

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

RESULTS

OF

SPIRIT LEVELING IN PENNSYLVANIA

FOR THE

YEARS 1899 TO 1905

INCLUSIVE

BY

S. S. GANNETT AND D. H. BALDWIN



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RESULTS OF SPIRIT LEVELING IN PENNSYLVANIA FOR THE YEARS 1899 TO 1905, INCLUSIVE.

By S. S. GANNETT and D. H. BALDWIN.

INTRODUCTION.

The readjustment in 1903 of the precise-level net in the eastern portion of the United States by the United States Coast and Geodetic Survey necessitated a corresponding readjustment of all spirit-level heights of the United States Geological Survey dependent thereon. These results will be summarized by States or groups of States and published from time to time in bulletin form.

All results of leveling in Pennsylvania previously published in Appendixes to Reports of the Director of the United States Geological Survey and in Bulletin No. 185, as well as levels not previously published, have therefore been readjusted, rearranged by quadrangles, and collected herewith in one publication. Additional work done in 1902 on Sideling Hill quadrangle, Fulton County, will be reported on when the work in that quadrangle is completed. Descriptions and elevations of bench marks are given in forty-two counties, furnishing vertical control for one-fourth of the total area of the State.

The field work was done under the direction of Mr. H. M. Wilson, geographer, and under the immediate supervision of Messrs. Frank Sutton and R. D. Cummin, chiefs of section, United States Geological Survey, in cooperation with the State of Pennsylvania, by various topographers and levelmen of the United States Geological Survey, to whom due credit is given under the different headings listed in the following pages. The office work of adjustment was principally done by Mr. D. H. Baldwin, topographer, under the supervision of Mr. S. S. Gannett, geographer in charge of the triangulation and computing section.

The elevations are arranged according to the degree of accuracy of their determination, precise and primary. The former are determined by lines of levels run either in both forward and backward directions or by simultaneous double-rodged lines, a high-grade instrument being used and special precautions being taken in observations and reduction to correct errors and make the line continuously good throughout. The latter or primary levels are determined with the Y level, precautions being taken against only the principal errors and the levels being run mostly in circuits of single lines. The allowable limit of error observed on the precise work already done by the Geological Survey in this State is represented in feet by $0.03\sqrt{D}$ and that for the primary work by $0.05\sqrt{D}$, in which D is the length of circuit in miles.

The bench marks described in the following list are of two general forms. First, a circular bronze or aluminum tablet $3\frac{1}{2}$ inches in diameter and one-fourth inch thick, appropriately lettered, having a 3-inch stem cemented into a drill hole, generally in the vertical walls of public buildings, bridge abutments, or other substantial masonry structures. The second form, employed where masonry or rock is not accessible, consists of a hollow wrought-iron post 4 feet in length and $3\frac{1}{2}$ inches in outer diameter, split at the bottom and expanded to 12 inches, so as to prevent both the easy subsidence of the post and its being maliciously pulled out of the ground. The iron is heavily coated with asphalt, and over the top of the post is riveted a bronze tablet similar to that described above.

The numbers stamped upon the bench marks as described in the following lists represent the elevations to the nearest foot above mean sea level, as determined by unadjusted levels in the field. They have been subjected to changes resulting from the adjustments necessary to close circuits and to those resulting from reduction to mean sea level through readjustment of the precise-level net of the United States. In some cases the finally accepted elevations as printed herein differ from those submitted as bench-mark numbers by 1 or 2 feet. This method of numbering bench marks has been adopted where many levelmen are working in the same area at the same time, as less liable to lead to confusion in identification of bench marks than any attempt at serial numbering, and because the bench-mark number at the same time gives an approximate statement of the elevation. It is assumed that engineers and others finding these bench marks so stamped in the field will communicate with the Director of the United States Geological Survey in order to obtain the accepted elevation to hundredths or thousandths of a foot:

Any person finding bench marks in the following lists mutilated or destroyed will confer a favor by notifying the Director, United States Geological Survey, Washington, D. C.

PRECISE LEVELING.

PIKE AND SUSQUEHANNA COUNTIES.

GREAT BEND, LACKAWAXEN, AND NARROWSBURG QUADRANGLES.

The elevations in the following list are the result of a line of precise levels run from Binghamton to Poughkeepsie. The two sections of this line, Binghamton to Hancock, and Hancock to Poughkeepsie, form two links in the net of precise leveling in the United States, 49 and 138 miles in length, respectively. The elevations here reported are the result of the 1903 adjustment, the effect of which upon the original results by this line has been to increase the elevation at Hancock with respect to Binghamton 0.042 foot and increase the elevation at Poughkeepsie with respect to Hancock 0.423 foot.

The New York portion of this line is published in the bulletin of spirit leveling for the State of New York (Bull. 281, U. S. Geol. Survey). The leveling was done during June, July, and August, 1900, by Mr. C. H. Semper, levelman. The standard bench marks are stamped "ALBANY" in addition to the figures of elevation.

GREAT BEND QUADRANGLE.

GREAT BEND, ALONG ERIE RAILROAD, TO LANESBORO.

	Feet.
Great Bend, at milepost J. C. 200 D. 224, north-bound track; top of rail.....	879.9
Great Bend, 200 feet north of station, in face of southeast foundation stone of railroad water tank; bronze tablet stamped "880 ALBANY 1900".....	880.778
Hickory Grove, 600 feet north of station, top of southeast abutment of iron bridge; bronze tablet stamped "893 ALBANY 1900".....	893.621
Hickory Grove, in front of station, north-bound track; top of rail.....	896.0
Susquehanna, in front of station, north-bound track; top of rail.....	909.9
Lanesboro, 1.3 miles northeast of Susquehanna, long iron bridge over highway and stream, top of south abutment, west side; bronze tablet stamped "955 ALBANY 1900".....	956.139

NARROWSBURG QUADRANGLE.

MASTHOPE, ALONG ERIE RAILROAD, TO WESTCOLANG.

Masthope, in front of station, north-bound track; top of rail.....	667.5
Westcolang Park, 100 feet east of station, railroad bridge, top of west abutment, south side; bronze tablet stamped "665 ALBANY 1900".....	665.618

PRECISE LEVELING.

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LACKAWAXEN QUADRANGLE.

LACKAWAXEN TO MILLRIFT.

	Feet.
Lackawaxen, in front of station, north-bound track; top of rail.....	646.8
Shohola, between Shohola Glen and store, stone steps opposite east end of station, third from bottom; bronze tablet stamped "648 ALBANY 1900".....	648.992
Parkersglen, in front of station, north-bound track; top of rail.....	626.5
Pond Eddy, in front of station, north-bound track; top rail.....	570.8
Pond Eddy, 0.2 mile east of; 350 feet east of whistle post, cut on south side of railroad, face of rock; bronze tablet stamped "573 ALBANY 1900".....	574.233
Millrift, in front of station, north-bound track; top of rail.....	494.4
Millrift, 0.3 mile east of, long bridge over Delaware River, top of west abutment, south side; bronze tablet stamped "491 ALBANY 1900".....	491.874

BRADFORD AND LYCOMING COUNTIES.

GILLETT, GROVER, RALSTON, TROUT RUN, AND WILLIAMSPORT QUADRANGLES.

The elevations in the following list are the Pennsylvania portion of the line of precise leveling run south from Elmira, N. Y., a point on the precise-level line of 1898, and connected at Williamsport, Pa., to a circuit of Pennsylvania Railroad levels from Harrisburg. The latter point is on the Coast and Geodetic Survey transcontinental precise line. This line, 75 miles in length, was involved as a factor in the 1903 adjustment of the precise-level net, the result of which was to lower the elevation by the original line only 0.004 foot at Williamsport with respect to Elmira.

The usual method of leveling and party outfit was used. The leveling was done in 1899 by Mr. C. H. Semper, levelman in charge. The standard bench marks on this line are stamped with the letters "HARRISBURG" in addition to figures of elevation and the year 1899. The elevations stamped are mostly 1 foot too low, due to an error of about 0.7 foot in the originally accepted elevation at Elmira, and thus do not strictly accord with the reference mark at Harrisburg, an aluminum tablet stamped "364 HARRISBURG 1899," in the State Library, the elevation of which is accepted as 363.988 feet above mean sea level.

GILLETT QUADRANGLE.

NEW YORK-PENNSYLVANIA BOUNDARY POST, ALONG NORTHERN CENTRAL RAILROAD TO TROY.

	Feet.
State boundary (N. Y.—Pa.), opposite line post; top of rail.....	1,006.7
Fassett, at road crossing near station; top of rail.....	1,122.0
Gillett, in front of station; top of rail.....	1,201.7
Dunning, in front of station; top of rail.....	1,237.5
Snediker, 50 feet west of railroad, in foundation wall of store and railroad station; bronze tablet stamped "1265 HARRISBURG 1899".....	1,265.229
Columbia crossroads, in front of station; top of west rail.....	1,180.7
Columbia crossroads, 1.8 miles south of, top of north wall of culvert and cattle pass, west side of railroad; bronze tablet stamped "1099 HARRISBURG 1899".....	1,099.855
Troy, road crossing at cemetery; top of east rail.....	1,074.6
Troy, in front of station; top of west rail.....	1,136.1
Troy, 0.2 mile south of station, north side of railroad water tank, in top of coping stone of foundation; bronze tablet stamped "1139 HARRISBURG 1899".....	1,139.758

GROVER QUADRANGLE.

COWLEY TO ROARING BRANCH.

Cowley, main track, in front of station; top of east rail.....	1,358.5
Cowley, 0.5 mile south of, in top of coping stone of railroad creek culvert on east side of railroad; bronze tablet stamped "1358 HARRISBURG 1899".....	1,358.847
Canton, main track, front of station; top of rail.....	1,255.2
Canton, 0.4 mile south of, in south abutment of old railroad bridge masonry, 20 feet east of railroad; bronze tablet stamped "1246 HARRISBURG 1899".....	1,246.334
Cedar Lodge, at railroad crossing near station; top of rail.....	1,204.8
Grover, in front of station; top of rail.....	1,229.4
Penbryn, in front of station; top of east rail.....	1,223.5
Roaring Branch, 600 feet north of station, east abutment of steel highway bridge, on bridge seat; aluminum tablet stamped "966 HARRISBURG 1899".....	966.236
Roaring Branch, in front of station; top of rail.....	959.3

RALSTON QUADRANGLE.

RALSTON TO MARSHHILL.

	Feet.
Ralston, 0.2 mile north of station, in south abutment, west side of railroad bridge; bronze tablet stamped "851 HARRISBURG 1899".....	852.116
Marshhill, in front of station; top of west rail.....	795.9

TROUT RUN QUADRANGLE.

BODINE TO HEPBURNVILLE.

Bodine, in front of station; top of rail.....	760.5
Fields, 0.1 mile north of, in south abutment east side of iron railroad bridge; bronze tablet stamped "732 HARRISBURG 1899".....	732.512
Gray, at north end of switch, at road crossing; top of west rail.....	717.0
Trout Run, in front of station, main track; top of rail.....	677.9
Powys, in front of station; top of rail.....	629.7
Powys, 0.7 mile south of, in northwest wing abutment of small creek culvert; aluminum tablet stamped "620 HARRISBURG 1899".....	620.554
Cogan Valley, in front of station; top of rail.....	598.7
Hepburnville, at road crossing near station; top of rail.....	582.9

WILLIAMSPORT QUADRANGLE.

AT WILLIAMSPORT.

Williamsport, general superintendent's office building, north side of east entrance, on water table; chiseled shelf (Pennsylvania Railroad bench mark, elevation 528.35).....	528.50
Williamsport, northwest corner base of Soldiers' monument; chiseled square (Pennsylvania Railroad bench mark No. 46, elevation 525.04).....	525.19
Williamsport, city hall, in front face near main entrance; aluminum tablet stamped "528 HARRISBURG 1899".....	528.266

WARREN COUNTY.

KINZUA, WARREN, AND YOUNGSVILLE QUADRANGLES.

The elevations in the following list are the Pennsylvania portion of the result of two independent lines of precise leveling run in opposite directions between Salamanca, N. Y., and Irvineton, Pa. A large probable error occasioned the second running, with a result, however, checking to 0.043 foot the original figures. The final mean results of this line were included as a factor in the 1903 adjustment of the precise-level net. The result of this was to increase the elevation at Irvineton, Pa., by this line 0.128 foot with respect to Salamanca; therefore, there has been distributed a correction of 0.128 foot in a total distance of 48.8 miles in amounts proportional to the mileage. Both lines were run by the same methods and similar party outfits as in previous work, each being a double-rodged, simultaneous, direct and reverse read line, employing special 10-foot double-faced targeted rods. The total divergence in the 1902 line was but 0.011 foot and the total correction 0.085 foot.

The leveling of 1899 was done by Mr. E. L. McNair, topographer, and that of 1902 by Mr. D. H. Baldwin, topographer. The standard bench marks are referred to the Dunkirk datum and stamped with the letters "DUNKIRK" in addition to the figures of elevation and year 1899.

KINZUA QUADRANGLE.

CORYDON, ALONG PENNSYLVANIA RAILROAD, TO TUTTLETOWN.

	Feet.
Corydon, 0.33 mile north of station, at southeast corner of steel bridge over Willow Creek, on foundation coping stone; aluminum tablet stamped "1281 DUNKIRK 1899".....	1,281.865
Corydon, in front of station; top of north rail.....	1,281.2
Corydon, 2.04 miles south of, southeast corner of Bridge No. 758, on foundation coping stone; chiseled square.....	1,271.25
Gawanga, in front of station; top of rail.....	1,267.1
Sugar Run, 1.4 miles south of, southwest corner of Bridge No. 114, on foundation coping stone; aluminum tablet stamped "1253 DUNKIRK 1899".....	1,254.403
Sugar Run, in front of station; top of south rail.....	1,244.9

Feet.

Sugar Run, 0.13 mile south of station, southwest corner of Bridge No. 113, on parapet coping stone; chiseled square.....	1,245.23
Kinzua, in front of station; top of south rail.....	1,237.1
Kinzua, 500 feet south of station, at northwest corner of steel-truss bridge across Kinzua Creek, 2.5 feet west of chord, on foundation coping stone; aluminum tablet stamped "1229 DUNKIRK 1899".....	1,230.206
Tuttle town, 400 feet south of, at northeast corner of four-span bridge over Allegheny River, on parapet coping stone; chiseled square.....	1,232.1

WARREN QUADRANGLE.

GREAT BEND TO IRVINETON.

Great Bend, at flag crossing; top of south rail.....	1,222.7
Great Bend, 0.80 mile southwest of, northeast corner of Bridge No. 644, on foundation stone; chiseled square.....	1,221.2
Hemlock, at flag crossing; top of rail.....	1,208.4
Hemlock, 0.2 mile southwest of, at northwest corner of steel-girder Bridge No. 110, 5 inches from bed plate, on foundation coping stone; aluminum tablet stamped "1205 DUNKIRK 1899".....	1,205.768
Glade, in front of station; top of southeast rail.....	1,199.2
Struthers, in front of station; top of north rail.....	1,191.9
Warren, 300 feet south of station, at northwest corner of double-track steel-truss Bridge No. 54 over Allegheny River, on coping of parapet wall; aluminum tablet stamped "1193 DUNKIRK 1899".....	1,193.485
Warren, at station, Pennsylvania Railroad bench mark No. 33, in doorsill of waiting room; copper plug.....	1,194.813
Starbuck crossing; top of south rail.....	1,189.5
Jackson crossing, 650 feet east of, Pennsylvania Railroad bench mark No. 37, southwest corner of Bridge No. 53, coping stone; copper plug.....	1,180.778
Jackson crossing; top of south rail.....	1,181.5
Irvinton, 1.48 miles east of, Pennsylvania Railroad bench mark No. 33, southwest corner of small girder Bridge No. 52, top of second step from top of wing wall; copper plug.....	1,166.172

YOUNGSVILLE QUADRANGLE.

NEAR IRVINETON.

Irvinton, 0.75 mile east of, Pennsylvania Railroad bench mark No. 39, southeast corner of open drain, on foundation stone; copper plug.....	1,168.951
Irvinton, 0.24 mile east of station, east abutment of double-track steel-girder Bridge No. 50 across Brokenstraw Creek, north side of middle girder, on foundation coping stone; aluminum tablet stamped "1167 DUNKIRK 1899".....	1,167.948

FOREST, VENANGO, AND WARREN COUNTIES.

FRANKLIN, OIL CITY, TIDIOUTE, TIONESTA, AND YOUNGSVILLE QUADRANGLES.

The elevations in the following list are the result of a line of precise levels run from Irvinton to Franklin. The latest adjustment of the precise-level net in which this line was a factor has resulted in raising the original values of the line 0.083 foot at Franklin with respect to Irvinton, distributing this amount over the total distance of 57.9 miles.

The method of leveling and party outfit was similar to that previously used. The leveling was done in 1899 by E. L. McNair, topographer. The standard bench marks are referred to the Dunkirk, N. Y., datum and are stamped with the letters "DUNKIRK" in addition to figures of elevation which are mostly 1 foot low.

YOUNGSVILLE QUADRANGLE.

IRVINETON TO THOMPSON.

Feet.

Irvinton, 0.24 mile east of station, east abutment of double-track steel-girder Bridge No. 50 across Brokenstraw Creek, north side of middle girder, on foundation coping stone; aluminum tablet stamped "1167 DUNKIRK 1899".....	1,167.948
Thompson, 0.12 mile northeast of Western New York and Pennsylvania station, at east end of south abutment of small girder Bridge No. 85A, on coping stone; aluminum tablet stamped "1135 DUNKIRK 1899".....	1,136.118
Thompson, in front of station; top of west rail.....	1,139.8

TIDIOUTE QUADRANGLE.

COBHAM TO JAMISON.

	Feet.
Cobham, in front of flag station; top of east rail.....	1,131.4
Tidioute, in front of Pennsylvania Railroad station; top of north rail.....	1,110.5
Tidioute, 100 feet east of station, 270 feet south of center of track at north end of suspension bridge across Allegheny River, on face of west cable anchor; aluminum tablet stamped "1116 DUNKIRK 1899".....	1,116.969
Trunkeyville, in front of flag station; top of east rail.....	1,096.0
Trunkeyville, 350 feet south of flag post, 45 feet west of center of main track, 4.5 feet south from large chestnut tree, in large bowlder; aluminum tablet stamped "1098 DUNKIRK 1899".....	1,098.647
Hickory, 0.2 mile north of, at northeast corner of steel truss combination railroad and highway bridge across Allegheny River, on foundation wall; aluminum tablet stamped "1086 DUNKIRK 1899".....	1,086.578
Hickory, in front of station; top of west rail.....	1,088.6
Dawson, in front of station; top of east rail.....	1,073.0
Jamison, in front of flag station; top of east rail.....	1,070.5

TIONESTA QUADRANGLE.

Tionesta, 180 feet north of station, 70 feet east of main track, at southwest corner of highway bridge across Allegheny River, on coping stone; aluminum tablet stamped "1063 DUNKIRK 1899".....	1,064.289
Tionesta, in front of station, main track; top of east rail.....	1,057.5

OIL CITY QUADRANGLE.

HUNTER TO SEDGWICK.

Hunter, near flag station, at road crossing; top of west rail.....	1,058.7
Baum, in front of flag station; top of east rail.....	1,043.9
President 0.3 mile north of flag station, 17.5 feet east of center of track, 2.4 feet below top of rail, top of large bowlder 5 feet high and 12 feet long; aluminum tablet stamped "1042 DUNKIRK 1899".....	1,042.696
President, in front of flag station; top of east rail.....	1,044.8
Eagle Rock, in front of station; top of east rail.....	1,043.0
Riverview, in front of flag station; top of south rail.....	1,035.9
Oleopolis, 0.3 mile northeast of flag station, at northwest corner of one-span steel-truss Bridge No. 74, 13 feet north of center of track, on coping stone of abutment wall; aluminum tablet stamped "1030 DUNKIRK 1899".....	1,031.339
Oleopolis, in front of flag station; top of south rail.....	1,208.1
Walnut, in front of flag station; top of east rail.....	1,020.6
Rockwood, in front of flag station; top of west rail.....	1,013.4
Snelly, in front of flag station; top of east rail.....	1,006.6
South Oil City, 0.4 mile east of railroad station, bridge seat at northeast corner of large three-span steel-truss bridge across Allegheny River, 7 feet north of center of track, 5.1 feet below top of rail and 6 inches from end of chord; aluminum tablet stamped "1009 PITTSBURG 1899".....	1,009.664
South Oil City, in front of railroad station; top of north rail.....	1,006.0
Sedgwick, in front of flag station; top of east rail.....	999.8

FRANKLIN QUADRANGLE.

Prentice, in front of flag station; top of west rail.....	990.5
Franklin, 60 feet north of north end of station, 90 feet west of center of track, east abutment of highway bridge across Allegheny River, second step below coping stone at end of south wing wall, 3.4 feet above top of rail; aluminum tablet stamped "987 PITTSBURG 1899".....	987.777

**ALLEGHENY, ARMSTRONG, CLARION, CRAWFORD, ERIE, MERCER,
AND VENANGO COUNTIES.**

**CAMBRIDGE SPRINGS, ERIE, FOXBURG, FRANKLIN, FREEPORT, KITTANNING, McKEESPORT,
MEADVILLE, RURAL VALLEY, SHARPSBURG, STONEBORO, AND UNION CITY QUADRANGLES.**

The elevations in the following list result from a line of precise levels extending from Erie to Pittsburg, Pa. The initial bench mark is an aluminum tablet stamped "635 ERIE" in the water table of the northwest corner of the hospital wing of the Soldiers' Home, Erie, the elevation of which was previously determined by primary levels to be 58.588 feet above a bench mark of the army engineers, described as a "chisel mark," at southwest corner of foundation of the light-house keeper's dwelling. The line extends south over the Pennsylvania Railroad to Leboeuf, thence over the Erie Railroad to Franklin and from Franklin to Pittsburg over the Allegheny Valley branch of the Pennsylvania Railroad. This line was included in the 1903 adjustment of the precise-level net, and as a result of that adjustment the elevations of the original line with respect to Erie have been lowered 0.204 foot at Leboeuf, 0.499 foot at Franklin, 0.862 foot at West Penn Junction (Lucesco post-office), and Pittsburg. The corresponding distances from Erie are, respectively, 22.4, 76.3, 169.7, and 198.7 miles. Between West Penn Junction and Pittsburg no error was distributed, because of a satisfactory check by Pennsylvania Railroad levels and to simplify the adjustment. The leveling was done in 1899 by Mr. C. H. Semper, levelman, except the portion Franklin to Emlenton, which was done by Mr. E. L. McNair, topographer. Standard bench marks are stamped "PITTSBURG" in addition to the figures of elevation and the year 1899.

ERIE QUADRANGLE.

ERIE, ALONG PENNSYLVANIA RAILROAD, TO SAMSON.

Feet.

Erie Harbor, army engineers' bench mark, southwest corner of foundation of light-house keeper's dwelling; chisel mark.....	577.591
Erie, northwest corner of hospital wing of Soldiers Home, in water table; aluminum tablet stamped "635 ERIE".....	636.179
Erie, at junction of Pennsylvania and Lake Shore railroads; top of foundation of water tank, marked "685".....	685.01
Belle Valley, in front of station; top of rail.....	1,015.5
Belle Valley, 1.1 miles south of, overhead highway bridge, in north end of east side of foundation of bent; aluminum tablet stamped "1103 PITTSBURG 1899".....	1,103.430
Langdon, railroad crossing at station, main track; top of rail.....	1,134.8
Jackson, in front of station, main track; top of rail.....	1,229.4
Samson, 0.8 mile south of, north end, east side of railroad bridge No. 8, in top of arch masonry; aluminum tablet stamped "1214 PITTSBURG 1899".....	1,215.286
Samson, 0.8 mile south of, Bridge No. 8; copper bolt (Pennsylvania Railroad bench mark No. 85).....	1,212.035

UNION CITY QUADRANGLE.

SAMSON TO MILLERS STATION.

Samson, 4.3 miles south of, on Bridge No. 14; Pennsylvania Railroad bench mark No. 82.....	1,191.014
Waterford, in front of station; top of rail.....	1,192.3
Leboeuf, 1.5 miles west of, on New York, Pennsylvania and Ohio (Erie) Railroad, in culvert masonry on northwest side of railroad; aluminum tablet stamped "1193 PITTSBURG 1899".....	1,194.210
Mill Village, in front of station; top of rail.....	1,214.3
Millers, in front of station, main track; top of rail.....	1,169.8
Millers, 0.9 mile southwest of, in top of southwest end of bridge abutment; aluminum tablet stamped "1148 PITTSBURG 1899".....	1,148.237

CAMBRIDGE SPRINGS QUADRANGLE.

