copper bolt (B. & O. bench mark 131)	934. 563
Underwood (Farmington), 0.6 mile west of, in abutment of bridge 116½, at telegraph pole 313/15; copper bolt (B. & O. bench mark 137).....	937. 233
Underwood (Farmington), 1.5 miles west of, in southeast end of northeast abutment of small bridge at telegraph pole 314/9; copper bolt (B. & O. bench mark 138).....	940. 335
Downs (Bloomfield), 1.2 miles southeast of, in bridge seat of abutment of bridge 117, at telegraph pole 315/12; copper bolt (B. & O. bench mark 139).....	948. 159
Downs (Bloomfield), 1 mile southeast of, in bridge seat of abutment of bridge 118, telegraph pole 315/23; copper bolt (B. & O. bench mark 139A).....	953. 073
Downs (Bloomfield), 1 mile southeast of, 2.8 miles west of Farmington; chiseled square on abutment of bridge, marked "953" (U. S. G. S. bench mark).....	953. 095
Downs (Bloomfield), near station; copper bolt set in bridge seat of abutment of bridge 118½ (B. & O. bench mark 140).....	962. 197
Downs (Bloomfield), 0.8 mile west of, in bridge seat of abutment of bridge at telegraph pole 317/11; copper bolt (B. & O. bench mark 141).....	962. 964
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Mannington, in pillar north of door of Exchange Bank; bronze tablet stamped "975 Grafton 1902" (U. S. G. S. bench mark).....	974. 947
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Metz, 0.8 mile south of, at telegraph pole 323/30; rail section set east of tracks (B. & O. bench mark 149).....	999. 798
Metz, 0.2 mile north of, in abutment of bridge at telegraph pole 324/25; copper bolt (B. & O. bench mark 150).....	1, 003. 354
Metz, 1.5 miles northwest of, set in abutment of bridge at milepost 326; copper bolt (B. & O. bench mark 151).....	1, 017. 872
Glover Gap, 0.2 mile southeast of, at milepost 327; rail section set south of tracks (B. & O. bench mark 152).....	1, 035. 146
Glover Gap, 0.8 mile northwest of, at milepost 328; rail section set south of tracks (B. & O. bench mark 153).....	1, 057. 742
Glover Gap, 1.2 miles northwest of, in north corner of small culvert at telegraph pole 328/24; copper bolt (B. & O. bench mark 153A).....	1, 084. 368
Glover Gap, 2 miles northwest of, in abutment of bridge at telegraph pole 329/10; copper bolt (B. & O. bench mark 154).....	1, 118. 944
Cottontown, 0.8 mile south of, 0.5 mile north of Burton tunnel, in large arch bridge 126; copper bolt (B. & O. bench mark 155).....	1, 126. 341
Cottontown, copper bolt set in abutment of bridge near telegraph pole 331/5 (B. & O. bench mark 156).....	1, 090. 687
Burton, between main track and east bound siding, in bridge seat, northwest abutment of bridge, at telegraph pole 331/27; copper bolt (B. & O. bench mark 157).....	1, 065. 299
Burton, 0.9 mile northwest of, in west wing of south end stone face for pipe culvert at telegraph pole 332/23; copper bolt (B. & O. bench mark 158)..	1, 039. 159
Hundred, 0.8 mile southeast of, in northwest end of southwest coping of box culvert at telegraph pole 333/5; copper bolt (B. & O. bench mark 159).....	1, 030. 142
Hundred, just west of, in northeast end of northwest bridge seat of bridge 128; bronze tablet stamped "1013 Grafton 1902" (U. S. G. S. bench mark, B. & O. bench mark 160).....	1, 012. 895
Hundred, 1.2 miles northwest of; copper bolt set in north end of west bridge seat of bridge at telegraph pole 335/7 (B. & O. bench mark 161) ..	995. 523
Hundred, 1.8 miles northwest of, at telegraph pole 335/23, in abutment of bridge 130; copper bolt (B. & O. bench mark 161A).....	986. 173

LITTLETON QUADRANGLE.

Littleton northwest along Baltimore & Ohio R. R. to Belton.

Littleton, 1.8 miles east of, set in abutment of bridge 131, at telegraph pole 336/21; copper bolt (B. & O. bench mark 162).....	969. 267
Littleton, 0.8 mile east of, telegraph pole 337/3, in abutment of bridge 133; copper bolt (B. & O. bench mark 163).....	950. 486
Littleton, 0.5 mile east of, in abutment of bridge 135; copper bolt (B. & O. bench mark 163A).....	944. 569
Littleton, between main track and siding at milepost 338; rail section (B. & O. bench mark 164).....	941. 317

Littleton, 0.8 mile northwest of, south of track at milepost 339; rail section (B. & O. bench mark 165).....	Feet. 1,016.194
Board Tree, 0.8 mile south of; center line pin at south end of Board Tree tunnel (B. & O. bench mark 166).....	1,108.867
Board Tree, 0.2 mile south of, in rock projecting from under west end of first course of retaining wall at north end of Board Tree tunnel, east of track; copper bolt (B. & O. bench mark 167).....	1,083.904
Board Tree, 0.5 mile northwest of, at telegraph pole 341/30; rail section set north of tracks (B. & O. bench mark 168).....	1,012.274
Bellton, 1.4 miles southeast of, north of tracks at telegraph pole 343/4; rail section (B. & O. bench mark 169).....	933.187
Bellton, 0.5 mile south of, between main track and siding at milepost 344; rail section (B. & O. bench mark 170).....	897.539

CAMERON QUADRANGLE.