Cambridge Springs, in front of station; top of rail.....	1,161.6
Venango, in front of station; top of rail.....	1,161.1
Venango, 0.8 mile southwest of, in southeast end of bridge abutment; bronze tablet stamped "1128 PITTSBURG 1899".....	1,128.717

MEADVILLE QUADRANGLE.

SAEGERSTOWN, ALONG ERIE RAILROAD, TO COCHRANTON.

	Feet.
Saegerstown, in front of station; top of rail.....	1, 114. 0
Saegerstown, 0.7 mile south of, in north abutment, east side of railroad bridge; bronze tablet stamped "1109 PITTSBURG 1899" (reported as having been removed).....	1, 109. 236
Meadville, in front of station; top of rail.....	1, 078. 6
Meadville, 1.8 miles south of, north end of culvert abutment west side of railroad; bronze tablet stamped "1071 PITTSBURG 1899".....	1, 072. 114
Buchanan, in front of station; top of rail.....	1, 073. 3
Shaws, in front of station; top of east rail.....	1, 090. 5
Cochranton, 1,000 feet northwest of, in abutment of railroad iron bridge, north end, east side; bronze tablet stamped "1062 PITTSBURG 1899".....	1, 062. 391
Cochranton, in front of station; top of rail.....	1, 062. 3

STONEBORO QUADRANGLE.

Carlton, in front of station; top of west rail.....	1, 045. 3
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FRANKLIN QUADRANGLE.

UTICA, ALONG ERIE RAILROAD, TO FRANKLIN.

Utica, in front of station; top of rail.....	1, 033. 6
Utica, 300 feet south of station, in east abutment, north side of highway bridge; bronze tablet stamped "1038 PITTSBURG 1899".....	1, 038. 323
Takitezy, at railroad crossing by station; top of rail.....	1, 017. 8
Sugar Creek, 1,200 feet southeast of, in northeast end of abutment of railroad bridge; bronze tablet stamped "1013 PITTSBURG 1899".....	1, 013. 628
Franklin, in northeast corner of belt course of Erie Station; aluminum tablet stamped "989 PITTSBURG 1899".....	989. 349

FRANKLIN, ALONG PENNSYLVANIA RAILROAD, TO BRANDON.

Franklin, Pennsylvania Railroad station, 90 feet west of center of track, at point 60 feet north of north end of station, in second step below coping-stone at end of south wing wall of east abutment of road bridge across Allegheny River; aluminum tablet stamped "987 PITTSBURG 1899".....	987. 777
Franklin, in front of Pennsylvania Railroad station; top of west rail.....	984. 3
Cochran, in front of station; top of south rail.....	978. 1
Astral flag station; top of rail.....	973. 8
East Sandy, 650 feet north of station; coping stone of abutment at southwest corner of 2-span steel-truss bridge across Sandy Creek, 1.2 feet below top rail 10.5 feet west of center of track; bronze tablet stamped "970 PITTSBURG 1899".....	970. 905
East Sandy, in front of station; top of east rail.....	970. 5
Foster, in front of flag station; top of north rail.....	965. 3
Brandon, in front of station; top of south rail.....	957. 5
Brandon, 1.3 miles south of station, face of rock ledge 20 feet southeast of center of track, 3 feet above top of rail, 1,100 feet south of milepost 112; bronze tablet stamped "957 PITTSBURG 1899".....	957. 715

FOXBURG QUADRANGLE.

KENNERDELL, ALONG PENNSYLVANIA RAILROAD, TO CATFISH RUN.

Kennerdell, in front of station; top of west rail.....	944. 0
Kennerdell, 1.5 miles south of station; 300 feet west of milepost 106, large boulder 10 feet north of center of track, 2.4 feet above rail; bronze tablet stamped "941 PITTSBURG 1899".....	942. 373
St. George, 0.3 mile south of, 150 feet south of whistling post, in rock on west side of rail; bronze tablet stamped "925 PITTSBURG 1899".....	926. 181
Rockland, 0.1 mile south of, in northwest wing of abutment of bridge over small creek, 600 feet south of station on west side of railroad; bronze tablet stamped "919 PITTSBURG 1899".....	920. 792
Wood Hill, in front of station sign; top of west rail.....	917. 4
Shippingport crossing; top of east rail of middle crossing.....	913. 1
Dotter, 600 feet north of, in north abutment of west wing of railroad bridge; bronze tablet stamped "905 PITTSBURG 1899".....	906. 125
Dotter, in front of station; top of east rail.....	910. 9
Emlenton, 0.4 mile south of, in wing wall of railroad bridge abutment, south end, west side; bronze tablet stamped "898 PITTSBURG 1899".....	899. 079

	Fect.
Emlenton, at road crossing at station; top of south rail.....	901.2
Foxburg, in front of station; top of east rail.....	891.9
Parker, in top of abutment of road bridge at station, east abutment, south side; bronze tablet stamped "883 PITTSBURG 1899".....	884.014
Monterey, in front of station; top of south rail.....	870.8
Monterey, 900 feet south of station, in bridge abutment, north end, east side; bronze tablet stamped "869 PITTSBURG 1899".....	876.043
Upper Hillville, in front of station; top of south rail.....	863.7
Lower Hillville, in front of station; top of west rail.....	860.6
Lower Hillville, 1 mile south of, in top of culvert wall of small stream, northeast side; bronze tablet stamped "855 PITTSBURG 1899".....	856.387
Catfish Run, in front of station; top of east rail.....	854.7

KITTANNING QUADRANGLE.

EAST BRADY, ALONG PENNSYLVANIA RAILROAD, TO RIVERVIEW.

East Brady, in east abutment wing wall of steel highway bridge; bronze tablet stamped "852 PITTSBURG 1899".....	852.645
Redbank, in front of station; top of west rail.....	846.2
Redbank, 600 feet south of station; in north abutment of railroad bridge, west side of abutment; bronze tablet stamped "844 PITTSBURG 1899".....	844.746
Riverview, in front of station; top of rail.....	835.4

NEALE, ALONG PENNSYLVANIA RAILROAD, TO ROSSTON.

Neale, on last crossing south of station; top of west rail.....	805.3
Wick City, crossing at pottery works; top of west rail.....	805.3
Kittanning, in front of station; top of east rail.....	806.4
Kittanning, on corner of McKain and Vine streets, public school, northwest corner of front face; bronze tablet stamped "803 PITTSBURG 1899".....	803.500
Garrett Run, in front of station; top of west rail.....	796.1
Manorville, in front of station; top of east rail.....	796.0
Graff, in front of station; top of west rail.....	790.4
Ford City, in front of station; top of east rail.....	784.8
Rosston, in front of station; top of west rail.....	786.6

RURAL VALLEY QUADRANGLE.

RIMER, ALONG PENNSYLVANIA RAILROAD, TO COWANSHANNOCK.

Rimer, 2 miles south of, in north abutment, west side of iron bridge; bronze tablet stamped "820 PITTSBURG 1899".....	820.810
Mahoning, in front of station; top of east rail.....	818.8
Templeton, in front of station; top of west rail.....	819.1
Mosgrove, in north abutment, east end of railroad bridge, 900 feet north of station; bronze tablet stamped "806 PITTSBURG 1899".....	807.227
Cowanshannock, in front of station; top of east rail.....	805.4

FREEPORT QUADRANGLE.

LOGANSPOUT, ALONG PENNSYLVANIA RAILROAD, TO VALLEY CAMP.

Logansport, in front of station; top of west rail.....	781.7
Rosston, 0.2 mile south of, in east abutment of bridge over river; bronze tablet stamped "786 PITTSBURG 1899".....	785.855
Kelley, in front of station; top of west rail.....	778.3
White Rock, in front of station, main track; top of east rail.....	780.6
Donley, in front of station; top of south rail.....	782.2
West Penn Junction, in foundation of turntable of Pennsylvania Railroad, Pennsylvania Railroad bench mark No. 26; copper bolt stamped "788.85".....	788.554
West Penn Junction, in foundation wall of turntable of Pennsylvania Railroad; bronze tablet stamped "788 PITTSBURG 1899".....	788.573
Garvers Ferry, in front of station; top of west rail.....	783.7
McKain, in front of station; top of west rail.....	776.6
Metcalf, in front of station; top of west rail.....	773.5
Braeburn, in front of station; top of west rail.....	759.7
Edgecliff, 1,000 feet south of, in north abutment east side of bridge over creek; bronze tablet stamped "764 PITTSBURG 1899".....	763.478
Craig Dell, in front of station; top of west rail.....	776.2
Valley Camp, in front of station, main track; top of west rail.....	787.1

SHARPSBURG QUADRANGLE.

ARNOLD, ALONG PENNSYLVANIA RAILROAD, TO SYLVAN.

	Fect.
Arnold, in front of station, main track; top of west rail.....	786.0
New Kensington, in front of station; top of west rail.....	775.0
Parnassus, in front of station; top of west rail.....	763.0
Logans Ferry, in front of station, north-bound track; top of east rail.....	755.7
Barking, in front of station, south-bound track; top of east rail.....	759.0
Blacks Run, 300 feet south of Bessemer steel railroad bridge over Allegheny River, in face of stone milepost marked "P 13, O. C. 119-5/10"; bronze tablet stamped "770 PITTSBURG 1899." (Reported as having been removed, though shank still remains).....	771.194
Hulton, in front of station; top of east rail.....	776.6
Oakmont, in front of station; top of west rail.....	763.6
Edgewater, in front of station; top of west rail.....	753.6
Verona, in front of station; top of west rail.....	744.8
Sylvan, in front of station; top of west rail.....	744.1

M'KEESPORT QUADRANGLE.

SANDY CREEK, ALONG PENNSYLVANIA RAILROAD, TO PITTSBURG.

Sandy Creek, in front of station; top of west rail.....	744.8
Wildwood, in front of station; top of west rail.....	745.7
Wildwood, doorsill of west door Pennsylvania Water Company house; copper bolt.....	748.829
Brilliant, in front of station; top of north rail.....	746.5
Brilliant, 0.3 mile south of, in wall of small culvert south side of railroad; bronze tablet stamped "745 PITTSBURG 1899".....	745.354
Morningside, in front of station; top of north rail.....	745.8
Pittsburg, in front of Butler Street station; top of west rail.....	742.9
Pittsburg, in front of Forty-third Street station; top of west rail.....	730.5
Pittsburg, south side of Allegheny avenue, 15 feet west of Allegheny Valley Railway; top of curbstone, stamped "B. M.".....	736.621
Pittsburg, Liberty street, south side foundation of Washington Street footbridge; copper bolt (Pennsylvania Railroad bench mark).....	743.762
Pittsburg, in foundation of Seventh Avenue Hotel, north side, at main entrance; aluminum tablet stamped "738 PITTSBURG 1899".....	738.383

WASHINGTON AND WESTMORELAND COUNTIES.

BROWNSVILLE, MASONTOWN, McKEESPORT, MORGANTOWN, AND UNIONTOWN QUADRANGLES.

The elevations in the following list result from the Pennsylvania portion of a line of precise levels run between Pittsburg, Pa., and Grafton, W. Va. The line as run started from bench mark "M" at Grafton, W. Va., on the transcontinental precise-level line of the Coast and Geodetic Survey, a chisel mark on the coping stone at north end of central pier of railroad bridge over Tygart River, and followed the Baltimore and Ohio Railroad to Leith, near Uniontown, Pa., thence over the Pennsylvania Railroad to Pittsburg. This line was included in the 1903 adjustment of the precise-level net, and as a result of that adjustment the elevation by the original line at Braddock with respect to Grafton has been lowered 0.112 foot in a distance of 142.5 miles. Between Braddock and Pittsburg no error was distributed because of a satisfactory check by Pennsylvania Railroad levels and to simplify adjustment. The leveling was done in 1899 by Mr. E. L. McNair, topographer. Standard bench marks are stamped "PITTSBURG" in addition to the figures of elevation and of the year 1899.

M'KEESPORT QUADRANGLE.

PITTSBURG, ALONG PENNSYLVANIA RAILROAD, TO ELBEN.

	Fect.
Pittsburg, in front of Twenty-eighth Street station; top of south rail.....	755.6
Benvenue, 0.25 mile west of station, bridge seat at south end of west abutment of girder bridge over Pittsburg Junction Railway tracks; bronze tablet stamped "818 PITTSBURG 1899".....	818.184
East Liberty, in front of station; top of west rail.....	913.7
Fifth avenue, in front of station; top of west rail.....	919.9

	Feet.
Homewood, in front of station; top of west rail.....	922.2
Homewood, in doorsill of station; copper bolt (Pennsylvania Railroad bench mark)	923.367
Wilksburg, in front of station; top of west rail.....	922.0
Edgewood, in front of station; top of west rail.....	922.1
Swissvale, in front of station; top of west rail of west track.....	921.7
Hawkins, in front of station; top of rail.....	881.1
Braddock station, in doorsill of door to ladies' waiting room; copper bolt (Pennsylvania Railroad bench mark).....	828.737
Bessemer station, Pennsylvania Railroad, about 1 mile east of, east end of north abutment of double-track bridge of Union Railway over main line of Pennsylvania Railroad, in face of abutment; bronze tablet stamped "760 PITTSBURG 1899".....	759.492
Thompson, 0.33 mile south of flag station, at south end of west abutment of Port Perry Railroad bridge across Monongahela River; copper bolt (Pennsylvania Railroad bench mark No. 13).....	763.860
Thompson, 125 feet south of flag station, at signal tower, 25 feet west of south-bound track, 4 feet above top of rail, north wing wall of west abutment of double-track truss bridge of Union Railway crossing over tracks of Pennsylvania Railroad; bronze tablet stamped "767 PITTSBURG 1899".....	766.881
Thompson, in front of flag station, south-bound track; top of west rail.....	762.9
Cochran (Duquesne post-office), in front of station, south-bound track; top of east rail.....	761.1
Dravosburg, in front of station, south-bound track; top of west rail.....	746.7
Camden, in front of station, north-bound track; top of east rail.....	753.7
Coal Valley, county bridge over creek; chiseled square on coping stone of wall (Pennsylvania Railroad bench mark No. 19, elevation 736.60).....	736.303
Coal Valley, in front of station, south-bound track; top of west rail.....	754.2
Wilson, in front of station, south-bound track; top of west rail.....	756.5
Peters Creek, in front of flag station, south-bound track; top of east rail.....	752.5
Peters Creek, 0.25 mile south of flag station, 2-span stone arch culvert, first step below coping stone at southeast corner, 12 feet below top of rail; bronze tablet stamped "740 PITTSBURG 1899".....	739.446
Blair, in front of flag station, north-bound track; top of east rail.....	757.6
Central Park, north-bound track at road crossing; top of west rail.....	754.9
East Elizabeth, in front of station, north-bound track; top of west rail.....	750.1
West Elizabeth, in front of station, north-bound track; top of east rail.....	746.4
Jones flag station, north-bound track; top of east rail.....	754.3
Walton flag station, south-bound track; top of east rail.....	756.4
Elben, in front of station, north-bound track; top of west rail.....	751.6

BROWNSVILLE QUADRANGLE.

ELBEN, ALONG PENNSYLVANIA RAILROAD, TO TIPPECANOE.

Shire Oaks, in front of station, north-bound track; top of west rail.....	750.1
Coal Bluff, in front of station, south-bound track; top of east rail.....	750.7
Huston Run, in front of station, north-bound track; top of west rail.....	754.8
Courtney, in front of station; top of east rail.....	759.1
Riverview, 0.3 mile north of flag station, south end of large stone-arch culvert, west side of track, second step below coping stone, 2.5 feet below top of rail; bronze tablet stamped "753 PITTSBURG 1899".....	753.081
Riverview, in front of flag station; top of east rail.....	755.3
Monongahela City, in front of station; top of rail.....	753.8
Black Diamond flag station; top of west rail.....	753.9
Baird, 150 feet south of flag station, signpost, second step below coping stone of stone-arch culvert, north side of track, 4.8 feet below top of rail; bronze tablet stamped "755 PITTSBURG 1899".....	754.954
Baird, in front of flag station; top of east rail.....	760.0
Webster, in front of station; top of west rail.....	761.1
West Columbia, in front of flag station; top of west rail.....	772.9
Bamford, in front of station; top of east rail.....	763.9
Lock No. 4, on coping near heel of west gate at south end of west lock, on circle; chisel mark Lock No. 4; top of west rail.....	743.661
Charleroi, in front of station; top of west rail.....	764.7
Charleroi, 0.5 mile south of station, 150 feet south of city pumping station, coping stone at northwest corner of large stone-arch culvert; bronze tablet stamped "760 PITTSBURG 1899".....	764.0
Belle Vernon, in front of station; top of east rail.....	757.734
Dumlevy, in front of flag station; top of west rail.....	767.2
Allenport, in front of station; top of west rail.....	763.4
	764.5

	Feet.
Stockdale, in front of flag station; top of east rail.....	761.8
Lucyville, in front of station; top of west rail.....	766.7
Woods Run flag station, in front of; top of west rail.....	765.0
Woods Run flag station, 0.5 mile south of, bridge seat at east end of north abutment of open culvert, 25 feet south of milepost 47; bronze tablet stamped "764 PITTSBURG 1899"	765.241
Coal Center, in front of station; top of west rail.....	768.9
California, in front of station; top of east rail.....	766.4
West Brownsville Junction, in front of station; top of east rail.....	778.3
West Brownsville Junction, 0.25 mile south of, 4-span truss bridge across Monongahela River, bridge seat at east end of north abutment; bronze tablet stamped "778 PITTSBURG 1899"	777.579
Braznell, in front of flag station; top of east rail.....	798.8
Grindstone, in front of flag station; top of west rail.....	825.4
Tippecanoe, in front of flag station; top of west rail.....	859.4
Tippecanoe, 0.5 mile south of flag station, bridge seat at southwest corner of small girder bridge 15 feet long over roadway at south end of truss road bridge over Redstone Creek; bronze tablet stamped "868 PITTSBURG 1899"	867.466

MASONTOWN QUADRANGLE.

SMOCK, ALONG PENNSYLVANIA RAILROAD, TO WALTERSBURG.

Smock, in front of station; top of east rail.....	877.7
Rothbuck, in front of station; top of west rail.....	892.3
Waltersburg, in front of flag station; top of west rail.....	900.2

FAIRCHANCE, ALONG BALTIMORE AND OHIO RAILROAD, TO GANS.

Fairchance, 550 feet north of Baltimore and Ohio Railroad station, bridge seat at corner of small girder Bridge No. 338; aluminum tablet stamped "1065 PITTSBURG 1899"	1,065.184
Fairchance, in front of station; top of west rail.....	1,059.8
Smithfield, in front of station; top of west rail.....	985.5
Outcrop, in front of flag station; top of east rail.....	1,067.4
Outcrop, 0.2 mile south of flag station, northeast of Baltimore and Ohio tunnel, east of track, 3.7 feet above rail; bronze tablet stamped "1084 PITTSBURG 1899" ^a	1,083.846
Summit of grade; top of rail	1,089.5

UNIONTOWN QUADRANGLE.

WALTERSBURG, ALONG PENNSYLVANIA RAILROAD, TO UNIONTOWN.

Upper Middletown flag station, 675 feet north of, in face of rock in place, 26 feet east of center of track, 4.2 feet higher than top of rail; bronze tablet stamped "920 PITTSBURG 1899"	919.698
Upper Middletown flag station; top of rail	913.8
Vance Mill Junction, in front of station; top of east rail	927.0
Redstone Junction, in front of station; top of east rail.....	956.1
Uniontown, court-house, corner of Main and Court streets, foundation wall 4 feet above ground between Main street entrance and southwest corner and building; aluminum tablet stamped "999 PITTSBURG 1899"	998.835

UNIONTOWN, ALONG BALTIMORE AND OHIO RAILROAD, TO FAIRCHANCE.

Uniontown, in front of Pennsylvania Railroad station; top of east rail.....	980.7
Leith, in front of Pennsylvania Railroad station; top of west rail.....	1,005.9
Hutchinson, in front of flag station; top of east rail.....	1,106.1
Brownfield, in front of station; top of west rail.....	1,136.5
Oliphant, in front of flag station; top of west rail.....	1,170.6
Johnston, in front of flag station; top of west rail.....	1,098.6

MORGANTOWN QUADRANGLE.

GANS, ALONG BALTIMORE AND OHIO RAILROAD, TO THE STATE LINE.

Gans, in front of station; top of west rail.....	1,009.5
Aitchison, in front of station; top of east rail.....	939.1
Cheat Haven, in front of station; top of west rail.....	835.4
Point Marion, 0.25 mile north of station, coping stone at east end of north pier of 6-span truss and girder Bridge No. 356 across Cheat River; bronze tablet stamped "813 PITTSBURG 1899"	812.892
Point Marion, in front of station; top of west rail.....	815.3
State line (W. Va.-Pa.); top of east rail.....	815.3

^a Reported as having been disturbed by reconstruction of bridge; may be several feet lower than here given.

ERIE AND WARREN COUNTIES.

CORY, UNION CITY, AND YOUNGVILLE QUADRANGLES.

The elevations in the following list are the result of a line of precise levels run from Leboeuf to Irvineton. This line formed a factor in the 1903 adjustment of the precise-level net, the result of which was to lower the elevation by the unadjusted line 0.146 foot at Irvineton with respect to Leboeuf. This amount has therefore been distributed in this line proportional to the distance. The total divergence between the simultaneous, direct and reverse-lines is 0.021 foot in a total distance of 38.7 miles.

The method of leveling and party outfit was similar to that previously used. The leveling was done in 1902 by Mr. D. H. Baldwin, topographer in charge. The standard bench marks are referred to an aluminum tablet at Pittsburg at the entrance to the Seventh Avenue Hotel, stamped "738 PITTSBURG 1899," the elevation of which is accepted as 738.383 feet above mean sea level. They are stamped with the legend "PITTSBURG 1902" in addition to the figures of elevation.

UNION CITY QUADRANGLE.

LEBOEUF, EAST ALONG ERIE RAILROAD TO UNION CITY, THENCE ALONG PITTSBURG AND ERIE PAILOAD TO ELGIN.

	Feet.
Leboeuf, 1.5 miles west of, north side of tracks, arch culvert, on coping stone; aluminum tablet stamped "1193 PITTSBURG 1899"	1 194.20
Leboeuf, 1 mile southwest of, near railroad crossing, southwest corner of highway bridge, on foundation stone; chiseled square	1,201.31
Union City, 1.69 miles west of, on Erie Railroad, on top of stone milepost 74; chiseled square	1,259.60
Union City, 0.61 mile west of, Erie Railroad, on top of stone milepost 73; chiseled square	1,284.37
Union City, in front of Erie station; top of north rail	1,299.9
Union City, 0.31 mile east of Erie station, top of stone milepost 72; chiseled square	1,302.92
Union City, 0.78 mile east of Pennsylvania Railroad station, Bridge No. 27, northeast corner, on parapet wall; chiseled square	1,289.13
Union City, 1.97 miles east of, northeast corner of Bridge No. 29, on foundation stone; chiseled square	1,302.06
Union City, 2.22 miles east of, east corner of Bridge No. 30, on foundation wall; copper bolt (Pennsylvania Railroad bench mark No. 72)	1,307.892
Reilly, flag road crossing; top of north rail	1,346.1
Elgin, 1.09 miles west of, northwest corner of Bridge No. 32, on parapet stone; chiseled square (Pennsylvania Railroad bench mark No. 71)	1,369.58
Elgin, 0.13 mile west of, northeast corner Bridge No. 33, on foundation stone; copper bolt (Pennsylvania Railroad bench mark No. 70)	1,379.496
Elgin, 330 feet west of station, north of track, store of D. S. Lyon, southeast corner of foundation wall; aluminum tablet stamped "1382 PITTSBURG 1902"	1,381.794
Elgin, in front of station; top of north rail	1,386.4

CORY QUADRANGLE.

LOVELL TO HORN.

Lovell, 0.84 mile west of, northeast corner of Bridge No. 34, on foundation wall; copper bolt (Pennsylvania Railroad bench mark No. 69)	1,366.676
Lovell, in front of station; top of north rail	1,374.2
Lovell, 0.16 mile east of, southwest corner of Bridge No. 37, on foundation stone; copper bolt (Pennsylvania Railroad bench mark No. 68)	1,372.610
Corry, 2.68 miles west of, southeast corner of Bridge No. 38, on foundation stone; copper bolt (Pennsylvania Railroad bench mark No. 67)	1,382.199
Corry, 1.13 miles west of, northwest corner of Bridge No. 40, bottom of coping stone of wing wall; copper bolt (Pennsylvania Railroad bench mark No. 66)	1,412.769
Corry, in front of station; top of north rail	1,429.1
Corry, 0.05 mile southwest of station, northeast corner of Phoenix Hotel, on base water table; aluminum tablet stamped "1432 PITTSBURG 1902"	1,432.341
Colza, 0.34 mile west of, southeast corner of Bridge No. 41, on top of foundation wall; copper bolt (Pennsylvania Railroad bench mark No. 64)	1,397.526
Colza, in front of station; top of north rail	1,400.7
Roach, in front of section house; top of north rail	1,381.2

	Feet.
Roach, 0.24 mile east of, southwest corner of Bridge No. 42 (large steel-truss bridge), on parapet wall; chiseled square (Pennsylvania Railroad bench mark No. 62)	1,384.170
Spring Creek, in front of station; top of north rail	1,395.5
Spring Creek, 100 feet northeast of station, southwest corner of Donaldson Brothers' general store, in water table; aluminum tablet stamped "1406 PITTSBURG 1902"	1,405.594
Spring Creek, 0.26 mile east of, south side of track, on coping stone at culvert; chiseled square (Pennsylvania Railroad bench mark No. 58)	1,390.04
Spring Creek, 0.70 mile east of, west side of open culvert, north side of track, on foundation stone; copper bolt (Pennsylvania Railroad bench mark No. 57)	1,394.893
Spring Creek, 2.03 miles north of, northeast corner of girder Bridge No. 42½, on wing wall; copper bolt (Pennsylvania Railroad bench mark No. 56)	1,375.846
Horn, 0.17 mile west of, southwest corner small girder bridge, on foundation stone; copper bolt (Pennsylvania Railroad bench mark No. 55)	1,366.593
Horn, flag crossing; top of north rail	1,372.8

YOUNGVILLE QUADRANGLE.

HORN TO IRVINETON.

Horn, 1.18 miles north of, south end of box culvert on coping stone; copper bolt (Pennsylvania Railroad bench mark No. 54)	1,322.334
Quarry, flag crossing; top of north rail	1,328.7
Garland, in front of station, main track; top of south rail	1,308.8
Garland, 1.12 miles east of, southwest corner of "Blue Eye" Bridge over Blue Eye Creek, on foundation stone; copper bolt (Pennsylvania Railroad bench mark No. 51)	1,285.041
Pittsfield, 1.83 miles west of, at southwest corner of bridge, on top of foundation wall; copper bolt (Pennsylvania Railroad bench mark No. 50)	1,264.709
Pittsfield, 0.52 mile west of, large steel through-truss bridge over creek, southeast corner of foundation stone; bronze tablet stamped "1244 PITTSBURG 1902"	1,244.249
Pittsfield, in front of station; top of north rail	1,240.6
Pittsfield, 0.13 mile east of, northwest corner of Bridge No. 46, on foundation wall; chiseled square (Pennsylvania Railroad bench mark No. 47)	1,237.68
Pittsfield, 0.75 mile east of, southwest corner of small bridge, on foundation wing wall; copper bolt (Pennsylvania Railroad bench mark No. 46)	1,231.197
Youngville, 0.86 mile west of, southwest corner of Bridge No. 47, on foundation wall; copper bolt (Pennsylvania Railroad bench mark No. 45)	1,221.601
Youngville, 0.32 mile west of, southwest corner of 6-span girder bridge over Brokenstraw Creek; copper bolt (Pennsylvania Railroad bench mark No. 48)	1,207.025
Youngville, 0.15 mile west of, northeast corner of Dunkirk, Allegheny Valley and Pittsburg Railroad bridge, on projection of bottom foundation stone of pier; chiseled square (Pennsylvania Railroad bench mark No. 43)	1,211.305
Youngville, in front of station; top of rail	1,210.8
Youngville, in front of Dunkirk, Allegheny Valley and Pittsburg Railroad station; top of north rail	1,205.8
Irvineton, 0.70 mile west of, southwest corner of Bridge No. 49, on foundation wall; chiseled square (Pennsylvania Railroad bench mark No. 42)	1,173.032
Irvineton, in front of station; top of south rail	1,167.3
Irvineton, 0.24 mile east of station, east abutment of double-track steel-girder Bridge No. 50 across Brokenstraw Creek, north side of middle girder, on bridge seat; aluminum tablet stamped "1176 PITTSBURG 1899"	1,167.948

PRIMARY LEVELING.

TIOGA AND POTTER COUNTIES.

ELKLAND, GAINES, GALETON, AND TIOGA QUADRANGLES.

The following elevations are based upon bench marks at Corning and Addison, N. Y., on the precise-level line Dunkirk to Albany, N. Y. The reference bench mark is an aluminum tablet in the State library at Harrisburg stamped "364 HARRISBURG 1899," the elevation of which is accepted as 363.975 feet above mean sea level. The leveling was done in 1899 under the direction of Mr. J. H. Jennings, topographer, by Messrs. C. H. Semper and Robert Coe, levelmen. The standard bench marks are stamped "HARRISBURG" in addition to figures of elevation mostly 1 foot low.

ELKLAND QUADRANGLE.

ADDISON, N. Y., SOUTH ALONG BUFFALO AND SUSQUEHANNA RAILROAD TO ELKLAND, PA., THENCE WEST,
VIA ACADEMY CORNERS, TO WESTFIELD.

	Feet.
Elkland, on west Main street, in front face of Pattison Bank; tablet stamped "1134 HARRISBURG 1899".....	1, 134. 432
Academy Corners, in southeast corner of district schoolhouse; tablet stamped "1216 HARRISBURG 1899".....	1, 216. 725
Knoxville, in about the middle of foundation of chimney on residence of H. I. Brewster, on south side of East Main street, being the third building from corner of Main and Water streets; aluminum tablet stamped "1239 HARRISBURG 1899".....	1, 240. 368

ACADEMY CORNERS, SOUTH ALONG HIGHWAYS TO LITTLE MARSH, THENCE SOUTHEAST
TO MIDDLEBURY CENTER.

Little Marsh, at east end of village, in top of third stone from east end of north abutment of iron highway bridge over Crooked Creek; bronze tablet stamped "1392 HARRISBURG 1899".....	1, 393. 184
Middlebury Center, in top stone at south end of west pier of iron highway bridge over Crooked Creek; bronze tablet stamped "1149 HARRISBURG 1899".....	1, 150. 004

GAINES, EAST ALONG BUFFALO AND SUSQUEHANNA RAILROAD AND NEW YORK CENTRAL
RAILROAD TO STOKESDALE, THENCE NORTH ALONG LATTER TO MIDDLEBURY
CENTER.

Ansonia, on north side of east abutment of highway bridge over Marsh Creek 200 feet west of Fall Brook Railway, in top of bridge seat stone; bronze tablet stamped "1136 HARRISBURG 1899".....	1, 136. 884
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STOKESDALE, SOUTH ALONG NEW YORK CENTRAL RAILROAD, TO WELLSBORO (SINGLE-
SPUR LINE.)

Wellsboro, bronze tablets in stone monuments set in public square as meridian marks; stamped "1308 HARRISBURG 1899"—	
North monument (about 7 feet from Central avenue and 42 feet from Main street).....	1, 308. 638
South monument (about 13 feet from Pearl street and 26 feet from Charles street).....	1, 309. 305

TIOGA QUADRANGLE.

ELKLAND, EAST ALONG NEW YORK CENTRAL RAILROAD TO LAWRENCEVILLE, THENCE
NORTH TO CORNING.

Nelson, in southeast corner of Nelson schoolhouse; tablet stamped "1077 HARRISBURG 1899".....	1, 077. 978
Lawrenceville, at northwest corner of Main and Cowanesque streets, in top foundation stone on south side near southeast corner of building; aluminum tablet stamped "996 HARRISBURG 1899".....	996. 792

MIDDLEBURY CENTER, SOUTHEAST ALONG HIGHWAY TO EAST CHARLESTON, THENCE
EAST TO MANSFIELD.

East Charleston, at northwest corner of brick residence of Seymour Whitney, in west face of foundation; aluminum tablet stamped "1656 HARRISBURG 1899".....	1, 656. 891
Covington, in west face of foundation near northwest corner of I. O. O. F. hall, being third building south of State street, on east side of Williams street; bronze tablet stamped "1196 HARRISBURG 1899".....	1, 197. 015
Mansfield, bronze tablets set in stone monuments on the grounds of the Mansfield State Normal School for meridian marks—	
North monument marked "1207 HARRISBURG 1899".....	1, 207. 706
South monument marked "1196 HARRISBURG 1899".....	1, 196. 804

MANSFIELD, NORTH ALONG ERIE RAILROAD, TO TIOGA.

Tioga, 2.5 miles south of; top of coping stone at west end of north abutment of steel-plate girder railroad bridge over Mill Creek.....	1, 062. 13
Tioga, in front face of buttress on south side of south entrance of St. Andrews Episcopal church; bronze tablet stamped "1036 HARRISBURG 1899".....	1, 037. 041

20 SPIRIT LEVELING IN PENNSYLVANIA, 1899 TO 1905.

SPUR LINE, SOUTHEAST ALONG MILL CREEK, TO PAINTER RUN.

	Feet.
Painter Run, in south face of foundation near southwest corner of Free Methodist Church, at forks of road where signboard reads "Summit 6 miles;" aluminum tablet stamped "J257 HARRISBURG 1899".....	1,258.241

MIDDLEBURY CENTER, NORTHEAST ALONG NEW YORK CENTRAL AND HUDSON RIVER RAILROAD, TO TIOGA.

Crooked Creek, 1.25 miles north of, about 1,800 feet south of milepost 85-86, on west side of north abutment of small bridge; top of coping stone.....	1,103.80
Hammond, 0.75 mile north of, about 600 feet north of milepost 83-88, at west end of north abutment of small bridge; top of coping stone.....	1,075.52

TIOGA, NORTH ALONG ERIE RAILROAD, TO LAWRENCEVILLE.

Tioga, near Erie Railroad station, at north end of west abutment of highway bridge over Tioga River; top of coping stone.....	1,038.41
Lawrenceville, south end of east abutment of highway bridge over Tioga River, near railroad station; top of coping stone.....	993.43

TIOGA JUNCTION, EAST ALONG ERIE RAILROAD, TO JACKSON SUMMIT (SINGLE-SPUR LINE).

Jackson Summit, in north face of foundation near northeast corner of residence of O. B. Morrill, nearly opposite Erie station; bronze tablet stamped "1585 HARRISBURG 1899".....	1,586.080
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GAINES QUADRANGLE.

WESTFIELD, WEST ALONG NEW YORK CENTRAL RAILROAD, TO POINT 2.5 MILES WEST OF MILLS.

Westfield, at corner of Main and Church streets, in east face of top foundation stone at northeast corner of brick building; aluminum tablet stamped "1372 HARRISBURG 1899".....	1,372.510
Harrison Valley, in south face of top foundation stone at the southeast corner of brick building owned by G. E. and D. T. Stone; bronze tablet stamped "1618 HARRISBURG 1899".....	1,619.263
Mills, 2.5 miles west of, in top of cornerstone on north side of east abutment of bridge about 1,100 feet east of milepost 109-4; bronze tablet stamped "2022 HARRISBURG 1899".....	2,022.877

WESTFIELD, SOUTH ALONG BUFFALO AND SUSQUEHANNA RAILROAD, TO GAINES, THENCE WEST TO WEST PIKE (SINGLE-SPUR LINE).

Sabinsville, at north end of village, in top of cornerstone on north side of east abutment of highway bridge over Mill Creek; bronze tablet stamped "1601 HARRISBURG 1899".....	1,602.209
Gaines, at southeast corner of Hotel Vermilyea, in south face of foundation stone; bronze tablet stamped "1294 HARRISBURG 1899".....	1,294.945
West Pike, in top of stone at north end of west abutment of steel railroad bridge over Genesee Fork of Pine Creek; a square hole.....	1,461.97

GAINES, NORTHWEST ALONG HIGHWAY TO SUNDERLINVILLE (SINGLE-SPUR LINE).

Sunderlinville, at the southwest corner of forks of road, northwest corner of building used as hotel, in west face of foundation stone; aluminum tablet stamped "1738 HARRISBURG 1899".....	1,739.003
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GALETON QUADRANGLE.

Galeton, in window sill on east end near southeast corner of building used as general office of Buffalo and Susquehanna Railroad; aluminum tablet stamped "1330 HARRISBURG 1899".....	1,330.778
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WARREN COUNTY.

SHEFFIELD AND WARREN QUADRANGLES.

The elevations in the following list are based upon the latest adjustment datum. For additional elevations on Warren quadrangle refer to "Precise leveling." The leveling was done in 1905 under the direction of Mr. Robert D. Cummin, topographer, by Mr. J. H. Wetzel, levelman. The standard bench marks are stamped "ADJ 1903" in addition to the figures of elevation.

WARREN QUADRANGLE.

WARREN, NORTH ALONG DUNKIRK, ALLEGHENY VALLEY AND PITTSBURG RAILROAD,
TO FENTONVILLE, N. Y.

	Feet.
Warren, at street crossing, Dunkirk, Allegheny Valley and Pittsburg Railroad; top of rail..	1,209.4
North Warren station, road crossing; top of rail.....	1,218.5
Warren Asylum, at north side of railroad entrance to powerhouse, west side of building, on window sill; bronze tablet stamped "1225 ADJ 1903".....	1,224.538
Russell, near station, at northeast wing wall of covered highway bridge over Conewango Creek; bronze tablet stamped "1337 ADJ 1903".....	1,237.460
Ackley, road crossing at station; top of rail.....	1,238.8
Ackley, 600 feet west of station, southeast bridge seat of highway and trolley bridge over Conewango Creek; bronze tablet stamped "1241 ADJ 1903".....	1,240.743
Ackley, north end of siding at switch; top of rail.....	1,248.5

RUSSELL, EAST ALONG HIGHWAY, TO CORYDON.

Russell, 4 miles east of, southeast bridge seat of wooden bridge over Ackley Run; bronze tablet stamped "1519 ADJ 1903".....	1,519.282
Russell, 6.5 miles east of, in southeast foundation stone of Hiram Lonsbury's residence; bronze tablet stamped "2097 ADJ 1903".....	2,096.602

RUSSELL, NORTHWEST ALONG HIGHWAY TO MARSHS CORNERS, THENCE SOUTH TO
PUTNAMVILLE, THENCE SOUTHEAST TO MOUTH OF RHIMES RUN.

Russell, 4 miles northwest of, at Marshs Corners, in northwest foundation stone of Herbert Philips's residence; bronze tablet stamped "1548 ADJ 1903".....	1,547.612
Putnamville, 1,300 feet east of schoolhouse, in northwest foundation stone of Fletcher's frame residence; bronze tablet stamped "1663 ADJ 1903".....	1,662.580

WARREN, SOUTHEAST ALONG PHILADELPHIA AND ERIE RAILROAD, TO TIONA AND RETURN.

Warren, 2 miles southeast of; railroad bench mark on rock.....	1,218.84
Stoneham; railroad bench mark No. 28 (description not given).....	1,304.35
Stoneham, road crossing; top of rail.....	1,342.7
Stoneham station, 150 feet north of, at west entrance of stone building of Elk Tanning Company, in stone doorsill; bronze tablet stamped "1358 ADJ 1903".....	1,357.971
Clarendon, railroad crossing; top of rail.....	1,391.5

SHEFFIELD QUADRANGLE.

AT TIONA.

Tioná, 600 feet north of station, in southeast bridge seat of iron bridge; aluminum tablet stamped "1358 ADJ 1903".....	1,358.305
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CRAWFORD AND ERIE COUNTIES.

ERIE, FAIRVIEW, AND GIRARD QUADRANGLES.

The elevations in the following list are based on an aluminum tablet stamped "635 ERIE" placed in the Soldiers' Home, at Erie, Pa., the elevation of which is now accepted as 636.179 feet above mean sea level. This is the initial bench mark for the precise-level line run south to Pittsburg, and was set by primary leveling from an army engineer's bench mark, consisting of a chisel mark in the southwest corner of the foundation of the light-house keeper's dwelling at Erie, the elevation of which is now accepted as 577.591. This work was previously reported upon in the Appendix to the Twenty-first Annual Report of the United States Geological Survey and is here corrected. For additional elevations on Erie quadrangle refer to list under "Precise leveling."

The leveling was done in 1899 under the general direction of Mr. Frank Sutton, topographer, by William Crennel, levelman. The bench marks dependent on this datum are stamped "ERIE" in addition to figures of elevation mostly 1 foot low.

ERIE QUADRANGLE.

GODARD, WEST ALONG HIGHWAY, TO FAIRVIEW, THENCE NORTHEAST, ALONG LAKE SHORE AND MICHIGAN SOUTHERN RAILWAY, TO ERIE.

Sterrettania, in southeast corner of foundation of Cook's flouring mill; aluminum tablet stamped "904 ERIE"	Feet. 905.306
Erie, in water table northwest corner of hospital wing of Soldiers' Home; aluminum tablet stamped "635 ERIE"	636.179

FAIRVIEW QUADRANGLE.

FAIRVIEW, WEST ALONG LAKE SHORE AND MICHIGAN SOUTHERN RAILWAY, TO STATE LINE.

Fairview, in southwest corner of foundation of store owned by David Yeagle; aluminum tablet stamped "795 ERIE"	796.283
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GIRARD QUADRANGLE.

Girard Junction, 6.5 miles west of, southeast corner of coping of west abutment of culvert under Lake Shore and Michigan Southern Railway, at crossing; bench mark, stamped "Br # 8"	649.72
State line (Pa.-Ohio), on south side of pedestal of monument, 1.25 miles north of Lake Shore and Michigan Southern Railway; aluminum tablet stamped "635 ERIE"	635.595

STATE LINE, SOUTH-SOUTHEAST OVER HIGHWAY, VIA TRACY, TO CONNEAUTVILLE, THENCE NORTHEAST TO HICKERNELL, THENCE NORTH TO GIRARD.

West Springfield, in foundation west side of A. J. Thomas's barn; aluminum tablet stamped "712 ERIE"	712.772
Tracy, 1 mile south of and just south of creek bridge, in northwest corner of foundation of house owned by Mr. Culberson; aluminum tablet stamped "952 ERIE"	953.120
Beaver Center, store owned by L. L. Fuller, in northeast corner of foundation; aluminum tablet stamped "1029 ERIE"	1,030.316
Conneautville, in southeast corner of foundation of bank building; aluminum tablet stamped "948 ERIE"	949.142
Hickernells, on northeast corner of foundation of post-office; bronze tablet stamped "1127 ERIE"	1,128.134
Pont, in front foundation of United Brethren Church; bronze tablet stamped "1090 ERIE"	1,090.699
Platea, in southwest corner of foundation of Methodist Church; bronze tablet stamped "876 ERIE"	876.400
Girard, Dobler's farm; northwest corner of stone flag foundation of fountain and watering trough	799.22

BERKS, CHESTER, DELAWARE, AND LANCASTER COUNTIES.

COATESVILLE, PHOENIXVILLE, SUPLEE, AND WEST CHESTER QUADRANGLES.

The elevations in the following list are based upon an aluminum tablet in the State Library at Harrisburg, stamped "364 HARRISBURG 1899." The initial points are various bench marks along precise-level lines of the Pennsylvania Railroad, the heights accepted for which accord with the 1903 adjustment.

The leveling on the West Chester quadrangle was done in 1900 under the direction of Mr. Hersey Munroe, topographer, by Mr. Hargraves Wood, levelman, and that on the other quadrangles was done in 1903 under the direction of Mr. F. Sutton, topographer, by Mr. J. H. Wetzel, levelman. Standard bench marks are stamped "HARRISBURG" in addition to the figures of elevation.

WEST CHESTER QUADRANGLE.

WEST CHESTER TO WESTTOWN.

West Chester, near northwest corner of county court-house grounds, Market and North High streets, in top of wall; aluminum tablet stamped "HARRISBURG 459"	Feet. 458.935
Westtown, 500 feet west of station, at west end and north side of bridge over Chester Creek, in top of approach to wall; bronze tablet stamped "263 HARRISBURG"	263.288

WESTTOWN, VIA THORNBURY AND DILWORTHTOWN, TO BRANDYWINE SUMMIT.

	Feet.
Brandywine Summit, at northeast corner of crossroads, D. B. Martin's residence, in south face of west stone gatepost; bronze tablet stamped "427 HARRISBURG 1900".....	427.114

SPUR LINE, WEST FROM BRANDYWINE SUMMIT TO CHADS FORD STATION.

Chads Ford, 200 yards east of station, on west abutment of railroad bridge, south side; bronze tablet stamped "168 HARRISBURG 1900".....	168.417
Elam (discontinued post-office), 1.25 miles south of, 120 feet west of Wilmington pike, in top of State line stone No. 16; aluminum tablet stamped "384 HARRISBURG 1900".....	384.174

STATE CORNER NO. 6, VIA KENNETT SQUARE, WILLOWDALE, UNIONVILLE, GLENHALL, AND MARSHALLTON, TO WEST CHESTER.

Willowdale, 350 feet south of post-office, east side of road to Kennett Square, at northeast end of stone chapel, on stone doorsill; bronze tablet stamped "387 HARRISBURG 1900".....	387.712
Glenhall, Pennsylvania Railroad crossing at station; top of rail.....	210.8
Glenhall, 565 feet north of, 245 feet north of north end of highway bridge over Brandywine Creek, east side of road near spring, in ledge of rock; bronze tablet stamped "216 HARRISBURG 1900".....	216.397

COATESVILLE QUADRANGLE.

COATESVILLE, SOUTHEAST ALONG PHILADELPHIA AND READING RAILROAD, TO GLENHALL.

Coatesville, Pennsylvania Railroad station, in doorsill; copper bolt.....	381.25
Coatesville, road crossing; top of rail.....	305.29
Mortonville, 2,700 feet south of, southeast abutment of railroad bridge; bronze tablet stamped "245 HBG".....	245.261
Laurel, in front of station; top of rail.....	241.3

KENNETT SQUARE, WEST ALONG PHILADELPHIA, WILMINGTON AND BALTIMORE RAILROAD, TO OXFORD, THENCE NORTH, ALONG HIGHWAY, TO PARKSBURG.

Avondale, 450 feet east of station, railroad Bridge No. 33, on northeast bridge seat; bronze tablet stamped "272 HARRISBURG 1903".....	272.254
Avondale station, road crossing; top of rail.....	277.3
West Grove, 200 feet south of station, road crossing; top of rail.....	390.3
West Grove, 1.2 miles south of, on northeast abutment of overhead bridge; copper bolt.....	450.475
Kelton station, road crossing; top of rail.....	545.9
Kelton, 600 feet south of, on east side of track, on stone pier of overhead wagon bridge; bronze tablet stamped "554 HARRISBURG 1903".....	554.228
Lincoln University, 100 feet south of station, at road crossing; stone marker.....	487.0
Oxford, 2 miles north of, Bridge No. 47, over Elk Creek, on northwest wing wall; copper bolt.....	405.954
Oxford, 1,200 feet east of station, north side of track, on small culvert, bronze tablet stamped "507 HARRISBURG".....	506.704
Russellville, 1.2 miles north of, at northeast corner stone of porch of S. P. Martin; bronze tablet stamped "631 HARRISBURG".....	630.870
Parksburg, Pennsylvania Railroad passenger station, doorsill; copper bolt.....	540.90
Parksburg, 1,200 feet west of Pennsylvania Railroad station, culvert under street railroad, Bridge No. 62, northeast abutment; aluminum tablet stamped "542 HARRISBURG 1903".....	543.631

COATESVILLE, NORTH ALONG PHILADELPHIA AND READING RAILROAD, TO BIRDSBORO.

Coatesville, 200 feet north of stone-arch railroad bridge, southeast end of east abutment of railroad bridge over Brandywine Creek; aluminum tablet stamped "314 HBG".....	314.580
Valley station, road crossing; top of rail.....	340.2
Valley, small bridge 0.6 mile north of station, west end of north abutment.....	376.05

SUPLEE QUADRANGLE.

PARKSBURG, NORTH ALONG HIGHWAY, VIA COMPASS, TO BEARTOWN.