Bellton northwest along Baltimore & Ohio R. R. to Moundsville.

Denver station (Bellton), near, in abutment of bridge 136; copper bolt (B. & O. bench mark 170A).....	889.040
Denver station, 0.8 mile north of Bellton, just south of present track, in bridge seat of east abutment of bridge 137; copper bolt (B. & O. bench mark 171).....	910.867
Woodruff, 0.1 mile south of, east of tracks at milepost 346; rail section (B. & O. bench mark 172).....	946.851
Woodruff, 0.9 mile north of, east of track at milepost 347; rail section (B. & O. bench mark 173).....	1,011.739
Cogley, 0.5 mile south of, between main track and siding at milepost 348; rail section (B. & O. bench mark 174).....	1,087.427
Cogley, 0.5 mile north of, east of tracks at milepost 349; rail section (B. & O. bench mark 175).....	1,168.139
Cameron, 2 miles southeast of, east of tracks at north end of Welling tunnel; rail section (B. & O. bench mark 176).....	1,199.225
Cameron, 1 mile east of, set north of tracks at telegraph pole 350/30; rail section (B. & O. bench mark 177).....	1,125.450
Cameron, 0.2 mile east of, in south end of south wing wall, west abutment of bridge 138; copper bolt (B. & O. bench mark 178).....	1,062.823
Cameron, 1 mile west of, between main track and siding at telegraph pole 352/30; rail section (B. & O. bench mark 179).....	1,034.957
Loudenville, set in northeast end of northwest bridge seat of bridge 139; copper bolt (B. & O. bench mark 180).....	995.771
Loudenville, 0.8 mile west of, in north end of west bridge seat of bridge at telegraph pole 354/27; copper bolt (B. & O. bench mark 181).....	986.427
Glen Easton, 1.1 miles east of, in culvert at telegraph pole 355/10; copper bolt (B. & O. bench mark 182).....	977.933
Glen Easton, 0.2 mile east of, in south end of bridge seat of west abutment of bridge 141; copper bolt (B. & O. bench mark 183).....	964.700
Glen Easton, 0.8 mile northwest of, in northeast end of northwest bridge seat of bridge at telegraph pole 357/12; copper bolt (B. & O. bench mark 184).....	926.535
Glen Easton, 1.1 miles northwest of, on abutment of bridge at telegraph pole 357/27; copper bolt (B. & O. bench mark 184A).....	927.090
Glen Easton, 2.1 miles northwest of, in south end of west bridge seat of bridge 143, at telegraph pole 358/26; copper bolt (B. & O. bench mark 185).....	902.384

	Feet.
Rosbys Rock, 2.5 miles east of, in south capstone of west abutment of bridge 145; at telegraph pole 359/30; copper bolt (B. & O. bench mark 186).....	861. 846
Rosbys Rock, 2 miles east of, in southeast corner of small culvert just east of Shepherds tunnel; copper bolt (B. & O. bench mark 187).....	847. 609
Rosbys Rock, 1 mile east of, in east end of south bridge seat at telegraph pole 361/9; copper bolt (B. & O. bench mark 188).....	804. 439
Rosbys Rock, 0.5 mile east of, in north end of east bridge seat of bridge at telegraph pole 361/25; copper bolt (B. O. bench mark 189).....	789. 009
Rosbys Rock, 0.5 mile northwest of, east of track at telegraph pole 362/25; rail section (B. & O. bench mark 190).....	764. 414
Rosbys Rock, 1.5 miles northwest of, northeast of track at telegraph pole 363/25; rail section (B. & O. bench mark 191).....	741. 743
Rosbys Rock, 2.5 miles northwest of, in north end of west wing of north abutment of bridge at telegraph pole 364/25; copper bolt (B. & O. bench mark 192).....	718. 217
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Moundsville, 1.5 miles southeast of, west of tracks at telegraph pole 367/4; rail section (B. & O. bench mark 194).....	649. 520
Moundsville, 1 mile southeast of; a square cut in southwest end of north-west abutment of bridge 148 (B. & O. bench mark 195, U. S. G. S. bench mark).....	646. 508

CLARINGTON QUADRANGLE.

Moundsville north along Baltimore & Ohio R. R. to Benwood.

Moundsville, 0.2 mile northwest of, on north pedestal of water tank 54; square cut (B. & O. bench mark 196).....	645. 835
Moundsville, 1.4 miles northwest of, southwest of tracks at milepost 370; rail section (B & O. bench mark 197).....	668. 201
Moundsville, 2.4 miles northwest of, west of tracks at milepost 371; rail section (B. & O. bench mark 198).....	667. 586
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WHEELING QUADRANGLE.

Bench marks near Benwood.

Benwood Junction, near, at milepost 375; section of rail set vertically in ground between tracks (B. & O. bench mark 202).....	668. 729
Benwood near, on west end of north coping at east end of east approach to Ohio River bridge; square cut (B. & O. bench mark 114).....	688. 195
Benwood, 9.5 feet north of southeast angle of pier of Baltimore & Ohio R. R. bridge over Ohio River, about level with Ohio River railroad track; cut on east face of West Virginia shore pier (United States Corps of Engineers bench mark 94A).....	648. 034

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