Compass, at entrance to P. E. Church, in stone doorsill; aluminum tablet stamped "520 HARRISBURG 1903".....	519.835
Churchtown road, 0.3 mile west of station, northwest abutment of the Downingtown and Lancaster Railroad Bridge No. 17 over pike; top of coping stone.....	556.25
Wagontown; top of rail.....	464.8
Cedar Knoll, in front of station; top of rail.....	549.0

	Feet.
Cedar Knoll, 0.8 mile north of, railroad bridge over Brandywine Creek, east end of south abutment; bronze tablet stamped "548 HBG"	548.020
Brandamore, road crossing; top of rail	571.3
Ferndale station; top of rail	593.3
Birdell, road crossing; top of rail	601.4
Suplee, 250 feet north of station, road crossing; top of rail	645.2
Suplee, 2,400 feet north of, overhead highway bridge, 15 feet from south end of west pier, on top stone; bronze tablet stamped "644 HARRISBURG 1903"	644.564
Fountain station, road crossing; top of rail	647.2
Isabella, road crossing; top of rail	645.4
Conestoga, road crossing; top of rail	645.5
Elverson station, road crossing; top of rail	645.5
Elverson, southeast corner of wareroom of cannery, on top stone in foundation; aluminum tablet stamped "634 HARRISBURG"	634.593
Kenny station, road crossing; top of rail	627.1
Joanna station, road crossing; top of rail	625.8
Joanna Heights, road crossing; top of rail	600.5
Cold Run station, road crossing; top of rail	512.9
Geigertown, road crossing at station; top of rail	425.0
White Bear station, road crossing; top of rail	349.6
White Bear, 100 feet north of station, railroad bridge over Hay Creek, on southeast wing wall, aluminum tablet stamped "345 HARRISBURG"	345.434
Trap Rock station, in front of, top of rail	256.78
South Birdsboro station, road crossing; top of rail	215.1

SUPLEE, WEST ALONG DOWNINGTOWN AND LANCASTER RAILROAD, TO BEARTOWN.

Buchanans Road station, road crossing; top of rail	671.3
Honey Brook station, 200 feet west of, road crossing; top of rail	739.9
Honey Brook, 1.4 miles west of, Bridge No. 16, northeast bridge seat	817.79
Churchtown, road crossing; top of rail	876.0

SPUR TO BEARTOWN.

Beartown, in east pier of platform of railroad station, aluminum tablet stamped "773 HARRISBURG 1903"	773.654
Beartown, road crossing; top of rail	771.6

WHITE BEAR (SCARLETS MILL POST-OFFICE), WEST ALONG HIGHWAY, TO HUMMEL'S STORE

White Bear, 100 feet north of station, southeast wing wall of railroad bridge over Hay Creek; aluminum tablet stamped "345 HARRISBURG"	345.434
Plowville, 2 miles west of, 0.25 mile east of Hummel's store; large stone step at entrance to schoolhouse, bronze tablet stamped "730 HARRISBURG"	730.492

PHOENIXVILLE QUADRANGLE.

GLEN LOCH TO WEST CHESTER.

Glen Loch, 0.2 mile east of Pennsylvania Railroad Bench Mark No. 27, in south parapet of King Road Bridge; copper bolt	459.09
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DOWNINGTOWN, NORTH ALONG HIGHWAY, VIA-MILFORD MILLS AND PUGHTOWN, TO POTTSTOWN

Downingtown, Viaduct avenue arch, north end, copper bolt	255.223
Downingtown, west side of north end of Viaduct avenue arch, 720 feet east of station; bronze tablet stamped "255 HARRISBURG"	255.233
East Downingtown station, road crossing; top of rail	242.36
Dowlin station, road crossing; top of rail	274.5
Dorlan station, road crossing; top of rail	288.4
Dorlan, 0.1 mile north of, Bridge No. 6; southeast bridge seat	289.44
Milford Mills, covered wagon bridge over Marsh Creek, near blacksmith shop; east end stone of northeast wing wall	315.79
Pughtown, south end of, at entrance to schoolhouse, on stone step; bronze tablet stamped "273 HARRISBURG 1903"	273.535
Pottstown, passenger station; copper bolt on doorsill	138.76

	Feet.
Pottstown, 150 feet west of station, stone-arch bridge of Pennsylvania Railroad, in southeast corner of coping stone; bronze tablet stamped "136 HARRISBURG 1903".....	135.968
Spring City, west of, canal bridge, east bridge seat; copper bolt.....	114.26
Spring City, 1 mile west of, 480 feet west of Pennsylvania Railroad bridge over canal, in southeast bridge seat of undergrade wagon bridge; bronze tablet stamped "117 HARRISBURG 1903".....	117.651

AT PHOENIXVILLE.

Gay Street Bridge, south of track, capstone of pier of east column; square.....	128.657
Phoenixville, 900 feet east of passenger-station, northeast coping stone of bridge over Main street; aluminum tablet stamped "127 HARRISBURG 1903".....	127.330

AT FRAZER.

North end of undergrade bridge, east bridge seat; copper bolt.....	487.588
Frazer, at station, north end of undergrade railroad bridge, west bridge seat; aluminum tablet stamped "487 HARRISBURG 1903".....	487.397

BERKS, LANCASTER, LEBANON, AND LEHIGH COUNTIES.

LANCASTER, SLATINGTON, AND WERNERSVILLE QUADRANGLES.

The elevations in the following list are based upon an aluminum tablet in the State Library at Harrisburg stamped "364 HARRISBURG 1899." The initial points are various bench marks of the transcontinental line of the United States Coast and Geodetic Survey and of the Pennsylvania Railroad, the accepted heights for which accord with the 1903 adjustment.

The leveling on the Slatington and Wernerville quadrangles was previously reported upon in Bulletin No. 185, and was done in 1900 under the direction of Mr. Hersey Munroe, topographer, by Messrs. B. E. White and Hargraves Wood, levelmen, and that on the Lancaster quadrangle was mostly done in 1901-2 under the direction of Mr. J. H. Wheat, topographer, by Mr. J. S. B. Daingerfield, levelman. The line, Clay to Brickerville, was run in 1905 under Mr. Robert D. Cummin, topographer, by Mr. J. H. Wetzel, levelman. The standard bench marks are stamped with the letters "HARRISBURG" or "HGB" in addition to the figures of elevation.

LANCASTER QUADRANGLE.

LANCASTER, NORTH ALONG PUBLIC ROADS, VIA LITITZ AND BRUNERVILLE, TO BRICKERVILLE.

	Feet.
Lancaster, on northeast corner of foundation wall of court-house, corner North Duke street and alley; aluminum tablet stamped "369 HARRISBURG".....	368.904
Lancaster, on west doorsill of Pennsylvania Railroad station; copper bolt (Pennsylvania Railroad bench mark No. 81).....	359.714
Lititz, west side of fountain, on wall; aluminum tablet stamped "385 H G B".....	385.403
Brickerville, northeast corner foundation of hotel; aluminum tablet stamped "538 H G B".....	538.974

BRICKERVILLE, WEST ALONG PUBLIC ROADS, TO MOUNT HOPE, THENCE SOUTH ALONG PUBLIC ROADS, VIA OLD LINE, SALUNGA, AND SILVER SPRING, TO MOUNTVILLE.

Old Line 1.3 miles north of, at intersection of roads, set in rock; iron post stamped "U. S. 596" (Not U. S. Geol. Survey).....	596.148
Old Line (discontinued post-office), 650 feet northwest of, southeast corner of foundation of large barn; aluminum tablet stamped "584 H G B".....	583.871
Salunga, overhead bridge, south pier, east end; aluminum tablet stamped "405 H G B".....	404.716
Salunga, overhead bridge, south pier, west end; copper bolt (Pennsylvania Railroad bench mark No. 88).....	404.779
Mountville, 0.4 mile west of, south parapet of culvert; copper bolt (Pennsylvania Railroad bench mark No. 123).....	390.709
Mountville, west of, on south parapet of culvert; bronze tablet stamped "391 H G B".....	390.705

CLAY TO BRICKERVILLE.

	Feet.
Clay, Grant Steinmetz Hotel, in southeast corner stone; bronze tablet stamped "363 ADJ 1903"	362.560

SLATINGTON QUADRANGLE.

MACUNGIE, NORTHWEST ALONG HIGHWAY, VIA FOGELSVILLE, TO LYON VALLEY.

Macungie station, 0.5 mile west of; square cut on top of stone of the middle of the south side of Philadelphia and Reading Railroad bridge over small run, marked "XXII B. M. 1881"	
U. S. C. G. S. B. M.	383.822
Fogelsville, German Reformed Church; aluminum tablet set in southwest corner of foundation wall under corner stone, stamped "514 HARRISBURG 1900"	514.369
Claussville, on south end of doorstep of schoolhouse; chiseled square	684.05

LYON VALLEY, NORTHWEST ALONG HIGHWAY, TO NEW TRIPOLI, THENCE NORTH-EAST ALONG PHILADELPHIA AND READING RAILROAD, TO SLATINGTON.

New Tripoli, 0.5 mile northeast of; bronze tablet set in in southeast corner of stone basement of barn owned by A. Bennikoff, stamped "573 HARRISBURG 1900"	572.822
Germansville depot; top of rail at road crossing, marked "608" on plank	607.7
Germansville, 600 feet north of crossing by station, on north end of bridge seat, east abutment of railroad trestle bridge over Jordan Creek; chiseled square	601.07
Best, 500 feet northeast of railroad station; bronze tablet set in north end of bridge seat, west abutment of small railroad bridge, stamped "548 HARRISBURG 1900"	548.318

SLATINGTON, SOUTHEAST ALONG LEHIGH VALLEY RAILROAD TO ROCKDALE, THENCE SOUTHWEST ALONG HIGHWAY TO LYON VALLEY.

Slatington, 0.8 mile south of; iron bolt in west pier of Lehigh and New England Railroad, overhead crossing bridge over Lehigh Valley Railroad, marked "U. S. G. S. B. M. 358" (Lehigh Valley Railroad bench mark No. 92)	357.83
Rockdale, 250 feet north of station, at southeast corner of water tank of Lehigh Valley Railroad, in foundation stone under pillar; bronze tablet stamped "354 HARRISBURG 1900"	353.785
Unionville (Neffs post-office), Union Church; east end of lower stone step of front entrance	687.14

WERNERSVILLE QUADRANGLE.

WOMELSDORF, VIA HOST POST-OFFICE, SCHAEFFERSTOWN (TULPEHOCKEN POST-OFFICE), BERNVILLE, GARFIELD, AND BROWNSVILLE, TO WERNERSVILLE.

Womelsdorf, 1.5 miles west of, at Philadelphia and Reading Railroad overhead bridge, at north wall, east side; cut in base (United States Coast and Geodetic Survey bench mark)	483.488
Womelsdorf, at northwest corner of Main and Second streets, in east side of foundation, south end of Filbert & Bros. store; aluminum tablet stamped "433 HARRISBURG"	433.582
Host post-office, west side of Jacob Shaffner & Co.'s store, in top wall; bronze tablet stamped "369 HARRISBURG"	368.806
Schaefferstown (Tulpehocken post-office), St. Paul's Church, in west side of stone doorsill; bronze tablet stamped "491 HARRISBURG"	491.427
Garfield post-office, in northeast corner of stone house belonging to postmaster; bronze tablet stamped "367 HARRISBURG"	367.316
Brownsville (Lower Heidelberg post-office), in the east side of south front of schoolhouse; bronze tablet stamped "380 HARRISBURG"	379.612

WERNERSVILLE, WEST ALONG PHILADELPHIA AND READING RAILROAD AND HIGHWAY, VIA ROBSONIA FURNACE, TO COUNTY LINE.

Wernersville, 800 feet west of station, ledge of rock on north side of Philadelphia and Reading Railroad under highway bridge at base of north abutment; bronze tablet stamped "388 HARRISBURG"	387.636
South Mountain, in front of station; top of rail	394.78
Robsonia station, 0.1 mile east of, Philadelphia and Reading Railroad bridge over creek, north side, middle pier; United States Coast Survey bench mark No. XXIV	432.824
Berks-Lancaster County line, about 0.9 mile south of and 0.1 mile south of house at road forks, in large boulder; bronze tablet stamped "983 HARRISBURG"	982.782

LANCASTER COUNTY.

NEW HOLLAND QUADRANGLE.

The elevations in the following list are based upon the Pennsylvania Railroad elevations, corrected to accord with the latest adjustment of precise leveling. The leveling was done in 1905 under the direction of Mr. Robert D. Cummin, topographer, by Mr. J. H. Wetzel, levelman. The standard bench marks are stamped "ADJ 1903" in addition to the figures of elevation.

NEW HOLLAND QUADRANGLE.

GAP, NORTH ALONG HIGHWAY, TO REAMSTOWN, THENCE WEST TO CLAY.

	Feet.
Gap, in doorsill of passenger station; copper bolt.....	549.360
Gap, 3 miles northwest of; in fifth stone step to entrance to Hess's mill near Pequea Creek; bronze tablet stamped "384 ADJ 1903".....	383.560
New Holland, 3 miles south of, in brick store building of John Ellsworth, to left of entrance; aluminum tablet stamped "473 ADJ 1903".....	473.289
New Holland, opposite side of street from station, in south side of D. M. Rutter & Co.'s grain warehouse, in stone doorsill; bronze tablet stamped "493 ADJ 1903".....	493.106
New Holland, at Styre House, at street crossing; top of rail.....	521.0'
Hinkletown, near mill and hotel, on coping stone of north end of west pier of iron highway bridge over Conestoga Creek at west end of town; aluminum tablet stamped "331 ADJ 1903".....	330.941
Reamstown, in upper stone steps at entrance to Reamstown Hotel; bronze tablet stamped "391 ADJ 1903".....	391.354
Stevens, 0.3 mile west of, in southeast foundation of Adam Sleighbaugh's barn; bronze tablet stamped "393 ADJ 1903".....	393.391
Stevens, 2.5 miles west of, near Mermonite Church, in northeast foundation stone of Abraham Eberly's stone barn; bronze tablet stamped "419 ADJ 1903".....	418.515

WITMER, NORTH ALONG HIGHWAY, VIA OREGON, TO CLAY.

Witmer, 0.5 mile west of; copper bolt on overhead bridge.....	381.78
Harman, railroad crossing; top of rail.....	391.9
Leacock post-office, 1 mile west of, southwest wing wall of double stone-arch bridge over small stream in top coping stone; bronze tablet stamped "315 ADJ 1903".....	315.306
Oregon, southeast corner of H. Hosteder's stone mill; bronze tablet stamped "297 ADJ 1903".....	297.076
Brownstown, 0.5 mile north of, in southeast corner foundation of Blackbill's Hotel; bronze tablet stamped "360 ADJ 1903".....	360.354
Millway, in west doorsill at entrance to F. S. Brubaker's stone mill; bronze tablet stamped "316 ADJ 1903".....	316.084
Millway, 2.5 miles north of, in limestone at southeast corner of J. F. Zell's garden, along side of road at intersection of roads; bronze tablet stamped "323 ADJ 1903".....	323.090

CUMBERLAND AND YORK COUNTIES.

NEW CUMBERLAND QUADRANGLE.

The elevations in the following list are based upon the Pennsylvania Railroad elevations, corrected to accord with the latest adjustment of precise leveling. The leveling was done in 1905 under the direction of Mr. Robert D. Cummin, topographer, by Mr. J. H. Wetzel, levelman. The standard bench marks are stamped "ADJ 1903" in addition to the figures of elevation.

NEW CUMBERLAND QUADRANGLE.

MECHANICSBURG, SOUTH ALONG HIGHWAY, VIA SHEPARDSTOWN, TO MOUNT TOP, THENCE SOUTHEAST TO DOVER, THENCE NORTHEAST TO ZION VIEW, THENCE NORTH TO CLY.

	Feet.
Shepherdstown, on southeast corner of brick schoolhouse; aluminum tablet stamped "633 ADJ 1903".....	633.061
Bowmansdale, 5 miles south of, in north end wall of porch at entrance of W. H. Lerew's store; aluminum tablet stamped "720 ADJ 1903".....	720.230
Mount Top post-office, on southeast corner of store of W. E. Wiley; bronze tablet stamped "594 ADJ 1903".....	594.052

	Feet.
Wellsville, 1 mile west of, southwest wing wall of highway bridge over Doe Run; bronze tablet stamped "460 ADJ 1903".....	460.179
Roler, on southeast corner of Emig's mill; aluminum tablet stamped "364 ADJ 1903".....	364.336
Dover, Peter Brunhous's hotel, in stone pier to porch at ladies entrance; primary traverse station No. 8, stamped "453 ADJ 1903".....	453.060
Zion View, southeast entrance to Zion Church; aluminum tablet stamped "378 ADJ 1903"...	377.957
Strinestown, at northwest corner of schoolhouse; bronze tablet stamped "450 ADJ 1903"...	449.487
Cly, east side of an arch 675 feet north of milepost 70; copper bolt Northern Central Railroad bench mark No. 74.....	302.84

JUNIATA AND PERRY COUNTIES.

MILLERSTOWN AND NEW BLOOMFIELD QUADRANGLES.

The elevations in the following list are based upon various bench marks of the Pennsylvania Railroad within this area. They accord with the 1903 adjustment of the railroad levels. The leveling was done in 1904, under the direction of Mr. R. D. Cummin, topographer, by Mr. Ira M. Flocker, levelman. The standard bench marks are stamped with the legend "ADJ 1903," in addition to the figures of elevation.

NEW BLOOMFIELD QUADRANGLE.

COVE FORGE STATION, SOUTHWEST ALONG HIGHWAY TO KEYSTONE, THENCE WEST VIA SHERMANSDALE TO FALLING SPRINGS, THENCE NORTH TO NEW BLOOMFIELD.

	Feet.
Cove Creek arch; copper bolt Pennsylvania Railroad bench mark No. 12.....	351.715
Keystone post-office, 0.5 mile west of, Rye Township, schoolhouse District No. 2, in foundation; bronze tablet stamped "598 ADJ 1903".....	597.593
Shermans Dale, 150 feet west of Union Hotel, opposite south end of covered bridge, in corner stone of old wall; aluminum tablet stamped "445 ADJ 1903".....	445.281
Falling Springs, 0.5 mile east of, in northwest corner of stone mill of M. L. Rice; aluminum tablet stamped "471 ADJ 1903".....	471.432

DUNCANNON, WEST ALONG PERRY COUNTY RAILROAD, VIA NEW BLOOMFIELD, TO MANNSVILLE JUNCTION, THENCE NORTH ALONG HIGHWAY TO MARKETSVILLE, THENCE EAST TO NEWPORT.

Duncannon, railroad bridge over Sherman Creek, in bridge seat of northeast wing wall; aluminum tablet stamped "349 ADJ 1903".....	349.066
Duncannon, northeast wing wall of bridge over Sherman Creek; Pennsylvania Railroad bench mark.....	355.400
Sulphur Springs, 600 feet west of, in southwest corner of abutment of railroad bridge; bronze tablet stamped "416 ADJ 1903".....	415.762
Hoffman station, 700 feet west of, 300 feet south of track, in northeast corner of foundation of barn; aluminum tablet stamped "568 ADJ 1903".....	568.546
New Bloomfield, on west side of main entrance of court-house, in top stone of foundation; bronze tablet stamped "679 ADJ 1903".....	678.840
Valley station, bridge of Newport and Sherman Valley Railroad, in southwest bridge seat; bronze tablet stamped "717 ADJ 1903".....	717.360
Sylvan station, 0.25 mile north of, 300 feet south of road forks, wooden bridge over Little Buffalo Creek, northwest corner of north abutment; bronze tablet stamped "543 ADJ 1903"...	543.300
Marketville, covered bridge over Big Buffalo Creek, in northwest corner of north abutment; bronze tablet stamped "494 ADJ 1903".....	494.363
Juniata post-office, near village of Milford, 80 feet east of covered bridge over Big Buffalo Creek, top of wing wall of small bridge; bronze tablet stamped "441 ADJ 1903".....	440.640
Newport, square cut on tank house (Pennsylvania Railroad bench mark).....	396.296
Newport, Little Buffalo Creek Bridge, northeast wing wall; copper bolt (Pennsylvania Railroad bench mark).....	394.179
Newport, in southeast wing wall of Little Buffalo Creek Pennsylvania Railroad bridge; bronze tablet stamped "394 ADJ 1903".....	394.187

PRIMARY LEVELING.

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MILLERSTOWN QUADRANGLE.

THOMPSONTOWN, NORTH ALONG HIGHWAY, TO EAST SALEM. (TWO DIRECT LINES.)

	Feet.
Thompsontown, north abutment of overhead bridge; Pennsylvania Railroad bench mark...	420.188
Thompsontown, Emmanuel Lutheran Church, in stone step; bronze tablet stamped "465 ADJ 1903".....	464.810
East Salem, top of stone step of schoolhouse; bronze tablet stamped "620 ADJ 1903".....	620.020

MILLERSTOWN, NORTHEAST ALONG HIGHWAY TO PFOUTS VALLEY, THENCE SOUTH TO BERLEE, THENCE SOUTHWEST TO POINT OPPOSITE OLD FERRY STATION, THENCE NORTHWEST TO MILLERSTOWN.

Millerstown, overhead bridge, Pennsylvania Railroad bench mark.....	409.267
Millerstown, in foundation of the Ward House; bronze tablet stamped "432 ADJ 1903".....	432.302
Pfouts Valley, in east foundation of post-office; bronze tablet stamped "694 ADJ 1903".....	694.327
Berlee (discontinued post-office), 800 feet northeast of, in east side of foundation of school-house; bronze tablet stamped "504 ADJ 1903".....	503.840
Old Ferry station, opposite, in southwest corner of foundation of barn; bronze tablet stamped "428 ADJ 1903".....	427.957

MILLERSTOWN, NORTH ALONG HIGHWAY, TO EVENDALE, THENCE EAST TO ORIENTAL, THENCE SOUTH TO PFOUTS VALLEY.

Evendale post-office, brick house of J. H. Yodira, in northeast corner of foundation; bronze tablet stamped "714 ADJ 1903".....	714.561
Richfield, northwest corner of Richfield Lutheran Church, in foundation stone; bronze tablet stamped "658 ADJ 1903".....	658.012
Oriental post-office, 4 miles west of, 4 miles east of Richfield, in abutment of bridge over Mahantango Creek; bronze tablet stamped "553 ADJ 1903".....	553.062
Oriental post-office, 300 feet west of, in wing wall of wood and iron bridge; bronze tablet stamped "468 ADJ 1903".....	467.926

EVENDALE, SOUTHWEST ALONG HIGHWAY, TO BROWN'S MILL (COCOLAMUS POST-OFFICE) AND RETURN.

Cocolamus post-office (Brown's mill); just below, in wing wall of iron bridge over Cocolamus Creek; bronze tablet stamped "636 ADJ 1903".....	636.144
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CUMBERLAND, FRANKLIN, AND YORK COUNTIES.

CARLISLE, CHAMBERSBURG, HANCOCK, AND MERCERSBURG QUADRANGLES.

The elevations in the following list are based upon various bench marks of the transcontinental precise-level line of the United States Coast and Geodetic Survey and accord with the latest adjustment. They are referred to an aluminum tablet in the State Library at Harrisburg, stamped "364 HARRISBURG 1899," the elevation of which is now accepted as 363.975 feet above mean sea level. The work was previously reported upon in Bulletin No. 185.

The leveling was done in 1900, under the direction of Mr. R. D. Cummin, topographer, by Mr. F. M. Taylor, levelman. The standard bench marks are stamped with the letters "HARRISBURG," in addition to the figures of elevation. The bench mark near Sylvan was set by a double-targeted line from Cherry Run, W. Va., and is stamped "C," referring to Cumberland datum.

CARLISLE QUADRANGLE.

CARLISLE, VIA MOUNT HOLLY, TO IDAVILLE.

Mount Holly Springs, in southwest corner of Philadelphia and Reading station; bronze tablet stamped "556 HARRISBURG 1900".....	555.640
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30 SPIRIT LEVELING IN PENNSYLVANIA, 1899 TO 1905.

IDAVILLE, VIA YORK SPRINGS AND DILLSBURG, TO MECHANICSBURG.		Feet.
Idaville, in east side of P. L. Houck's house; bronze tablet stamped "805 HARRISBURG 1900"		805.175
York Springs in southwest corner of brick hall; bronze tablet stamped "607 HARRISBURG 1900"		606.673
Dillsburg, in southwest corner of brick schoolhouse; bronze tablet stamped "613 HARRISBURG 1900"		613.271
Mechanicsburg, west side of brick high school, at right front entrance; bronze tablet stamped "436 HARRISBURG 1900"		455.929
MECHANICSBURG TO CARLISLE.		
New Kingston, curbstone in front of Doctor Faulk's house; chiseled cross		453.55
MOUNT HOLLY TO WILLIAMS GROVE.		
Leidighs station, 0.33 mile east of, right side of track, capstone of abutment of bridge; chiseled mark		451.91
CHAMBERSBURG QUADRANGLE.		
CHAMBERSBURG TO FAYETTEVILLE.		
Fayetteville, in foundation stone east side of Union brick church; bronze tablet stamped "792 HARRISBURG 1900"		791.90
CHAMBERSBURG, VIA SCOTLAND AND GREENVILLE, TO WEST FAYETTEVILLE.		
Scotland, southeast wing wall of bridge over Conococheague Creek, between Soldiers' Orphans Industrial School and Scotland station; capstone, chiseled cross		670.88
Green Village, in southeast cornerstone of brick schoolhouse; bronze tablet stamped "678 HARRISBURG 1900"		678.157
GREENCASTLE, VIA MARION JUNCTION, TO MERCERSBURG JUNCTION.		
Marion Junction, 1 mile west of, Cumberland Valley Railroad, southwest of milepost 60; top of iron support of standard		578.24
GREENCASTLE, TO WAYNESBORO.		
Zullinger, stone horse block in front of Louis Hovis's house; chiseled cross		748.55
FAYETTEVILLE TO WAYNESBORO.		
Mount Alto (Funkstown or Altondale), entrance to M. E. Church, in left side of stone step; aluminum tablet stamped "848 HARRISBURG 1900"		847.625
Waynesboro, in stone in north foundation of Western Maryland Railroad station; aluminum tablet stamped "712 HARRISBURG 1900"		712.061
HANCOCK QUADRANGLE.		
CHERRY RUN, W. VA., NORTH ALONG HIGHWAYS THROUGH MARYLAND TO NEAR SYLVAN, PA.		
Sylvan, 1.5 miles south of, in south side of Yeakle mill, near southwest corner, 5 feet above ground, in foundation stone; aluminum tablet stamped "407 C"		466.835
MERCERSBURG QUADRANGLE.		
CHAMBERSBURG TO LOUDON.		
St. Thomas, in northeast cornerstone of brick hotel; bronze tablet stamped "645 HARRISBURG 1900"		644.835
LOUDON TO RICHMOND.		
Loudon, 1.25 miles north of, east side of capstone of culvert; chiseled cross		617.14
Richmond, in southeast cornerstone of schoolhouse foundation; bronze tablet stamped "676 HARRISBURG 1900"		676.346
LOUDON, VIA MERCERSBURG JUNCTION, TO MERCERSBURG.		
Mercersburg, 2.5 miles northeast of, at southeast corner of railroad bridge over west branch of Conococheague Creek; capstone, chiseled square		536.96

MERCERSBURG TO COVE GAP.

	Feet.
Mercersburg, 1.75 miles west of, Fruit Hill schoolhouse near northwest corner of foundation; chiseled cross.....	705.23

MERCERSBURG, VIA UPTON, TO GREENCASTLE.

Mercersburg, Mercersburg Academy, in northwest corner of dining hall; aluminum tablet stamped "595 HARRISBURG 1900".....	595.029
Mercersburg, 1 mile east of, stone in front of tollgate house; chiseled cross.....	558.03
Upton, in southeast cornerstone of brick schoolhouse; aluminum tablet stamped "620 HARRISBURG 1900".....	619.834
Greencastle, 0.75 mile west of, schoolhouse at corner of roads, in foundation stone; chiseled cross.....	550.84

BEDFORD, BLAIR, AND HUNTINGDON COUNTIES.

EVERETT, HOLLIDAYSBURG, AND HUNTINGDON QUADRANGLES.

The elevations in the following list are based upon an aluminum tablet placed in the front of the State Library at Harrisburg, Pa., stamped "364 HARRISBURG 1899," the elevation of which is now accepted as 363.975 feet above mean sea level in accord with the latest adjustment. The initial points upon which these levels depend are various bench marks along precise-level lines of the Pennsylvania Railroad.

The leveling on the Everett and Hollidaysburg quadrangles was done in 1900, and that on the Huntingdon quadrangle was done in 1901, under the direction of Mr. A. M. Walker, topographer, by Mr. F. M. Taylor, levelman. The standard bench marks dependent on this datum are stamped with the letters "HARRISBURG" in addition to the figures of elevation.

EVERETT QUADRANGLE.

MOUNT DALLAS, VIA HUNTINGDON AND BROADTOP RAILROAD, TO COVE.

	Feet.
Mount Dallas, Pennsylvania Railroad bridge over Juniata River, southwest abutment; chiseled square in stone.....	1,046.49
Everett, in northeast corner of front wall of Union Hotel; aluminum tablet stamped "1015 HARRISBURG".....	1,016.853
Everett, 2.7 miles north of, Huntingdon and Broadtop Railroad bridge over highway and stream, southeast corner top stone of north abutment; bronze tablet stamped "1097 HARRISBURG".....	1,097.766
Cypher station, 1,310 feet east of, iron railroad bridge over Juniata River, west wing wall, coping stone; chiseled square.....	928.09
Cypher, 2.6 miles north of, 300 feet west of eleventh milepost, stone culvert near water station, east wing wall; chiseled square.....	897.22
Hopewell, 75 feet north of station, I. O. O. F. Block, in southwest corner of south wall; bronze tablet stamped "902 HARRISBURG".....	901.828
Riddlesburg, 500 feet north of station, stone culvert over creek, on southeast corner coping stone; chiseled square.....	860.82
Saxton, corner of Church and Litetis streets, in center of north wall of schoolhouse; aluminum tablet stamped "918 HARRISBURG".....	917.664
Saxton, 1.5 miles north of, culvert over highway, northeast corner of east abutment, coping stone; chiseled square.....	877.21
Foxton post-office, Cove station, stone culvert over creek and highway, east wall, 3 feet above surface of highway; bronze tablet stamped "906 HARRISBURG".....	906.118

HENRIETTA, WEST TO CURRYVILLE, THENCE SOUTH, ALONG RAILROAD, TO STEELTOWN.

Woodbury, brick schoolhouse, at northwest corner of foundation; bronze tablet stamped "1292 HARRISBURG".....	1,291.444
Loysburg, northeast corner front foundation of M. E. Church; bronze tablet stamped "1127 HARRISBURG".....	1,126.794
Steeltown, 0.1 mile northeast of, bottom step of front entrance to Steele's flouring mill, square stone; chiseled mark.....	937.95

HOLLIDAYSBURG QUADRANGLE.

HENRIETTA, VIA MARTINSBURG AND HOLLIDAYSBURG, TO ALTOONA, BEING SPUR LINES FROM PENNSYLVANIA RAILROAD BENCH MARKS.

	Feet.
Henrietta, foundation at north end of Pennsylvania Railroad passenger station shelf in rock (Pennsylvania Railroad bench mark No. 20).....	1,394.29
Henrietta, passenger station of Morrisons Cove Branch of Pennsylvania Railroad, corner of foundation; bronze tablet stamped "1393 HARRISBURG".....	1,392.959
Martinsburg, Morrisons Cove Bank, north wall, northeast corner of foundation stone; bronze tablet stamped "1407 HARRISBURG".....	1,407.250
Roaring Spring, Church of God, corner stone of northwest corner of building; bronze tablet stamped "1237 HARRISBURG".....	1,236.603
Hollidaysburg, Blair County court-house, near soldiers' monument, northeast corner of front wall of foundation; aluminum tablet stamped "1010 HARRISBURG".....	1,010.274
Canaan station, Pennsylvania Railroad, red brick schoolhouse, in front wall, 3 feet west of door; bronze tablet stamped "1075 HARRISBURG".....	1,075.001

MARTINSBURG, VIA WILLIAMSBURG, TO FRANKLIN FORGE.

Martinsburg, 0.75 mile south of, north leg of east end of culvert, in top stone; copper bolt (Pennsylvania Railroad bench mark No. 16).....	1,343.12
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HUNTINGDON QUADRANGLE.

Williamsburg, northwest corner of brick schoolhouse, in corner stone; bronze tablet stamped "884 HARRISBURG".....	884.287
Franklin Forge, south abutment of Bridge No. 24, southeast corner of bridge seat; bronze tablet stamped "862 HARRISBURG".....	862.225

HUNTINGDON, SOUTHWEST VIA PUBLIC ROAD AND BROADTOP MOUNTAIN RAILROAD (VIA ENTRIEN), TO COVE STATION (FOXTON POST-OFFICE).

Huntingdon, Pennsylvania Railroad station, ladies' waiting room, on east window sill; chiseled square.....	624.47
McConnellstown, front face of brick hall and band room; bronze tablet stamped "716 HARRISBURG".....	715.350
Marklesburg (James Creek post-office), front face of brick schoolhouse; aluminum tablet stamped "917 HARRISBURG".....	916.671
Foxton (Cove station), in face of north wall of overhead bridge; bronze tablet stamped "906 HARRISBURG 1901".....	906.118

ENTRIEN, SOUTHEAST ALONG HIGHWAY TO CASSVILLE, THENCE NORTH TO HUNTINGDON.

Trough Creek, 2 miles north of, at Paradise furnace, H. P. Reynolds's stock farm, southwest corner of foundation of large barn, in south face of corner stone; bronze tablet stamped "959 HARRISBURG".....	959.336
Cassville, 100 feet east of post-office, northwest corner of brick store of Sarah A. Heaton; bronze tablet stamped "1247 HARRISBURG".....	1,246.490
Finks Bridge, 2.5 miles east of, on south side of road; point on top of large rock stamped "U" on east side and "P" on west side (township boundary post).....	1,670.52
Hawns Bridge, 500 feet east of, at Lutheran brick church, in face of stone doorstep of entrance; aluminum tablet stamped "664 HARRISBURG 1901".....	664.333
Huntingdon, in water table near main entrance of court-house; aluminum tablet stamped "642 HARRISBURG 1901".....	642.319

CENTER, CLEARFIELD, INDIANA, AND JEFFERSON COUNTIES.

CLEARFIELD, CURWENSVILLE, HOUTZDALE, MARION CENTER, PUNXSUTAWNEY, AND PHILIPSBURG QUADRANGLES.

The elevations in the following lists are based upon an aluminum tablet in the foundation of the Seventh Avenue Hotel, Pittsburg, Pa., marked "738 PITTSBURG 1899", the elevation of which is now accepted as 738.384 feet above mean sea level. The initial points upon which these levels depend are various bench marks along precise-level lines of the Pennsylvania Railroad, the heights accepted having been determined by the 1903 adjustment.

The double-rodde line from Tyrone through these quadrangles was run in 1902 under the direction of Mr. Frank Sutton, by Mr. Ira M. Flocker, levelman, and the remainder of the work on the Houtzdale and Curwensville quadrangles was done in 1902 under the direction of Mr. Sutton, by Mr. Charles Hartman, jr., levelman. The remainder of the work on the Punxsutawney quadrangle was done in 1902 by Mr. George Seidel, levelman. All standard bench marks dependent on this datum are stamped "PITTSBURG" in addition to the figures of elevation.

PHILIPSBURG QUADRANGLE.

	Feet.
Summit, 800 feet south of, 300 feet south of milepost 13, Pennsylvania and Northwestern Railroad, west of track, top of bank, in top of stone; bronze tablet stamped "2045 PITTS".....	2,044.653
Phillipsburg, in northeast capstone of bridge over Moshannon Creek; aluminum tablet stamped "1428 PITTSBURG".....	1,427.768

HOUTZDALE QUADRANGLE.

OSCEOLA MILLS, ALONG PENNSYLVANIA AND NORTHWESTERN RAILROAD, TO BECCARIA.

Osceola Mills, highway bridge over Moshannon Creek, in southeast wing wall; aluminum tablet stamped "1461 PITTSBURG".....	1,460.491
Sterling, 0.1 mile southwest of, 0.5 mile northeast of Houtzdale, Bridge No. 304, in south end of west abutment; aluminum tablet stamped "1500 PITTS".....	1,499.613
Houtzdale, crossing at station; top of rail.....	1,518
McCauley, crossing at station; top of rail.....	1,535
West Moshannon, crossing at station; top of rail.....	1,540
Kendrick, crossing at station; top of rail.....	1,553
Beulah, crossing at station; top of rail.....	1,575
Smoke Run, 0.1 mile east of, Bridge No. 309, in north end of east abutment; aluminum tablet stamped "1351 PITTS".....	1,351.033
Beccaria, at crossing; top of rail.....	1,374

OSCEOLA MILLS, NORTH ALONG PENNSYLVANIA RAILROAD AND BEECH CREEK RAILROAD.

Blueball, corner stone of water-tank house, beside station; bronze tablet stamped "1544 PITTSBURG".....	1,543.710
Woodland, 200 feet north of station, in southeast capstone of Pennsylvania Railroad Bridge No. 217; bronze tablet stamped "1463 PITTSBURG".....	1,463.024

CLEARFIELD JUNCTION, SOUTH ALONG BEECH CREEK RAILROAD, CLEARFIELD RAILROAD, PUBLIC ROADS, AND PENNSYLVANIA RAILROAD, VIA CLEARFIELD BRIDGE, FAUNCE, AND BELSENA MILLS, TO SMOKE RUN.

Clearfield Bridge, 1.3 miles north of, railroad Bridge No. 28, near crossing, on northwest capstone; chiseled square.....	1,163.20
Clearfield Bridge, over Clearfield Creek, in northwest capstone of highway bridge; bronze tablet stamped "1172 PITTSBURG".....	1,171.936
Faunce, in northwest capstone of highway bridge over Clearfield Creek; bronze tablet stamped "1250 PITTSBURG".....	1,250.023
Faunce, 3.25 miles west of, southwest corner of church; cut on top of foundation wall.....	1,613.31
Belsena Mills, in northeast capstone of turntable; bronze tablet stamped "1335 PITTSBURG".....	1,334.597
Smoke Run, in southeast top capstone of railroad Bridge No. 39; aluminum tablet stamped "1351 PITTSBURG".....	1,351.033
Susquehanna Bridge, railroad station, Pennsylvania Railroad bridge over Susquehanna River on northeast capstone; chisel mark.....	1,125.03

CURWENSVILLE QUADRANGLE.

COALPORT, ALONG PENNSYLVANIA AND NORTHWESTERN RAILROAD, TO MAHAFFEY.

Coalport, 0.5 mile northwest of, Cambria and Clearfield Railroad bridge across Clearfield Creek, north abutment, east end bridge seat; bronze tablet stamped "1378 PITTS".....	1,377.565
Irvona, road crossing at station; top of rail.....	1,380
Berwindsdale crossing at station; top of rail.....	1,553
Berwindsdale, 0.2 mile northwest of, in west end of south abutment of culvert, in corner stone; aluminum tablet stamped "1543 PITTS".....	1,542.806
Lajose, crossing east of station; top of rail.....	1,315

	Feet.
Lajose, between, and Lajose junction, railroad Bridge No. 33, in northwest coping stone; aluminum tablet stamped "1297 PITTS"	1,296.501
Ostend, at crossing; top of rail	1,387
Mahaffey, Pennsylvania and Northwestern Railroad bridge over Susquehanna River, in coping stone at east end, south abutment; aluminum tablet stamped "1272 PITTS"	1,271.713

MAHAFFEY, EAST ALONG NEW YORK CENTRAL AND HUDSON RIVER RAILROAD, TO CLEARFIELD BRIDGE.

Curry Run, railroad bridge over Susquehanna River, in north end south abutment; bronze tablet stamped "1222 PITTS"	1,221.275
Kerrmoor, 0.1 mile west of, in north end south abutment of railroad Bridge No. 44; bronze tablet stamped "1356 PITTS"	1,355.957
Olanta, in northwest abutment of highway bridge over Clearfield Creek; bronze tablet stamped "1296 PITTSBURG"	1,295.256

CURWENSVILLE, ALONG PENNSYLVANIA RAILROAD, TO GRAMPIAN.

Curwensville, 0.2 mile east of, in step of abutment of Buffalo, Rochester and Pittsburg Railroad bridge; bronze tablet stamped "1143 PITTS"	1,142.668
Grampian, highway bridge over Little Anderson Creek, in southeast capstone of east abutment; bronze tablet stamped "1535 PITTSBURG"	1,535.225

LAJOSE, SOUTH ALONG PENNSYLVANIA RAILROAD, TO WESTOVER.

Westover, northwest corner of Baptist Church, top cornerstone of foundation, in west face; bronze tablet stamped "1368 PITTSBURG"	1,368.114
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CLEARFIELD QUADRANGLE.

CLEARFIELD JUNCTION, NORTH ALONG PENNSYLVANIA RAILROAD, TO CLEARFIELD.

Clearfield, 2.3 miles south of, Pennsylvania Railroad bridge over the New York Central and Hudson River Railroad; chiseled cut in abutment	1,129.40
Clearfield, 0.1 mile south of office of New York Central and Hudson River Railroad station, highway bridge over the Susquehanna River, in coping of the northeast wing abutment; aluminum tablet stamped "1113 PITTSBURG"	1,112.386
Riverview, highway bridge over Susquehanna River, on the southwest capstone; chiseled mark	1,113.14

PUNXSUTAWNEY QUADRANGLE.

M'GEES MILLS, ALONG PENNSYLVANIA AND NORTHWESTERN RAILROAD, TO PUNXSUTAWNEY.

McGees Mills, in front of station; top of rail	1,307
Sydney, 0.5 mile northwest of, in top of rock, east of track; bronze tablet stamped "1622 PITTS"	1,621.624
Flynn, crossing; top of rail	1,698
Winslow, southeast corner of station, in top of stone; aluminum tablet stamped "1649 PITTS"	1,648.127
Elbell, crossing at station; top of rail	1,483
Canoe Creek, crossing at station; top of rail	1,260
Punxsutawney, in northeast wing wall of Mahoning Street Bridge; aluminum tablet stamped "1236 PITTS"	1,235.906
Punxsutawney, in front of station; top of rail	1,236

CHERRY TREE (GRANT POST-OFFICE), NORTH ALONG PUBLIC ROAD AND RAILROAD, VIA PATCHINSVILLE AND BURNSIDE, TO M'GEES MILLS.

Patchinsville, grain house opposite post-office, southwest corner of foundation wall; aluminum tablet stamped "1370 PITTS"	1,369.367
Burnside, upper iron bridge over river, northwest abutment; bronze tablet stamped "1328 PITTS"	1,327.388
Glen Campbell, abutment of Bridge No. 42, at intersection of Brady Run and Cush Creek; bronze tablet stamped "1344 PITTS"	1,343.830

ROSSITER JUNCTION, SOUTH ALONG RAILROAD AND PUBLIC ROADS, VIA ROSSITER
STATION AND ROCHESTER MILLS, TO ORD POST-OFFICE.

	Feet.
Rossiter station, 350 feet north of, west side of track, west end of culvert; copper bolt stamped "1324 PITTS"	1,323.595
Rochester Mills (Richmond), iron bridge ^a over Little Mahoning Creek, southwest abutment; bronze tablet (stamping obliterated)	1,273
East Run, 0.2 mile west of post-office; south side of road, flat rock near blacksmith shop; aluminum tablet stamped "PITTS 1539"	1,538.203

MARION CENTER QUADRANGLE.

VALIER, ALONG PENNSYLVANIA AND NORTHWESTERN RAILROAD, TO GOODVILLE.

Valier, road crossing; top of rail	1,225
Hamilton, road crossing; top of rail	1,190
Hamilton, 60 feet west of, 5 feet south of track, in top of large rock; aluminum tablet stamped "1188 PITTSBURG"	1,187.015
Loop, 0.25 mile west of; high bridge over Mahoning Creek, in south end of east abutment; aluminum tablet stamped "1183 PITTS"	1,182.458
Goodville, crossing at station; top of rail	1,215
Dayton, 900 feet west of station, northwest wing wall of Buffalo, Rochester and Pittsburg Railroad bridge over small stream, on second coping stone; aluminum tablet stamped "1326 PITTSBURG"	1,326.118

BEDFORD, BLAIR, CAMBRIA, INDIANA, AND SOMERSET COUNTIES.

ALTOONA, BARNESBORO, BEDFORD, EBENSBURG, JOHNSTOWN, PATTON, AND TYRONE
QUADRANGLES.

The elevations in the following list are based upon an aluminum tablet in the foundation of the Seventh Avenue Hotel, Pittsburg, Pa., marked "738 PITTSBURG," 1899, the elevation of which is now accepted as 738.384 feet above mean sea level. The initial points upon which these levels depend are various bench marks along the precise-level lines of the Pennsylvania Railroad, the accepted heights having been determined by the 1903 adjustment.

The work on the Barnesboro quadrangle was done under the direction of Mr. Frank Sutton, topographer; partly in 1901 by Mr. J. H. Wetzel, levelman, and partly in 1902 by Mr. George Seidel, levelman. Mr. Seidel also did the leveling on the Johnstown quadrangle in 1902. The work on the Bedford and Ebensburg quadrangles was done in 1901 under the direction of Mr. A. M. Walker, topographer, by Mr. J. B. McGuire, levelman. The Patton quadrangle was partly leveled in 1901 by Mr. F. M. Taylor, levelman, under the direction of Mr. A. M. Walker, topographer, the work being completed in 1902 by Mr. Charles Hartman, jr., levelman, under the direction of Mr. Frank Sutton, topographer. All standard bench marks dependent upon this datum are stamped "PITTSBURG" in addition to the figures of elevation.

TYRONE QUADRANGLE.

TYRONE, ALONG PENNSYLVANIA RAILROAD AND PENNSYLVANIA AND NORTHWESTERN RAILROAD, TO
VANSOCYOC (DOUBLE-RODDED LINE).

	Feet.
Tyrone, in front of passenger station; chiseled shelf in base course (Pennsylvania Railroad bench mark No. 110)	910.69
Tyrone, 2 miles north of, northeast wing wall of Bridge No. 5; chiseled square	941.28
Vail, in front of station; top of rail	989
Vansocoyoc, just southeast of, 100 feet southeast of cut, 15 feet north of track; chiseled square in top of rock	1,395.80

ALTOONA QUADRANGLE.

Utahville, in front of station; top of rail	1,669
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^a Owing to reconstruction of this bridge the elevation may be erroneous.

PATTON, EAST ALONG PUBLIC ROAD, TO FRUGALITY.

	Feet.
Frugality, 0.25 mile south of, west end of south abutment of railroad Bridge No. 408, at junction of wye track, on capstone; chiseled cross.....	1,475.53

PATTON QUADRANGLE.

Coalport, crossing at station; top of rail.....	1,414
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GALLITZIN, NORTHWEST VIA PUBLIC ROAD TO LORETTO, THENCE WEST TO EBENSBURG.

Loretto, northeast corner of Catholic Church, on corner of lowest step; cross cut.....	1,942.60
Winterset station, at road crossing; top of north rail.....	2,111

LORETTO,^a VIA PUBLIC ROAD TO PATTON, THENCE WEST TO ELMORA.

Chest Springs, southeast corner of frame schoolhouse, on corner stone of foundation; bronze tablet stamped "1909 HARRISBURG".....	1,968.699
Patton, 2 miles southeast of, Clarke schoolhouse, southeast corner of cloak room, on face of foundation corner stone; cross cut.....	1,945.83
Patton, main entrance to Good Building, stone at right side; aluminum tablet stamped "1756 PITTSBURG".....	1,755.348
Carrolltown, at left entrance steps to St. Benedict's Catholic Church, on corner stone of foundation wall; square and cross cut.....	2,173.32
Elmora, 600 feet south of, in valley, southwest corner of schoolhouse, in foundation stone; aluminum tablet stamped "1765 PITTSBURG".....	1,764.016

PATTON, VIA PUBLIC ROAD, NORTH TO HASTINGS, THENCE WEST TO BARNESBORO.

Hastings, opera house, northeast corner of foundation, north face of top corner stone; aluminum tablet stamped "1736 HARRISBURG".....	1,734.553
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HASTINGS, NORTH ALONG HIGHWAY, TO WESTOVER.

Garway, 1.7 miles north of, north side of railroad Bridge No. 28, on masonry; chiseled cross.....	1,360.90
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FRUGALITY, SOUTH ALONG CAMBRIA AND CLEARFIELD RAILROAD, TO SYBERTON

Frugality, 2.5 miles south of, crossing at Dean station, 100 feet south of north abutment of railroad bridge No. 407, west capstone; chiseled square.....	1,514.30
Ashville, 0.1 mile south of, on last capstone middle pier of railroad Bridge No. 403; chiseled square.....	1,643.41
Syberton, 0.25 mile west of, east abutment of iron bridge across Clearfield Creek, on west coping stone of north corner; cross cut.....	1,764.85

BARNESBORO QUADRANGLE.

Cookport, southwest of McCoy's store, top of stone over cellar door; aluminum tablet stamped "1609 PITTSBURG".....	1,606.662
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COOKPORT, EAST ALONG PUBLIC ROADS, TO CHERRY TREE (GRANT POST-OFFICE).

Cherry Tree, railroad Bridge No. 314, southeast end of bridge seat; aluminum tablet stamped "1366 PITTSBURG".....	1,363.983
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CHERRY TREE (GRANT POST-OFFICE), ALONG RAILROAD, VIA BARNESBORO AND ELMORA, TO EBENSBURG.

Barnesboro, 0.1 mile north of station, south abutment of railroad Bridge No. 308, in east end of bridge seat; aluminum tablet stamped "1447 PITTSBURG".....	1,445.641
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EBENSBURG, WEST ALONG ROAD VIA PINDLETON AND STRONGTOWN, TO PENN RUN.

Pindleton post-office, in southeast corner of foundation of church; aluminum tablet stamped "2301 PITTSBURG".....	2,299.683
Strongtown, in southeast corner of Methodist church; aluminum tablet stamped "1890 PITTSBURG".....	1,889.475
Greenville, 4 miles southeast of. 2.5 miles north of Nolo, southwest corner of large barn of M. A. Sleepy, in top of large stone; aluminum tablet stamped "1725 PITTSBURG".....	1,724.600

^a Loretto is checked by two other lines from Cresson.

JOHNSTOWN QUADRANGLE.

JOHNSTOWN, SOUTH ALONG BALTIMORE AND OHIO RAILROAD, TO INGLESIDE.

Feet.

Johnstown, at west end of north parapet of railroad bridge; copper bolt (Pennsylvania Railroad bench mark).....	1,180.27
Johnstown, east end of south parapet of Pennsylvania Railroad bridge; aluminum tablet stamped "1180 PITTS".....	1,180.261
Johnstown, railroad ticket office, on window sill; chiseled shelf (Pennsylvania Railroad bench mark).....	1,187.60
Johnstown, road crossing at Pennsylvania Railroad station; top of rail.....	1,184
Johnstown, in front of Baltimore and Ohio Railroad station; top of rail.....	1,169
Honey Creek, road crossing at station; top of rail.....	1,194
Johnstown, 3 miles south of, Baltimore and Ohio Railroad and trolley grade crossing; top of rail.....	1,191
Kring, road crossing at station; top of rail.....	1,241
Ingleside, 700 feet north of, northeast corner of small railroad bridge; copper bolt marked "1275 PITTS".....	1,275.610

INGLESIDE, NORTHEAST ALONG PENNSYLVANIA RAILROAD, VIA ELKTON, TO SALIX.

Scalp Level, 0.45 mile north of, west side of track, 75 feet west of tool house, in large sandstone; aluminum tablet stamped "1719 PITTS".....	1,719.225
Salix, 870 feet north of station, under Pennsylvania Railroad culvert, west wall; bronze tablet stamped "2050 PITTS".....	2,049.455
Salix, railroad bridge at station, north parapet, east end; aluminum tablet stamped "2077 PITTS".....	2,077.762

SEWARD, NORTHEAST ALONG PENNSYLVANIA RAILROAD, VIA VINTONDALE AND NANTY GLO, TO EBENSBURG.

Seward, 0.17 mile west of V. K. tower, railroad Bridge No. 226 over Piney Run, north parapet, east end of arch; copper bolt (Pennsylvania Railroad bench mark).....	1,001.571
Seward, doorstep of waiting room of station; copper bolt marked "1122 U. S".....	1,122.145
Seward, crossing at station; top of rail.....	1,120
Wehrum, crossing at station; top of rail.....	1,360
Vintondale, 150 feet east of station, iron bridge, south end of west abutment; aluminum tablet stamped "1403 PITTS".....	1,402.741
Twin Rocks, crossing at station; top of high rail.....	1,668
Nanty Glo, 200 feet south of station, iron bridge, west end of north abutment; bronze tablet stamped "1706 PITTS".....	1,705.761
Nanty Glo, crossing at station; top of high rail.....	1,710
Beulah Road, in front of station; top of rail.....	1,894

EBENSBURG QUADRANGLE.

AT EBENSBURG (ON LINE FROM GALLITZIN).

Ebensburg, west front of court-house, in base of center column of double entrance; aluminum tablet stamped "2138 PITTSBURG".....	2,138.223
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WILMORE, SOUTH ALONG PUBLIC ROADS AND PENNSYLVANIA RAILROAD, TO SALIX.

Wilmore, in front wall of railroad station; chiseled square (Pennsylvania Railroad bench mark No. 14).....	1,562.72
Wilmore, 1,090 feet north of station, highway bridge over creek, in south end of east abutment; bronze tablet stamped "1555 PITTS".....	1,554.389
Lovett, 0.7 mile south of, east end of north parapet of railroad bridge; copper bolt stamped "1725 U. S".....	1,724.992

LOVELY, NORTH ALONG PUBLIC ROADS, TO BLUE KNOB, THENCE NORTHWEST TO PORTAGE.

Pavia, highway bridge over Bobs Creek, in east end of face of north abutment; bronze tablet stamped "1403 PITTSBURG".....	1,402.449
Blue Knob, at southeast corner of crossroads, on east end of north wall of Mount Sinai Church; bronze tablet stamped "2375 PITTSBURG".....	2,373.830
Blue Knob, a Union Township, Bedford County, 2.5 miles northeast of Pavia post-office.....	3,136
Hughes mine tipple, 10 feet west side of track, on top of boulder; chiseled cross.....	1,814.51

a A flying-level spur line run from Blue Knob post-office to the summit of Blue Knob determined this elevation, which is the highest known in the State of Pennsylvania. It is about 4 miles east of the main crest of the Allegheny Plateau and 200 feet higher.

BEDFORD QUADRANGLE.

ELTON, SOUTHEAST ALONG PUBLIC ROADS, TO LOVELY.

	Feet.
Elton, 8.9 miles east of, 2,000 feet from top on side of Allegheny Mountains, on west side of New Road; chiseled square on rock.....	2,591.35
Lovely, southeast corner of crossroads, at northwest corner of post-office building; bronze tablet stamped "1314 PITTSBURG"	1,312.901

CLARION AND JEFFERSON COUNTIES.

CLARION, BROOKVILLE, AND FOXBURG QUADRANGLES.

The elevations in the following list are based upon bench marks at Parker and Redbank on the Geological Survey precise-level line Franklin to Pittsburg which traverses the Foxburg quadrangle. The leveling was done in 1905 under the direction of Mr. W. T. Griswold, topographer, by Mr. B. J. Green, levelman. The standard bench marks are stamped "ADJ 1903" in addition to the figures of elevation.

FOXBURG QUADRANGLE.

PARKER, NORTHEAST ALONG BALTIMORE AND OHIO RAILROAD (NARROW GAGE), TO SHIPPENVILLE.

	Feet.
Foxburg, in stone doorsill of baggage room at Pennsylvania station; copper bolt.....	892.544
Foxburg, in east wall near entrance to "The Inn," opposite station; aluminum tablet stamped "885 ADJ 1903"	884.494
Richmond (Alum Rock post-office), opposite, in doorstep of hotel building; bronze tablet stamped "1190 ADJ 1903"	1,190.389
Blairs Corners, 1,000 feet east of, bridge over Beaver Run, north end of west abutment, by flouring mill; bronze tablet stamped "1157 ADJ 1903"	1,156.826
Knox, at southeast corner of Main and State streets, in foundation wall at northeast corner of B. A. Kribbs & Co.'s brick building; aluminum tablet stamped "1382 ADJ 1903"	1,381.839

CLARION QUADRANGLE.

SHIPPENVILLE, SOUTHEAST ALONG PITTSBURG, SOMERVILLE AND CLARION RAILROAD, TO HOLDEN.

Shippenville, 0.5 mile northwest of, on north end of east abutment of iron county bridge over Deer Creek; aluminum tablet stamped "1209 ADJ 1903"	1,208.296
Clarion Junction, 25 feet in front of entrance to schoolhouse, in rock; bronze tablet stamped "1439 ADJ 1903"	1,438.990
Clarion, 1.3 miles northwest of, in coping at southeast corner of large iron bridge over Clarion River; bronze tablet stamped "1088 ADJ 1903"	1,088.020
Clarion, in north meridian stone near northwest corner of court-house; bronze tablet stamped "1491 ADJ 1903"	1,490.687
Clarion, in south meridian stone in southeast corner of park opposite court-house; bronze tablet stamped "1485 ADJ 1903"	1,484.668
Strattonville, 1,500 feet south of, on south end of east abutment of railroad bridge over county road; aluminum tablet stamped "1438 ADJ 1903"	1,437.542
Holden, 1.6 miles west of, in south end of abutment of railroad bridge over Piney Creek; bronze tablet stamped "516 ADJ 1903"	1,515.276

HOLDEN, WEST ALONG HIGHWAY TO NEAR SLIGO, THENCE NORTH TO ELK CITY.

Kingsville, in foundation wall at southwest corner of M. G. May's store and post-office building; aluminum tablet stamped "1387 ADJ 1903"	1,386.944
Greenville (Limestone post-office), in foundation wall at northwest corner of flouring mill; aluminum tablet stamped "1270 ADJ 1903"	1,269.697
Greenville, 4 miles west of, 2.5 miles south of Reidsburg, in south foundation wall at southwest corner of J. Monreau's dwelling; aluminum tablet stamped "1325 ADJ 1903"	1,324.660
Burma, 1,000 feet south of, in west foundation of Five Point schoolhouse; aluminum tablet stamped "1279 ADJ 1903"	1,278.874
Piney, on north wing wall of south abutment of large iron bridge over Clarion River; aluminum tablet stamped "1022 ADJ 1903"	1,021.831
Elk City, 3.3 miles south of, in north foundation wall of Madison schoolhouse at crossroads; aluminum tablet stamped "1477 ADJ 1903"	1,476.129

LAWSONHAM, NORTH ALONG SLIGO BRANCH OF PENNSYLVANIA RAILROAD, TO SLIGO.

Feet.

Rimersburg, 1.1 miles southeast of station, in north hill pier of coal tippie of Acme Coal Company; aluminum tablet stamped "1269 ADJ 1903".....	1,268.544
Cherry Run (Huey post-office), in southeast corner of foundation-wall of station, post-office, and store building; bronze tablet stamped "1241 ADJ 1903".....	1,240.605
Sligo, at northwest corner of Main and Clarion streets, in doorsill of H. Holdid's brick store building; aluminum tablet stamped "1159 ADJ 1903".....	1,158.415

AT LEATHERWOOD. (ON LINE LAWSONHAM TO CLIMAX, WHICH IS MOSTLY IN RURAL VALLEY QUADRANGLE.)

Leatherwood, in large rock 50 feet south of station; aluminum tablet stamped "1000 ADJ 1903".....	999.326
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CLIMAX, EAST ALONG PENNSYLVANIA RAILROAD (LOW-GRADE DIVISION) TO MAYPORT.
(MEAN OF THREE LINES INCLUDING RAILROAD LEVELS.)

Bethlehem, 0.5 mile west of, in southeast corner of south coping of stone-arch bridge opposite South Bethlehem; aluminum tablet stamped "1067 ADJ 1903".....	1,066.693
New Bethlehem, in baggage-room doorsill; copper bolt (railroad bench mark marked 1077.83 B. M.).....	1,077.101
Oak Ridge, 0.6 mile west of, in coping at northeast corner of Bridge No. 58; copper bolt (railroad bench mark marked 1086.56 B. M.).....	1,085.826
Oak Ridge, at northeast corner of Bridge No. 57, over county road near station; aluminum tablet stamped "1089 ADJ 1903".....	1,088.401
Mayport, 0.7 mile west of, in coping at north end of east abutment of Bridge No. 56; copper bolt (railroad bench mark).....	1,096.723
Mayport, in north end of east abutment of Bridge No. 55; copper bolt (railroad bench mark).....	1,104.796

BROOKVILLE QUADRANGLE.

HOLDEN, SOUTHEAST ALONG PITTSBURG, SUMMERVILLE AND CLARION RAILROAD,
TO SUMMERVILLE, THENCE SOUTHWEST ALONG PENNSYLVANIA RAILROAD (LOW-GRADE DIVISION) TO MAYPORT. (MEAN OF TWO LINES.)

Holden, 1.2 miles southeast of, on east end of south abutment of small bridge just south of private crossing (county road 75 feet east); aluminum tablet stamped "1433 ADJ 1903".....	1,432.338
Summersville, on northwest corner of railroad bridge over Redbank Creek; aluminum tablet stamped "1160 ADJ 1903".....	1,159.890
Heathville, in coping at west end of north abutment of Bridge No. 51, over Beaver Run; aluminum tablet stamped "1158 ADJ 1903".....	1,157.456
Heathville, 0.7 mile southwest of, in coping at northwest corner of north abutment of Bridge No. 52, over Redbank Creek; railroad bench mark 1154.69.....	1,153.994
Pattons Station post-office, in north pier of water tank; copper bolt stamped "1137.255".....	1,136.554
Mayport (New Mayville post-office), 1 mile east of, in north coping of stone-arch bridge over run and road; aluminum tablet stamped "1108 ADJ 1903".....	1,106.892

ARMSTRONG, BUTLER, AND INDIANA COUNTIES.

KITANNING AND RURAL VALLEY QUADRANGLES.

The elevations in the following list are based upon bench marks at Kittanning, Rimerton, and East Brady, on the precise-level line from Erie to Pittsburg, and are determined in accord with the latest adjustment of the precise-level net. For additional elevations on these quadrangles refer to said precise line.

The leveling on the Rural Valley quadrangle, republished from Bulletin No. 185, was done in 1900 under the direction of Mr. Frank Sutton, topographer, by Mr. J. H. Wetzel, levelman, and that on the Kittanning quadrangle was mostly done in the same year under the direction of Mr. W. L. Miller, topographer, by Mr. Ira M. Flocker, levelman. The elevations between Climax and Redbank on these quadrangles were determined in 1905 under the direction of Mr. W. T. Griswold, topographer, by Mr. B. J. Green, levelman. The standard bench marks are stamped with the letters "PITTSBURG" in addition to the figures of elevation, except those set in 1905, which are stamped "ADJ 1903" in addition to the figures of elevation.

40 SPIRIT LEVELING IN PENNSYLVANIA, 1899 TO 1905.

RURAL VALLEY QUADRANGLE.

KITTANNING, VIA RURAL VALLEY AND DAYTON, TO MAHONING.

	Feet.
Kittanning, 4.5 miles east of, 50 feet east of road northeast, north side of road, on rock; chiseled square.....	1,026.19
Kittanning, 5 miles east of, southeast corner stone of stone house; aluminum tablet stamped "1011 PITTSBURG".....	1,010.491
Rural Valley, southeast wing wall of bridge, in coping stone; bronze tablet stamped "1112 PITTSBURG".....	1,111.610
Dayton, 900 feet west of station, Buffalo, Rochester and Pittsburg Railroad bridge over small stream, on second coping stone of northwest wing wall; aluminum tablet stamped "1326 PITTSBURG".....	1,326.118
Eddyville, 2 miles south of, on southeast abutment of iron bridge over Mahoning Creek; chiseled square "1019".....	1,018.69
Eddyville, iron bridge over Big Mahoning, on bridge seat, southeast wing wall; aluminum tablet stamped "992 PITTSBURG".....	992.284
Putneyville, iron bridge over Mahoning Creek, on coping stone of northwest wing wall; chiseled square.....	940.42
Mahoning, 6 miles east of, iron bridge over Mahoning Creek known as "Macks Bridge;" chiseled square on southeast bridge seat.....	863.50
Mahoning, 2 miles east of, iron bridge, on coping stone of southwest wing wall; chiseled square.....	833.17
Mahoning, in front of Allegheny Valley Railroad station; top of rail.....	818.7
Rimerton, 2 miles south of, northwest abutment of railroad bridge; bronze tablet stamped "820 PITTSBURG 1899".....	820,810

CLIMAX, WEST ALONG PENNSYLVANIA RAILROAD (LOW-GRADE DIVISION), TO LAWSONHAM. (LEATHERWOOD IS GIVEN UNDER CLARION QUADRANGLE.)

Climax, in doorsill of Climax Fire Brick Company's office, by station; copper bolt marked "1046.765" (railroad bench mark).....	1,045.973
Climax, in foundation wall at southeast corner of Climax Fire Brick Company's office, by station; aluminum tablet stamped "1046 ADJ 1903".....	1,045.644
St. Charles, in coping at northeast corner of Bridge No. 63, just east of station; copper bolt marked "1023.595" (railroad bench mark).....	1,022.953
Lawsonham, 2.5 miles east of, in west end of arch tunnel; aluminum tablet stamped "946 ADJ 1903".....	945.554
Lawsonham, on south coping of arch bridge east of station; copper bolt marked "909.33" (railroad bench mark).....	908.833
Lawsonham, on coping at southeast corner of arch bridge just east of station; aluminum tablet stamped "909 ADJ 1903".....	908.768

KITTANNING QUADRANGLE.

LAWSONHAM, WEST ALONG PENNSYLVANIA RAILROAD, TO RED BANK.

Shannon, in face of stone milepost at east side of coal tipple, marked "3 and 107"; aluminum tablet stamped "881 ADJ 1903".....	880.127
Redbank, 1 mile east of, in coping at northeast corner of Bridge No. 69; copper bolt marked "856.04" (railroad bench mark).....	855.64
Redbank, in coping at northwest corner of railroad bridge over Redbank Creek (Allegheny division); copper bolt marked "845.21" (railroad bench mark).....	844.786

KITTANNING, WEST ALONG HIGHWAY TO WEST WINFIELD, THENCE NORTH TO CHICORA AND EAST TO EAST BRADY. (THE ERROR DISTRIBUTED IN THIS LINE IS SLIGHTLY EXCESSIVE.)

Kittanning, public schoolhouse; bronze tablet stamped "803 PITTSBURG".....	803.500
West Winfield, 100 feet west of railroad tracks, in foundation of trestle; aluminum tablet stamped "950 PGH 1900".....	949.940
Fennelton, 375 feet west of station, in foundation of water tank; aluminum tablet stamped "1068 PGH 1900".....	1,068.572
Chicora, corner Main street and Central avenue, directly opposite Union Hall, in sandstone post; aluminum tablet stamped "1246 PGH 1900".....	1,245.543

INDIANA AND WESTMORELAND COUNTIES.

BOLIVAR, ELDERS RIDGE, INDIANA, AND LATROBE QUADRANGLES.

The elevations published in the following list are based upon various bench marks of the Pennsylvania Railroad on lines from West Penn Junction, via Blairsville intersection, to Braddock, the elevations of which are derived from the latest adjustment by the United States Coast and Geodetic Survey. The work was previously reported upon in Bulletin No. 185.

The leveling was executed under the direction of Mr. Frank Sutton, topographer, by Mr. J. H. Wetzel, levelman, except that on the west side of Elders Ridge quadrangle which was done in 1901 by Mr. Ira M. Flocker, levelman. The bench marks are stamped "PITTSBURG" in addition to the figures of elevation.

LATROBE QUADRANGLE.

SALTSBURG, SOUTH VIA NEW ALEXANDRIA, TO LATROBE.

	Feet.
Saltsburg, wooden covered bridge over Kiskiminitas River, on northeast wing wall, west end; aluminum tablet stamped "849 PITTSBURG"	848.567
New Alexandria, wooden covered bridge over Loyalhanna Creek, southeast wing wall, on coping stone; tablet stamped "945 PITTSBURG"	944.980
New Alexandria, 500 feet north of Pennsylvania Railroad station, east side of road; nail in root of large oak (Pennsylvania Railroad bench mark No. 407)	975.43

FIVE TABLETS SET FROM PENNSYLVANIA RAILROAD BENCH MARKS.

Georges station, on north pier of overhead bridge; aluminum tablet stamped "1199 PITTSBURG"	1,199.180
Latrobe, high school building; aluminum tablet stamped "1026 PITTSBURG"	1,026.206
Millwood, south abutment of overhead bridge, on southwest coping stone; tablet stamped "1175 PITTSBURG"	1,175.286
Livermore, 0.2 mile east of, in southeast wing wall of overhead bridge; aluminum tablet stamped "934 PITTSBURG"	933.462
Blairsville, northeast corner of Pennsylvania passenger station, on foundation off-set; chiseled square (Pennsylvania Railroad bench mark No. 60)	1,011.909
Blairsville, northeast wing wall of Walnut Street Bridge, on coping stone; aluminum tablet stamped "1003 PITTSBURG"	1,003.077

BLAIRSVILLE, ALONG PENNSYLVANIA RAILROAD, VIA HOMER CITY, TO INDIANA.

Blairsville, Maple street crossing; top of rail	1,010.1
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BOLIVAR QUADRANGLE.

Turner, in front of station; top of west rail	1,100.1
Black Lick, in front of station; top of west rail	967
Black Lick, 6 miles north of station, railroad bridge over Two Lick Creek, southwest corner of south abutment, on coping stone; bronze tablet stamped "981 PITTSBURG"	980.510
Rugh, in front of station; top of west rail	1,028.5

INDIANA QUADRANGLE.

Graceton, in front of station; top of rail	1,060
Homer, 600 feet south of station, bridge over Yellow Creek, northwest wing wall, on coping stone; aluminum tablet stamped "1019 PITTSBURG"	1,019.092
Homer, in front of station; top of rail	1,023
Two Lick, in front of station; top of rail	1,057.4
Reed, in front of station; top of west rail	1,149.1
Normal, 1 mile south of, northwest wing wall of bridge; chiseled square	1,227.89
Indiana, Normal school campus, on north meridian stone; bronze tablet stamped "1299 PITTSBURG 1900"	1,299.022

INDIANA, VIA CREEKSIDE, GAIBLETON, PENN RUN, AND BRUSH VALLEY, TO HOMER.

	Feet.
Indiana, in front of station; top of west rail.....	1,309.3
Newville, entrance to M. E. Church, in southwest corner stone; bronze tablet stamped "1034 PITTSBURG".....	1,033.678
Gaibleton, 650 feet south of post-office, west side of road, double-arch stone bridge, on coping stone of north arch; aluminum tablet stamped "1087 PITTSBURG".....	1,086.388
Tanoma, Tanoma House, in top foundation stone of bay window; aluminum tablet stamped "1132 PITTSBURG".....	1,132.225
Tanoma, 4.25 miles south of, southeast wing wall of covered bridge, on coping stone; chiseled square.....	1,191.61
Penn Run (Greenville), on lower stone step of Presbyterian Church; bronze tablet stamped "1475 PITTSBURG".....	1,474.578
Brush Valley, entrance to Union House, in south end of top stone step; bronze tablet stamped "1447 PITTSBURG".....	1,448.267

ELDERS RIDGE QUADRANGLE.

CREEKSIDE WEST TO SHELOCTA, THENCE SOUTH VIA KENT TO LIVERMORE.

Shelocta, at west end of covered bridge over Crooked Creek, northeast wing wall, on coping stone; bronze tablet stamped "992 PITTSBURG".....	991.414
Kent, 3 miles north of post-office, W. L. Neal's brick house, on upper foundation stone; aluminum tablet stamped "1167 PITTSBURG".....	1,167.098
Kent, 2 miles south of post-office, James M. Jack's brick residence, on stone doorstep; bronze tablet stamped "1029 PITTSBURG".....	1,028.344

SHELOCTA, ALONG HIGHWAY, VIA ELDERTON, COCHRAN MILLS, AND ELDERS RIDGE, TO JACKSONVILLE (KENT POST-OFFICE).

Shelocta, in wing wall of covered bridge over Crooked Creek; bronze tablet stamped "992 PITTSBURG".....	991.414
Elderton, opposite hotel, on street corner, in west side of square hitching post; aluminum tablet stamped "1265 PITTSBURG".....	1,264.510
Cochran Mills, old covered bridge over Crooked Creek, in northwest wing wall of east abutment; bronze tablet stamped "871 PITTSBURG".....	870.429
Elders Ridge, Presbyterian Church, in southwest corner foundation stone; aluminum tablet stamped "1226 PITTSBURG".....	1,225.639
Clarksburg, at corner of front of hotel, on stone; chiseled square.....	917.85

ELDERS RIDGE TO EDRI.

Edri, 0.1 mile west of station, in northwest corner of bridge seat of railroad bridge; bronze tablet stamped "834 PITTSBURG".....	833.732
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FAYETTE, GREENE, SOMERSET, WASHINGTON, AND WESTMORELAND COUNTIES.

BROWNSVILLE, CONFLUENCE, CONNELLSVILLE, MASONTOWN, AND UNIONTOWN QUADRANGLES.

The elevations in the following list are based upon an aluminum tablet in the foundation of the Seventh Avenue Hotel, Pittsburg, the elevation of which is now accepted as 738.384 feet above mean sea level. The initial points upon which this work depends are various bench marks on the precise-level line, Grafton to Pittsburg, of the United States Geological Survey, and the Connellsville and Pittsburg division precise level-line of the Baltimore and Ohio Railroad. For additional elevations in these quadrangles refer to list under "Precise leveling." The leveling was previously reported upon partly in the Appendix to the Twenty-first Annual Report and partly in Bulletin No. 185, but has been corrected in this list to accord with the 1903 adjustment.

The leveling on the Uniontown quadrangle, on the west side of the Confluence quadrangle, and on line to Greensboro on the Masontown quadrangle, was done in 1899, under the direction of Mr. Frank Sutton, topographer, by Mr. William Crënnell, levelman. The leveling on the Connellsville quadrangle, on line West Newton to Baird on the Brownsville quadrangle, was done the same year, under Mr. Sutton, by Mr. J. H. Wetzel, levelman, who com-

pleted leveling on the Masontown quadrangle in 1900. The line through Centerville on the Brownsville quadrangle was run in 1901, under the direction of Mr. A. H. Bumstead, topographer, by Mr. M. P. Page, levelman. The standard bench marks depending on this datum are stamped "PITTSBURG" in addition to the figures of elevation.

UNIONTOWN QUADRANGLE.

UNIONTOWN, SOUTHEAST ALONG HIGHWAY TO FARMINGTON.

	Feet.
Summit, 75 feet east of steps in front of Summit House, in large boulder in field south side of National pike, 20 feet south of fence; bronze tablet stamped "2418 PITTSBURG".....	2,417.607

FARMINGTON, SOUTHWEST TO ELLIOTTSVILLE.

Elliottsville, in north side of east abutment wing wall of stone-arch bridge over Sandy Creek; bronze tablet stamped "1569 PITTSBURG".....	1,569.145
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FARMINGTON, NORTHEAST ALONG HIGHWAY TO OHIO PYLE, THENCE NORTHWEST ALONG RAILROAD TO SOUTH CONNELLSVILLE, THENCE SOUTHWEST TO UNIONTOWN.

Farmington, in southwest corner of foundation of Thomas Rush's hotel; bronze tablet stamped "1835 PITTSBURG".....	1,835.346
Indian Creek, on south bridge seat, west abutment of Baltimore and Ohio Railroad bridge over Indian Creek; bronze tablet stamped "970 PITTSBURG".....	970.195
South Conneltsville, on northwest corner of abutment of bridge over Youghiogheny River (Baltimore and Ohio Short Line); chisel mark.....	914.11
Dunbar, in water table at northeast corner of George Swearingen's store; bronze tablet stamped "999 PITTSBURG".....	998.434
Ferguson (flag station), 0.25 mile north of, on west side of north abutment of bridge over creek; chisel mark.....	1,110.26
Lemont Furnace, in water table at northeast corner of Union Supply Company's store; bronze tablet stamped "1059 PITTSBURG".....	1,059.096

MASONTOWN QUADRANGLE.

POINT MARION NORTH TO GREENSBORO.

Point Marion, 3.1 miles north of, on stone in west side of south abutment of bridge over Dunkard Creek; chisel mark.....	799.93
New Geneva, on west side of north abutment of bridge over creek; chisel mark.....	793.41
Greensboro, on southeast corner of foundation of Crawford's block; bronze tablet stamped "806 PITTSBURG".....	806.464

BROWNSVILLE, SOUTHWEST VIA EAST RIVERSIDE TO CARMICHAELS.

Jacobs Ferry (East Riverside), on southwest corner of foundation of mill; bronze tablet stamped "792 PITTSBURG".....	792.615
Carmichaels, on stone step of entrance to schoolhouse; aluminum tablet stamped "1004 PITTSBURG".....	1,004.297

CONFLUENCE QUADRANGLE.

Ohio-pyle, south face of north abutment of Baltimore and Ohio Railroad bridge over Youghiogheny River; bronze tablet stamped "1218 PITTSBURG".....	1,217.632
Somerfield, ^a corner of Main and Water streets, foundation wall of brick building owned by J. W. Endsley; aluminum tablet stamped "1386 C".....	1,390.349

CONNELLSVILLE QUADRANGLE.

SOUTH CONNELLSVILLE, NORTHWEST ALONG BALTIMORE AND OHIO RAILROAD.

Connellsville, Main street, between Baltimore and Ohio Railroad and river, on top stone of south end of pier of wagon bridge over Youghiogheny River; aluminum tablet stamped "885 PITTSBURG".....	884.686
Bradford, in front of station; top of rail.....	859.4
Dawson, in face of entrance to First National Bank; aluminum tablet stamped "851 PITTSBURG".....	851.280

^a This bench mark was determined by levels extended from the Accident quadrangle.

	Feet.
Layton, 600 feet south of station, at north end of Fayette brick works, in stone on north side of railroad arch culvert; aluminum tablet stamped "806 PITTSBURG".....	806.168
Layton, in front of station; top of rail.....	806
Jacobs Creek, 1,200 feet south of station, on southwest corner of railroad bridge over Jacobs Creek, south abutment; aluminum tablet stamped "782 PITTSBURG".....	783.472
Jacobs Creek, in front of station; top of rail.....	781.7
Smithton, in front of station; top of rail.....	781.7

BROADFORD, NORTHEAST ALONG BALTIMORE AND OHIO RAILROAD TO MOUNT PLEASANT, THENCE NORTHWEST ALONG HIGHWAY TO HUNKERS, THENCE WEST TO WEST NEWTON.

Summit Mines, in front of station; top of rail.....	1,224.4
Scottdale, H. C. Frick Coal Company's building, in second stone below water table, at left side of entrance; aluminum tablet stamped "1040 PITTSBURG".....	1,039.561
Hammondville, in front of station; top of rail.....	1,039.2
Mount Pleasant, in front of station; top of rail.....	1,071.3
Mount Pleasant, left side at entrance to Farmers and Merchants' National Bank, on foundation stone; aluminum tablet stamped "1222 PITTSBURG".....	1,222.470
Tarrs, in front of station; top of rail.....	1,088
Ruffsedale, in front of station; top of rail.....	1,042.4
Hunkers, 150 feet south of station, west end of south abutment of railroad bridge, on coping stone; bronze tablet stamped "939 PITTSBURG".....	939.24
Mendon, east end of, northwest corner of brick house owned by F. F. Grove, in second stone from top of foundation; bronze tablet stamped "1104 PITTSBURG".....	1,104.204

BROWNSVILLE QUADRANGLE.

WEST NEWTON, WEST ALONG HIGHWAY, TO BAIRD FLAG STATION.

West Newton, wagon bridge over Youghiogheny River, north side of east end of wing wall; aluminum tablet stamped "771 PITTSBURG".....	770.742
West Newton, in front of station; top of rail.....	767.2
Gambles (formerly Gambles post-office), west side of front entrance to James Torren's brick house, on stone in retaining wall; bronze tablet stamped "1134 PITTSBURG".....	1,133.882

WEST BROWNSVILLE, WEST-NORTHWEST ALONG HIGHWAY TO BEALLSVILLE.

Centerville (East Bethlehem post-office), 35 feet east of H. L. Smith's store, 30 feet east of center of street, Mrs. Deaves's residence, in northwest corner of retaining wall; bronze tablet stamped "1178 PITTSBURG".....	1,177.821
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ALLEGHENY, ARMSTRONG, BEAVER, BUTLER, WASHINGTON, AND WESTMORELAND COUNTIES.

CARNEGIE, FREEPORT, GREENSBURG, McKEESPORT, SEWICKLEY, AND SHARPSBURG QUADRANGLES.

The elevations in the following list are based upon an aluminum tablet in the foundation of the Seventh Avenue Hotel, Pittsburg, the elevation of which is now accepted as 738.384 feet above mean sea level. Precise-level lines of the Corps of Engineers, U. S. Army, of the Baltimore and Ohio Railroad, of the Pennsylvania Railroad, and of the United States Geological Survey traverse this area. These, corrected in accordance with the latest adjustment, form the initial control for the primary levelings. For other elevations in this locality refer to list under "Precise leveling."

The leveling was done mostly in 1903 under the direction of Mr. Frank Sutton, topographer, by C. W. Marvin, levelman, on Greensburg and part of Freeport quadrangles, and the remainder by Mr. J. H. Wetzel, levelman. Five of the bench marks on Sewickley quadrangle were established in 1905 under Mr. A. C. Roberts, topographer, by Mr. B. J. Green, levelman. The standard bench marks are stamped with the letters "PITTS" in addition to the figures of elevation.

CARNEGIE QUADRANGLE.

SMITHFIELD STREET BRIDGE, PITTSBURG, NORTHWEST TO M'KEES ROCKS, THENCE SOUTH-
WEST, ALONG PITTSBURG, CHARTIERS AND YOUGHIOGHENY RAILWAY AND HIGHWAY, TO
CARNEGIE, THENCE ALONG PENNSYLVANIA RAILROAD TO WASHINGTON.

Feet.

Pittsburg (south side), south end of Smithfield Street Bridge, in north face of abutment facing Pittsburg and Lake Erie Railroad, 17 feet east of west side of abutment, 9 courses of stone from top; seat cut, marked "U. S. B. M."	726.730
Smithfield Street Bridge, 1 mile west of, on signal foundation	726.84
McKees Rocks, Pittsburg and Lake Erie Bridge over mouth of Chartiers Creek, on bridge seat, north end of west abutment; aluminum tablet stamped "720 PITTSBURG"	719.480
Scully, in front of station; top of rail	747.4
McKees Rocks, 3.2 miles south of, on northeast abutment of railway bridge (railroad bench mark)	745.78
Pike, road crossing at station; top of rail	777
Thornburg, in front of station; top of rail	774
McKees Rocks, 5.2 miles south of, small bridge over Lewis Run, on coping stone at southeast corner; chiseled square	763.53
Lockton, on southwest wing wall of railroad bridge over Chartiers Creek, on coping stone; chiseled square	766.18
Carnegie, in front of station; top of rail	768.6
Carnegie, iron wagon bridge spanning Chartiers Creek at Main avenue, south end of southeast wing wall; aluminum tablet stamped "773 PITTSBURG"	772.836
Gleam station, in front of; top of south rail	802.9
Heidelberg, small arch bridge at station, on coping stone; railroad bench mark	791.97
Woodville, in front of station; top of rail	803.2
Bridgeville, Bridge No. 5 spanning Chartiers Creek, northeast wing wall of east abutment; railroad bench mark	801.32
Marshalsea, in front of; top of rail	851.3
Boyce, 3 miles south of, Bridge No. 9 spanning Chartiers Creek, on west end of north abutment; aluminum tablet stamped "857 PITTS"	856.205
Hill, road crossing at station; top of west rail	868.8
Vaneman, in front of station; top of west rail	922.9
Vaneman, Bridge No. 13, on west wing wall of north abutment; railroad bench mark	928.60
Canonsburg, iron road bridge over Chartiers Creek, Jefferson avenue, in east end of north abutment; aluminum tablet stamped "931 PITTS"	930.659

CARNEGIE, WEST ALONG PANHANDLE RAILROAD, TO M'DONALD.

Carnegie, 1.2 miles west of, Bridge No. 13; railroad bench mark	798.88
Rennerdale, in front of station; top of rail	855.5
Greggs, 600 feet west of, Bridge No. 19, on northeast coping stone; aluminum tablet stamped "893 PITTS"	892.402
Oakdale, road crossing at station; top of rail	905.9
McDonald, northeast wing wall of McDonald street iron bridge; aluminum tablet stamped "980 PITTS"	979.631

M'KEESPORT QUADRANGLE.

FINLEYVILLE, NORTHEAST ALONG BALTIMORE AND OHIO RAILROAD, TO THOMPSON
FLAG STATION.

Cochran Mills, southwest coping stone of stone-arch bridge; aluminum tablet stamped "884 PITTS"	882.546
Cochran Mills, road crossing at station; top of rail	894.3
Wallace, road crossing at station; top of rail	903.8
Bruce, 0.5 mile north of Bridge No. 90, on bridge seat; railroad bench mark	1,002.16
Willloch, iron highway bridge at station, on southeast wing wall; aluminum tablet stamped "926 PITTS"	925.060
Hayes, near station, south side of land pier of Baltimore and Ohio Railroad overhead bridge; railroad bench mark	760.49

HULTON, SOUTH ALONG PITTSBURG, BUFFALO AND LAKE ERIE RAILROAD, TO BESSEMER.

North Bessemer, 1 mile south of, north end of tunnel, on west side, third stone from bottom; aluminum tablet stamped "1023 PITTS"	1,022.321
Bessemer Bridge; bronze tablet stamped "759 PITTS"	759.492

SHARPSBURG QUADRANGLE.

	Feet.
CHESWICK, NORTH ALONG HIGHWAY AND PITTSBURG, BESSEMER AND LAKE ERIE RAILROAD, TO BARTLEY STATION.	
Grey's mill, iron bridge over wagon road, southwest bridge seat; aluminum tablet stamped "975 PITTS".....	974.406
Bartley, south side of door entrance to store of T. G. Kennedy, in foundation wall; aluminum tablet stamped "1171 PITTS".....	1,171.013

BARTLEY STATION, WEST ALONG HIGHWAY, TO VALENCIA. (DOUBLE LINE.)

Glade Mills, brick residence of J. W. Starr, in northeast foundation stone; aluminum tablet stamped "1087 PITTS".....	1,086.348
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VALENCIA, SOUTH ALONG PITTSBURG AND WESTERN (BALTIMORE AND OHIO) RAILROAD, TO SHARPSBURG.

Gibsonia, 1,200 feet south of station, east end of south abutment of small Bridge No. 336; aluminum tablet stamped "1031 PITTS".....	1,030.880
Wildwood, 1 mile north of, northeast bridge seat of small wooden bridge; copper bolt.....	959.124
Southwood, southwest bridge seat of Bridge No. 329; copper bolt (railroad bench mark).....	915.31
Bryant, 1 mile west of, northwest bridge seat of Bridge No. 327; copper bolt (railroad bench mark).....	902.64
Bryant, 1.5 miles south of station, Pittsburg and Western Bridge No. 323 over Pine Creek. southeast bridge seat; aluminum tablet stamped "853 PITTS".....	853.125
Elfinwild, 300 feet west of station, southeast bridge seat; copper bolt (railroad bench mark).....	833.29
Glenshaw, 300 feet north of, northeast bridge seat; copper bolt (railroad bench mark).....	789.12
Pine Creek, 0.1 mile east of station, railroad bridge spanning Pine Creek, northwest abutment; copper bolt (railroad bench mark).....	733.04

SEWICKLEY QUADRANGLE.

VALENCIA, NORTH ALONG PITTSBURG AND WESTERN RAILROAD, TO MARS, THENCE WEST ALONG HIGHWAY, VIA BRUSH VALLEY, TO FREEDOM.

Downieville, 1,400 feet north of station, on northwest bridge seat of small culvert bridge; bronze tablet stamped "1036 PITTS".....	1,035.341
Brush Creek, 3 miles east of, south side of road, northwest corner of J. F. Martin's barn, in foundation; bronze tablet stamped "1245 PITTS".....	1,245.234
Brush Creek, stone-arch bridge over Brush Creek, in southwest coping stone; bronze tablet stamped "1066 PITTS".....	1,066.096
Lovi, southeast corner of store and post-office, in foundation wall; bronze tablet stamped "1138 PITTS".....	1,137.771
Conway, 2 miles east of, iron highway bridge over Crows Run near Parks's store, on north end of southwest wing wall; aluminum tablet stamped "802 PITTS".....	801.792

BRYANT, WEST ALONG HIGHWAY, VIA PERRYVILLE, TO DIXMONT.

Emsworth, 3.7 miles east of, iron bridge over Lowrie Run, on northeast wing wall; bronze tablet stamped "881 PITTS".....	880.918
Dixmont, northeast corner of gas house; east sill of window.....	719.46
Dixmont, 75 feet east of entrance to hospital, in coping stone of retaining wall; bronze tablet stamped "727 PITTS".....	726.930

AT ECONOMY AND BEN AVON. (SET FROM PITTSBURG, FORT WAYNE AND CHICAGO RAILROAD LEVELS CORRECTED.)

Economy, 2,000 feet north of; northeast corner of north coping of Bridge No. 15.....	711.55
Economy, 2,000 feet north of, on second step from top of Bridge No. 15, on northwest wing wall; bronze tablet stamped "710 PITTS".....	710.119
Ben Avon, northwest corner Pittsburg, Fort Wayne and Chicago Railway station, in foundation wall; bronze tablet stamped "728 PITTS" (1.96 feet higher than railroad bench mark on Bridge No. 6).....	727.871

AT STOOPS FERRY. (SET FROM ARMY ENGINEERS' PRECISE-LEVEL LINE.)

Stoops Ferry station (opposite Sewickley), northwest abutment wall of Pittsburg and Lake Erie Railroad bridge over Narrows Run, on top of third course of stone below top; bronze tablet stamped "721 PITTS".....	721.266
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PRIMARY. LEVELING.

47

GREENSBURG QUADRANGLE.

MOSS SIDE (OLD LINE PENNSYLVANIA RAILROAD), ALONG RAILROAD, VIA STEWART STATION AND MURRAYSVILLE, TO EXPORT, THENCE ALONG HIGHWAY, VIA DELMONT AND HARVEYS FIVE POINTS, TO GREENSBURG.

	Feet.
Moss Side, at station, near northwest corner of fence of dwelling; stone monument (Pennsylvania Railroad bench mark)	763.111
Stewarts, 600 feet west of station, in capstone north end stone bridge over creek, 50 feet east of west end; copper bolt (Pennsylvania Railroad bench mark No. 80)	782.621
Saunders Junction, 0.84 mile west of, bridge over Turtle Creek, on southeast corner stone of abutment, west end of bridge; tip cut	817.91
Murrysville, 800 feet west of station, west end of bridge over Turtle Creek, south end of stone abutment, in top of next to top step; bronze tablet stamped "897 PITTS"	897.143
Export, 0.3 mile west of station, power house at Elizabeth coal tippie, on southwest corner of water table; tip cut	973.56
Export, 0.1 mile east of, in south end of coal building at tippie of Westmoreland Coal Company, 2.5 feet west of door, foundation of boiler room; aluminum tablet stamped "983 PITTS"	982.220
Delmont, at southeast corner of National Bank building, on northwest corner of cross streets, west side of corner post; top of water table	1,265.82
Harveys Five Points, frame house of A. B. Huff, 5 feet west of southeast corner of foundation; bronze tablet stamped "1327 PITTS"	1,327.279
Millers schoolhouse, on foundation, 10 feet east of southwest corner; square cut	1,289.67
Greensburg, east end of tunnel; Pennsylvania Railroad bench mark	1,085.875
Greensburg, 350 feet south of station, in water table of Monahan Hotel, 1 foot south of northwest corner; aluminum tablet stamped "1079 PITTS"	1,078.296

AT JEANNETTE AND IRWIN.

Grapeville, 300 feet east of station, brick house, base course in bay window; Pennsylvania Railroad bench mark No. 71	1,059.561
Jeannette, 120 feet east of station, south of track and west of overhead bridge, in angle of stone wall; aluminum tablet stamped "1040 PITTS"	1,039.87
Irwin, Youghiogheny Railroad bridge, west end of north back wall; Pennsylvania Railroad bench mark	879.107
Irwin, south side of station, in center of third capstone east of west end of west wing wall of highway bridge over street; aluminum tablet stamped "888 PITTS"	888.025

FREEPORT QUADRANGLE.

EDGECLIFF, ALONG HIGHWAY EAST, VIA M'LAUGHLINSVILLE (MERWIN), TO PAULTON.

Edgecliff, 400 feet south of station, in north abutment, east side of bridge over creek; bronze tablet stamped "764 PITTS 1899"	763.468
Edgecliff, 0.93 mile east of, in southeast corner of foundation of barn of F. E. Blair; point in projection stone	806.79
Merwin, in northeast corner of foundation of house of Philip Love; aluminum tablet stamped "1244 PITTS 1903"	1,244.127
Paulton, county bridge, in southwest wing wall; copper bolt	809.532
Paulton, county bridge, in northeast corner of west abutment; aluminum tablet stamped "810 PITTS 1903"	809.364

LEECHBURG, NORTHEAST ALONG HIGHWAY (KITANNING ROAD), TO ROSSTON.

Leechburg, wagon bridge spanning Kiskiminitas Creek, on northeast corner stone; bronze tablet stamped "789 PITTS"	788.625
Neale post-office, 1 mile south of, 50 feet south of coal drift on right side of road, in sewer stone; aluminum tablet stamped "984 PITTS"	984.044

LAWRENCE AND MERCER COUNTIES.

MERCER, NESHANNOCK, AND YOUNGSTOWN (OHIO-PA.) QUADRANGLES.

The elevations in the following list are based upon the 1903 adjustment datum, the connection being obtained through leveling on the Newcastle quadrangle from Enon and Homewood. The leveling was done in 1905 under the direction of Mr. A. C. Roberts, topographer, by Mr. J. H. Wetzel, levelman. The standard bench marks are stamped "ADJ 1903" in addition to the figures of elevation.

NESHANNOCK QUADRANGLE.

	Feet.
Edenburg, ^a 2 miles west of, on southeast pier of switch tower of Pittsburg and Lake Erie Railroad, and 2,000 feet west of Carbon brick works; bronze tablet stamped "801 ADJ 1903".....	801.135
NEWCASTLE, NORTH ALONG PENNSYLVANIA RAILROAD, TO NEW WILMINGTON, THENCE NORTHWEST ALONG SHARPSVILLE RAILROAD, TO SHARPSVILLE.	
Eastbrook, on southeast bridge seat of highway bridge; bronze tablet stamped "904 ADJ 1903".....	904.117
Wilmington Junction, 1,200 feet northeast of, on northwest bridge seat of railroad bridge over Neshannock River; bronze tablet stamped "931 ADJ 1903".....	931.253
New Wilmington, 1,800 feet east of, on northwest wing wall of iron highway bridge over Neshannock River; bronze tablet stamped "957 ADJ 1903".....	956.950
New Wilmington, street crossing at station; top of rail.....	970.8
Lyle, road crossing at station; top of rail.....	1,010.9
Carbon, road crossing at station; top of rail.....	1,040.7
Bethel, 700 feet east of, northwest wing wall of iron highway bridge; bronze tablet stamped "1071 ADJ 1903".....	1,070.570
Neshannock, road crossing at station; top of rail.....	1,101.8
Oakland, road crossing at station; top of rail.....	1,129.6
Hermitage, road crossing at station; top of rail.....	1,096.4
Hermitage, on stone door step at entrance to school; aluminum tablet stamped "1099 ADJ 1903".....	1,099.130

NEW WILMINGTON, NORTHEAST, ALONG HIGHWAY, TO MERCER, THENCE WEST TO HERMITAGE.

Mercer, 3 miles southwest of, in northeast corner of Shannon's residence; aluminum tablet stamped "1316 ADJ 1903".....	1,315.837
Charlestown (Hill post-office), primary traverse station No. 1, on south side of street, at intersection of streets; aluminum tablet stamped "1263 ADJ 1903".....	1,262.696

NEWCASTLE, NORTHWEST ALONG PENNSYLVANIA RAILROAD, TO WHEATLAND.

Newcastle, north wing wall of west abutment of Washington Street Bridge; aluminum tablet stamped "808 PITTSBURG 1901".....	807.712
Newcastle, southeast abutment of small culvert near yard limit; railroad bench mark.....	805.77
Newcastle, 4 miles north of, iron wagon bridge known as Harbor Bridge, northwest corner stone of bridge seat; bronze tablet stamped "807 ADJ 1903".....	806.733
Nashua Junction, on southwest abutment of small railroad culvert; bronze tablet stamped "810 ADJ 1903".....	809.655
Pulaski, on southwest abutment of iron highway bridge; bronze tablet stamped "828 ADJ 1903".....	827.678
West Middlesex, in northwest wing wall of iron highway bridge; bronze tablet stamped "841 ADJ 1903".....	841.080

YOUNGSTOWN QUADRANGLE.

WHEATLAND, NORTH ALONG PENNSYLVANIA RAILROAD, TO SHARPSVILLE.

Wheatland, 0.25 mile west of, on southeast bridge seat of iron highway bridge over Shenango River; bronze tablet stamped "842 ADJ 1903".....	841.747
South Sharon, in front of station; top of rail.....	852.4
Sharon, near high school building, on northeast abutment of iron highway bridge over Shenango River; bronze tablet stamped "856 ADJ 1903".....	855.921

MERCER QUADRANGLE.

AT MERCER (BY CIRCUIT NEW WILMINGTON TO HERMITAGE).

Mercer, on northeast corner of court-house steps; aluminum tablet stamped "1277 ADJ 1903".....	1,276.930
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^a Bench mark set from Baltimore and Ohio Railroad bench mark No. 368 (subtracting 0.091 foot from railroad company's elevation).

BEAVER AND LAWRENCE COUNTIES.

BEAVER AND NEWCASTLE QUADRANGLES.

The elevations in the following list are based upon an aluminum tablet in the foundation of the Seventh Avenue Hotel, Pittsburg, the elevation of which is now accepted as 738.384 feet above mean sea level. The initial points upon which this work depends are various bench marks of precise-level lines run by the Pennsylvania Railroad Company and the Corps of Engineers, U. S. Army. The elevations accepted for these are the result of the latest adjustment.

The leveling was done in 1901 under the direction of Mr. Frank Sutton, topographer, by Mr. Ira M. Flocker, levelman, except that at Freedom, which was done in 1905 under Mr. A. C. Roberts, topographer, by Mr. B. J. Green, levelman. The standard bench marks are stamped with the letters "PITTSBURG" in addition to the figures of elevation.

NEWCASTLE QUADRANGLE.

NEW GALILEE, SOUTHWEST ALONG RAILROAD, TO DARLINGTON AND RETURN.

	Feet.
New Galilee, northeast corner of east back wall of Bridge No. 42; bench mark No. 2116 (Pittsburg, Fort Wayne and Chicago Railroad precise levels).....	959.71
New Galilee, 1 mile southwest of, Pittsburg, Lisbon and Western Railroad bridge over Little Beaver; northeast corner of south abutment.....	931.37
Darlington, at intersection of Market and Second streets, in front of Darlington Hotel, on top of stone; bronze tablet stamped "912.5 PITTSBURG 1901".....	912.222

AT BEAVER FALLS.

Beaver Falls; bench mark No. 1596 (Pittsburg, Fort Wayne and Chicago Railroad precise levels).....	789.366
Beaver Falls, Pittsburg, Fort Wayne and Chicago Railroad bridge over Eleventh street, west end of south abutment, in coping stone; aluminum tablet stamped "789.8 PITTSBURG 1901".....	789.479

ENON, NORTH ALONG HIGHWAY, VIA MOUNT JACKSON, TO NEWCASTLE, THENCE SOUTHEAST ALONG PITTSBURG AND LAKE ERIE RAILROAD VIA WAMPUM, TO HOMEWOOD.

Enon; bench mark No. 2385, Pittsburg, Fort Wayne and Chicago Railroad precise levels....	995.635
Enon, 400 feet south of railroad track on Main street, in top of county line stone; bronze tablet stamped "1013.4 PITTSBURG 1901".....	1,013.187
Mount Jackson, at postoffice, 60 feet north of street intersection, in side of square stone hitching post; bronze tablet stamped "1165 PITTSBURG".....	1,164.787
Mahoningtown, highway bridge over the Mahoning, on wing wall of south abutment (nearest Pittsburg, Youngstown and Ashtabula Railroad track); seat cut in corner of.....	786.0
Mahoningtown, in front of station, Pittsburg and Lake Erie southbound track; north rail..	779.6
Newcastle, in front of station; top of rail.....	806
Wampum, in front of station; top of rail.....	803.0
Wampum, 500 feet south of station, northeast corner of arch bridge over Wampum Run, on coping stone; aluminum tablet stamped "804.7 PITTSBURG".....	804.438
Homewood; bench mark No. 1840 (Pittsburg, Fort Wayne and Chicago Railroad precise levels)	949.972

BEAVER QUADRANGLE.

BEAVER, WEST ALONG HIGHWAYS, VIA DAWSON TRIANGULATION STATION, TO BLACK HAWK, THENCE SOUTH, VIA FAIRVIEW, TO INDUSTRY.

Beaver, Pittsburg and Lake Erie Railroad bridge over Ohio River, land pier on right shore of river, 3 inches below top of nineteenth course of stone from top of pier and 3 feet east of west side of pier; seat on southwest end of land pier marked thus: "U. S. _B. M." (United States Engineers' bench mark "25 C").....	686.444
West Bridgewater, Cleveland and Pittsburg Railroad, west-bound track at station; top of north rail.....	708.7
Beaver, in foundation stone east of entrance to court-house; aluminum tablet stamped "798 PITTSBURG".....	797.654

	Feet.
Black Hawk, at crossroads, at corner of barn, on large rock; aluminum tablet stamped "1169.3 PITTSBURG".....	1,169.013
Industry, Cleveland and Pittsburg Railroad Bridge No. 117 over State road, south end of west abutment, in end of second stone from top; bronze tablet stamped "696 PITTSBURG"...	696.060
Industry, 600 feet above landing, 400 feet above Safe Harbor ferry landing, on left shore of river, on large rock under bank; seat cut (United States Engineers' bench mark "32 B")..	673.344
INDUSTRY, SOUTH ALONG HIGHWAYS, VIA HOOKSTOWN, TO KENDALL, THENCE EAST TO PATTON'S BRIDGE, THENCE NORTHEAST, VIA NEW SHEFFIELD, TO WOODLAWN.	
Hookstown, stone bridge on Washington road over small stream, on southwest corner (corner by the Robertson House); aluminum tablet stamped "988.6 PITTSBURG".....	988.220
Kendall, 1 mile east of (about 5 miles southeast of Hookstown), on Big Traverse Creek, red brick house of James Buchanan, in foundation stone; aluminum tablet stamped "1069.7 PITTSBURG".....	1,069.360
Clinton, 4 miles northwest of, 6 miles northeast of Frankfort Springs, in south end of west abutment of Patton's bridge over Raccoon Creek; aluminum tablet stamped "848".....	847.022
New Sheffield, in northeast corner of Johnston's mill; aluminum tablet stamped "943.7 PITTSBURG".....	943.666
AT FREEDOM (SET FROM PITTSBURG, FORT WAYNE AND CHICAGO RAILROAD LEVELS, CORRECTED).	
Freedom, northwest corner east bridge seat of Bridge No. 20½; railroad bench mark.....	703.445
Freedom, at northeast corner of railroad bridge over Eighth street, on wing wall; aluminum tablet stamped "701 PITTS".....	701.049

ALLEGHENY, BEAVER, AND WASHINGTON COUNTIES.

BURGETTSTOWN, CLAYSVILLE, AND STEUBENVILLE QUADRANGLES.

The elevations in the following list are based upon work in adjoining quadrangles of West Virginia and Pennsylvania, corrected in accordance with the 1903 adjustment of the precise level net.

The leveling was done mostly in 1904 under direction of Mr. W. T. Griswold, topographer, but a portion of the work on Claysville quadrangle was done in 1905 under Mr. M. J. Munn, assistant topographer, all by Mr. B. J. Green, levelman. Standard bench marks set in 1904 and 1905 in this area are stamped with the legend "ADJ 1903" and "ADJ" respectively, while those set previously on the Claysville and Steubenville quadrangles are stamped respectively "PITTS" or "STBNVL" in addition to figures of elevation.

BURGETTSTOWN QUADRANGLE.

M'DONALD, ALONG PENNSYLVANIA RAILROAD, TO HANLIN.

	Feet.
Primrose, 500 feet west of station, on south end of east abutment of Bridge No. 24; chiseled square (railroad bench mark).....	1,024.10
Midway, on north end of east abutment of Bridge No. 25 over county road at west end of station; aluminum tablet stamped "1111 ADJ 1903".....	1,110.666
Bulger, 0.3 mile west of, on catch-basin at northeast end of tunnel; chiseled square.....	1,156.64
Burgettstown, on south foundation wall of Burgettstown National Bank building; aluminum tablet stamped "1000 ADJ 1903".....	999.180
Hanlin, on coping at northeast corner of Bridge No. 32 over county road and 200 feet east of station; bronze tablet stamped "942 ADJ 1903".....	942.181

BURGETTSTOWN, NORTH ALONG HIGHWAY, VIA MURDOCKSVILLE, TO PATTON'S BRIDGE.

Burgettstown, 2.6 miles northeast of, in south end of east abutment of iron bridge over Raccoon Creek, at forks to west; chiseled square.....	946.63
Bavington, 0.2 mile north of, on east end of south abutment of iron bridge over Raccoon Creek; aluminum tablet stamped "921 ADJ 1903".....	920.874
Murdocksville, on north end of east abutment of iron bridge over Raccoon Creek; bronze tablet stamped "877 ADJ 1903".....	877.083
Murdocksville, 2.5 miles north of, on south end of west abutment of iron bridge over Big Traverse Creek; chiseled square.....	845.47

a The adjustment of railroad levels between Pittsburg and Steubenville involves the Geological Survey leveling from Pittsburg to Burgettstown.

PRIMARY LEVELING.

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MURDOCKSVILLE, EAST ALONG HIGHWAY, TO CLINTON, THENCE NORTHWEST TO PATTON'S BRIDGE.

Feet.

Clinton, on foundation wall at southeast corner of J. E. McCullough's store and post-office; bronze tablet stamped "1234 ADJ 1903" 1,233.882

MURDOCKSVILLE, WEST ALONG HIGHWAY, TO COMETTSBURG.

Frankfort, on north foundation wall of brick dwelling of Andrew Vance's heirs, on west side of street at south end of town; aluminum tablet stamped "1186 ADJ 1903" 1,185.604
Frankfort, 2.3 miles west of; spot on abutment at northwest corner of covered bridge at crossroads south of pump station 987.074
Comettsburg, in foundation wall at southeast corner of Freshwater's house; bronze tablet stamped "1150 STBNVL" 1,149.920

FRANKFORT, SOUTH-SOUTHEAST ALONG HIGHWAY, TO BURGETTSTOWN.

Florence, on east foundation wall of O. K. Simpson's dwelling on south side of street opposite road to Frankfort; aluminum tablet stamped "1282 ADJ 1903" 1,282.534

BURGETTSTOWN, SOUTH ALONG HIGHWAY, TO NEAR CROSS CREEK VILLAGE, THENCE SOUTHEAST, VIA HICKORY, TO CANONSBURG.

Burgettstown, 3.5 miles south of, 1.5 miles east of Cross Creek village, in wing wall at northeast corner of covered bridge over Raccoon Creek; aluminum tablet stamped "1037 ADJ 1903" 1,036.776
Hickory, on south wall at southwest corner of J. M. Griffith's dwelling; aluminum tablet stamped "1303 ADJ 1903" 1,302.800
Westland, on east end of south abutment of railroad bridge, 300 feet north of Pittsburg Coal Company's Midland mine No. 3 tipple; bronze tablet stamped "1024 ADJ 1903" 1,024.795

HICKORY, WEST ALONG WABASH RAILROAD, TO NEAR INDEPENDENCE.

Hickory, 2.2 miles southwest of, on east end of north abutment of sewer 100 feet west of tunnel; chiseled square 1,170.584
Woodrow, 0.6 mile east of, in south end of west abutment of bridge over county road; bronze tablet stamped "1134 ADJ 1903" 1,134.622
Woodrow, 1.8 miles west of, on bridge seat of bridge over county road, just south of second covered bridge at crossroads; railroad bench mark 1,046.98
Woodrow, 3.8 miles west of, 2 miles north of West Middleton, on bridge seat at southwest corner of bridge over county road; railroad bench mark 977.46
Patterson Mills, 1 mile south of, on south end of west abutment of large iron bridge over Cross Creek; railroad bench mark 912.966
Patterson Mills, 1 mile south of, on north end of east abutment of railroad bridge over Cross Creek, just west of road crossing; bronze tablet stamped "905 ADJ 1903" 904.828
Twin tunnels, second bridge west of; railroad bench mark on south end of west abutment.. 826.732

STUEBENVILLE QUADRANGLE.

Independence, 2.5 miles northwest of, 0.1 mile east of State line in southeast corner of county bridge over Cross Creek; aluminum tablet stamped "784 STBNVL" 784.024

CLAYSVILLE QUADRANGLE.

VALLEY GROVE, W. VA., NORTHWEST ALONG BALTIMORE AND OHIO RAILROAD IN PENNSYLVANIA, VIA COON ISLAND AND CROTHERS, TO WASHINGTON.

Valley Grove, 3 miles northeast of, State line (W. Va.-Pa.) monument, at the base of northeast side of Baltimore and Ohio Railroad Bridge No. 170 1,156.280
Coon Island (Vienna post-office), in front of station, railroad Bridge No. 166, in northeast capstone; bronze tablet stamped "1000 PITTS" 1,000.192
Claysville, public schoolhouse, at southeast corner, in foundation wall; aluminum tablet stamped "1127 ADJ 1903" 1,126.972
Tunnel No. 4, at east end of; cut on ledge of rock 1,126.79
Crothers, 0.5 mile southeast of, railroad Bridge No. 160, Pittsburg division, east abutment, set in capstone; bronze tablet stamped "1011 PITTS" 1,010.798
Finney, 120 feet north of station, southwest corner of E. T. Boone's dwelling, in foundation wall; bronze tablet stamped "1190 ADJ 1903" 1,189.809

PRYOR, SOUTH ALONG HIGHWAY, VIA WEST MIDDLETOWN AND TAYLORSTOWN, TO CROTHERS.

	Feet.
West Middleton, in foundation wall at northeast corner of M. M. Hemphill's brick dwelling; bronze tablet stamped "1332 ADJ 1903"	1,332.105
West Middletown, 3.7 miles south of, on large rock on east side of road, 360 feet south of covered bridge over Brush Run; bronze tablet stamped "903 ADJ 1903." (On a double-spur line 0.6 mile)	903.410
Buffalo, 2.7 miles southwest of, on abutment at southwest corner of covered bridge over Brush Run on Buffalo and Taylortown road; bronze tablet stamped "1028 ADJ 1903"	1,027.910
Buffalo, in foundation wall at southeast corner of H. W. Lecche's dwelling, on west side of street opposite post-office and store; bronze tablet stamped "1307 ADJ 1903." (On a double-spur line from preceding)	1,307.752
Taylorstown, 1.3 miles north of, east of large steel oil tank at northwest corner of large iron bridge over Buffalo Creek, on bridge seat; bronze tablet stamped "975 ADJ 1903"	975.814
Taylorstown, 0.6 mile northwest of, east of three corners on abutment at extreme northwest corner of large iron bridge over Buffalo Creek; chiseled square	981.73

COON ISLAND (VIENNA), NORTH ALONG PUBLIC ROAD, TO DUTCH FORK SCHOOLHOUSE
• AND RETURN.

Coon Island, 1.1 miles northwest of, on abutment at southwest corner of iron bridge over Dutch Fork, just south of forks to west; chiseled square	978.02
Budaville, 0.3 mile southwest of, north side of road fork to east from schoolhouse situated west of main road, on northwest corner of iron bridge over Dutch Fork; bronze tablet stamped "917 ADJ 1903"	917.3

CLAYSVILLE, SOUTH ALONG HIGHWAY, TO BURDETTE.

Fargo, 0.5 mile north of, on east side of road just north of point opposite road fork to west, on culvert abutment; bronze tablet stamped "1466 ADJ"	1,465.680
East Finley, 2 miles north of, west of three corners, on west abutment of covered bridge over Templeton Run; bronze tablet stamped "1092 ADJ"	1,092.407
Good Intent, 2.8 miles southeast of, in face of sandstone ledge on west of road, west side of Templeton Run; bronze tablet stamped "1037 ADJ"	1,037.377

FROM POINT 4.5 MILES SOUTH OF FARGO, WEST TO GOOD INTENT, AND RETURN.

Good Intent, southeast corner of foundation wall of school building; bronze tablet stamped "1052 ADJ"	1,052.228
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ENO, NORTHEAST ALONG HIGHWAY, TO PROSPERITY, THENCE EAST TO AMITY.

Old Concord, on step of entrance to church; bronze tablet stamped "1118 ADJ"	1,117.920
Prosperity, 1 mile southeast of, 0.1 mile south of three corners, on abutment at northeast corner of covered bridge; bronze tablet stamped "993 ADJ"	992.984

WEST WASHINGTON, SOUTH ALONG HIGHWAY TO PROSPERITY.

Lagonda, on east wall of brick schoolhouse at crossroads; bronze tablet stamped "1076 ADJ 1903"	1,075.986
Van Buren, in foundation wall at southeast corner of Bethel Church; bronze tablet stamped "1325 ADJ 1903"	1,325.610

GREENE AND WASHINGTON COUNTIES.

AMITY, BLACKSVILLE, ROGERSVILLE, AND WAYNESBURG QUADRANGLES.

The elevations in the following list are based upon an aluminum tablet in the foundation of the Seventh Avenue Hotel, Pittsburg, stamped "738 PITTSBURG 1899," the elevation of which is now accepted as 738.384 feet above mean sea level. They agree in datum with the latest adjustment of precise leveling.

The leveling was done as follows: On the Waynesburg quadrangle, in 1900, under the direction of Mr. Frank Sutton, topographer, by Mr. J. H. Wetzel, levelman; on the Blacksville quadrangle, in 1901, under Mr. A. H. Bumstead, topographer, by Mr. M. P. Page, levelman; on the Rogersville quadrangle, mostly in 1902, under Mr. R. D. Cummin, topographer, by Mr. Charles Hartman, jr., levelman; and on the Amity quadrangle, partly in 1901, under Mr. A. H. Bumstead, topographer, by Messrs. M. P. Page and H. Wood, levelmen; partly

in 1902, under Mr. R. D. Cummin, topographer, by Mr. Charles Hartman, jr., levelman; partly in 1903, under Mr. Sutton, by Mr. Wetzel, and partly in 1904, under Mr. W. T. Griswold, topographer, by Mr. J. B. Green, levelman. The final work on this and Rogersville quadrangle was that extended from Claysville quadrangle, in 1905, under Mr. M. J. Munn, assistant topographer, by Mr. Green. The standard bench marks, except that at Mount Morris, are stamped "PITTS" or "PITTSBURG" in addition to figures of elevation, which, being taken from unadjusted field values, are in many cases incorrect.

WAYNESBURG QUADRANGLE.

CARMICHAELS, WEST ALONG HIGHWAY, TO KHEDIVE, THENCE NORTH TO CLARKSVILLE, THENCE WEST TO RUFF CREEK, THENCE SOUTH TO WAYNESBURG, THENCE SOUTHEAST TO POINT MARION.

	Feet.
Khediye, in west end of residence of Mrs. Sarah Yoder, on foundation stone under bay window; aluminum tablet stamped "1013 PITTSBURG"	1,013.255
Clarks ville, 1 mile south of, covered bridge over Tenmile Creek, northwest wing wall, on coping stone (next to bridge); bronze tablet stamped "814 PITTSBURG"	814.167
Ruff Creek, northeast corner of wooden dwelling house of John Breston, in upper foundation stone; bronze tablet stamped "999 PITTSBURG"	997.697
Waynesburg, northwest corner of stone court-house veranda; bronze tablet stamped "1035 PITTSBURG"	1,034.446
Newton, on northeast wing wall of iron bridge, 2 coping stones from bridge; bronze tablet stamped "1010 PITTSBURG"	1,009.525
Davistown, in ledge of rocks at end of middle (wooden) bridge, northeast wing wall; bronze tablet stamped "932 PITTSBURG"	932.174
Davistown, 1.5 miles southeast of, iron bridge over Dunkard Creek, on northwest wing wall; chiseled square	871.87

WAYNESBURG, WEST ALONG PUBLIC ROADS, TO ROGERSVILLE.

Waynesburg, 3 miles west of highway bridge on Rogersville road, on southeast abutment; chiseled square	952.78
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BLACKSVILLE QUADRANGLE.

CORE, W. VA., NORTHEAST ALONG HIGHWAY, TO MOUNT MORRIS.

Mount Morris, 150 feet west of mill, in northwest abutment of bridge over Robinson Run, 8 feet from north end of bridge, 10 feet from center of road; bronze tablet stamped "904 GRATON"	903.840
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AMITY QUADRANGLE.

BEALLSVILLE, NORTHWEST ALONG PUBLIC ROADS, VIA SCENERY HILL AND VANCEVILLE, TO EIGHTYFOUR.

Beallsville 50 feet southeast of center of crossroads, Greenfield's Hotel, 30 feet west of corner of porch, in middle step; bronze tablet stamped "1137 PITTSBURG"	1,135.970
Scenery Hill, Hillsboro triangulation station, at top of; bronze tablet stamped "1467 PITTSBURG"	1,466.853
Vanceville, 1.7 miles northwest of, bridge over Pigeon Creek, 235 feet south of center of crossroads, set in north end of southwest abutment; bronze tablet stamped "1044 PITTSBURG"	1,042.454

WASHINGTON, NORTHEAST ALONG BALTIMORE AND OHIO RAILROAD, VIA EIGHTYFOUR, TO FINLEYVILLE STATION.

Washington, Cherry and Main streets, southeastern end of boundary wall of court-house, in south side; bronze tablet stamped "1156 PITTS"	1,156.064
Washington, 3.5 miles east of, Bridge No. 153, northwest corner of east abutment; chisel-mark	1,112.434
Zediker, in front of station; top of rail	1,034.4
Eightyfour, post-office, 7 miles east of Washington, Bridge No. 140, on southwest wing wall; bronze tablet stamped "992 PITTS"	991.754
Gilkeson, north end of platform; bench mark	1,092.58
Thomas station, southeast end of platform; bench mark	1,135.60
Venetia post-office (Anderson station), northwest bridge seat of iron wagon bridge at road crossing; aluminum tablet stamped "986 PITTS"	985.073
Hackett, road crossing; top of rail	954.4

WASHINGTON, SOUTH ALONG WAYNESBURG AND WASHINGTON RAILROAD AND PUBLIC
ROADS, VIA AMITY, TO RUFF CREEK.

Feet.

Amity, post-office and store of F. F. Iams & Son, in stone doorstep, on north side of door, east
side of road; aluminum tablet stamped "1204 PITTSBURG" 1,200.898

ROGERSVILLE QUADRANGLE.

ROGERSVILLE, NORTH TO NINEVEH, THENCE WEST ALONG PUBLIC ROADS, VIA TIME,
ENO, AND SIMPSON STORE, TO BURDETTE.

Rogersville, highway bridge over Tenmile Creek, in capstone of southwest abutment; aluminum
tablet stamped "978 PITTS" 977.337
 Nineveh, entrance to Van Olive Hotel, in southeast top of foundation wall; aluminum tablet
stamped "1023 PITTS" 1,022.180
 Eno, on top step of entrance to church; chiseled square 997.59
 Eno, 1.5 miles west of, on northwest abutment of iron bridge over Enslow Fork Wheeling
Creek; chiseled square 963.20
 Burdette, Braden's mill (formerly Clansen's mill), highway bridge over Enslow Fork Wheel-
ing Creek, in capstone of southeast abutment; bronze tablet stamped "918 PITTS" 917.211

BRADEN'S MILL, SOUTH ALONG PUBLIC ROADS, VIA RYERSON STATION AND ALEPPO,
TO DEEP VALLEY.

McCracken, 0.5 mile north of, near Earnests residence, on abutment of covered bridge over
South Fork Dunkard Fork Wheeling Creek; chiseled square 974.93
 Aleppo post-office (Bridgeport), in southwest abutment of highway bridge over South Fork
Dunkard Fork Wheeling Creek; bronze tablet stamped "1060 PITTS" 1,059.588
 Morford post-office, 4.4 miles south of, at forks of road leading to Bellton, New Freeport, and
Aleppo, covered bridge over Wagonroad Run, on southwest abutment; chiseled square 1,004.67

BELLTON, W. VA., EAST ALONG PUBLIC ROADS, VIA DEEP VALLEY AND NEW FREEPORT,
TO PINEBANK, THENCE NORTH TO ROGERSVILLE.

Deep Valley, public bridge over Pennsylvania Fork Fish Creek, on northeast abutment; chis-
eled square 1,015.81
 New Freeport, 2 miles west of, public bridge over Laurel Run, near Methodist Church, on
southeast abutment; chiseled square 1,031.17
 New Freeport, bridge over Pennsylvania Fork Fish Creek, in southwest abutment; bronze
tablet stamped "1062 PITTS" 1,062.006
 Pinebank, highway bridge over Toms Run, in southeast abutment; bronze tablet stamped
"1006 PITTS" 1,005.454

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