# PRIMARY TRAVERSE.

## Fords Ferry, Golconda, Kuttawa, Providence, and Smithland quadrangles.

#### CRITTENDEN AND LIVINGSTON COUNTIES.

The following geographic positions on Henderson astronomic datum were determined by J. H. Wilson in 1915, and are based upon United States Army Engineers' positions at Bay City and Elizabethtown, and United States Geological Survey positions previously determined by primary traverse, described in Bulletins 310 and 440.

#### FORDS FERRY QUADRANGLE.

#### Along highways through center of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
	o / //	3 / //	Feet.
T road south, 25 feet southwest to two mail boxes Repton, 2 miles southwest of, 30 feet from road forks, railroad	37 22 25.9	88 00 11.2	2,086
crossing	37 22 15.6	88 02 00.0	8,843
Repton, 3 miles southwest of, railroad crossing	37 21 34.3	88 02 44.3	5,505
Marion, 2 miles northeast of, at bridge "J. E. 72-5", railroad crossing		88 03 11.2	2,663
Marion, <sup>3</sup> / <sub>4</sub> mile northeast of railroad crossing Marion, in northeast corner of Crittenden County courthouse yard;	37 20 21.8	88 04 04.3	7, 197
iron post stamped "Prim. Trav. Sta. No. 1, 1915"	37 20 04.2	88 04 49.4	4,055
Marion, 1.40 miles west of, 25 feet northeast of wire fence, T road Marion, 2.10 miles west of, 45 feet northwest of mail box No. 2, road	37 19 48.2	88 06 21.2	7, 587
forks	37 19 47.7	88 07 06.5	3,655
60, road forks. Marion, 4.70 miles west of, 18 feet west of west end of bridge over	37 20 51.5	88 08 22.8	8,920
Hurricane Creek, at road leading up to Mary Bell mine; road			
forks.	37 20 48.9	88 09 19.3	4,573
Hurricane Creek, 0.87 mile west of, at top of ridge, road forks	37 20 45.6	88 10 15.8	4,575
Hurricane Creck, 1.90 miles west of, at white house, road forks	37 21 10.2	88 11 16.0	5,454
Sheridan road forks at store	$37 \ 21 \ 13. 1$	88 11 57.9	3,400
Sheridan, 1 mile northwest of, just east of Deer Creek church, at G. D. Humphrey's mail box, road forks	37 21 51.3	88 12 44.8	5,410
Sheridan, 1.50 miles northwest of, at sign, "Posted by R. L. Wil-			
liams," on tree road forks. Sullingers schoolhouse, about 900 feet north of, 415 feet north of T	37 22 00.0	88 13 16.9	2,737
road east, 20 feet east of intersection of Salem-Tolu and Lola- Tolu roads; iron post stamped "Prim. Trav. Sta. No. 2, 1915"	37 22 08.7	88 14 23.0	5,404

Along highways near Ohio River.

			1
Wooden bridge over creek, 100 feet south of, road north Elm tree, at fence corner, 15 feet north of, center of road at gate in	37 26 29.7	88 13 34.7	······
fence.	37 26 29.7	88 12 29.7	5, 247
Sycamore tree, on south side of road, 25 feet east of, at crossing of small creek, center of road	37 26 36.7	88 11 18.3	5,803
John Shaffer's residence, about 300 feet west of, 45 feet east of locust tree with board showing high-water mark of Apr. 5, 1913, road			
forks	37 26 44.9	88 10 32.1	3, 817
Second-class crossroads at top of hill, oak tree in center of triangle. Casad post office, northeast corner of porch of J. E. Phillips & Co.'s	37 26 43.1	88 09 49.4	3,444
store	37 26 48.4	88 09 04.0	3,707
Casad post office, 0.80 mile east of, T road west Casad post office, 1.40 miles northeast of, 20 feet north of crocked	37 26 57.4	88 08 14.0	4, 128
walnut tree on east side of road, T road west Fords Ferry, 70 feet south of T road east, on east side of north and	37 27 20.4	88 07 47.2	3, 186
south road, 2 feet west of northwest corner of post-office yard;			· · ·
iron post stamped "Prim. Trav. Sta. No. 8, 1915"	37 28 01.6	88 06 34.5	7,192
		3	91

## FORDS FERRY QUADRANGLE-Continued.

Along highways near Ohio River-Continued.

Station.	Latitude.	Longitude	Distance between stations.
Fords Ferry, 0.80 mile east of, 700 feet northwest of W. L. Clements residence, 50 feet south of river bank and on the west side of a small creek, large sweet-gum tree; nail in blaze on west side and 3 feet above ground Weston, 0.40 mile west of, prominent pointed rock, on rocky point, rock is black around base and has a scratch mark on river side	。, , ,, 37 28 05.0 37 28 18.2	。, , ,, 88 05 40.9 88 04 43.8	Feet. 4,331 4,797
Weston, locust tree at center of cross streets (described before as an elm tree, but there is no question but that the locust tree was located).	37 28 27.7	88 04 18.9	2, 229

Along highways near west border of quadrangle.

	1		1
Tolu, on north side of east and west street, 7 feet north and 12 feet west of northwest corner of Southern Methodist Church, Farm- ers & Merchants Bank on northeast corner; iron post stamped "Prim. Trav. Sta. No. 7, 1915''.	37 26 08.8	88 14 42.6	
This fills such the state of the set of the set of the set	07 20 00.0		
Tolu, 0.90 mile south of, center of triangle at road forks		88 14 42.1	4,683
Tolu, 3.40 miles south of, road forks at cemetery	37 23 28.1	88 14 58.9	
Liberty Grove Church, about 300 feet southwest of, just north of			
house. road forks.	37 21 18.9	88 14 14.8	
Thouse, Toat lorks.	31 21 13.9	00 14 14.0	• • • • • • • • • • •
Liberty Grove Church, 1.20 miles south of, at A. L. Cooper's mail box,			
road forks	37 20 15.7	88 14 14.5	6,390
Pleasant Grove schoolhouse, 400 feet north of, 700 feet south of		-	.,
crossroads at foot of hill, on hillside, crossroads	37 19 47.6	88 14 01.2	3,040
	37 19 47.0	00 14 01.2	3,040
Pleasant Grove schoolhouse, 1.70 miles south of, five mail boxes			
on wheel, center of crossroads	37 18 21.6	88 13 54.7	8,714
Salem, 1 mile northeast of, 20 feet southeast of "American Lady			· ·
Shoe" sign on oak tree, road forks	37 16 45.0	88 14 13.7	9,887
	57 10 35.0	00 14 10.1	5,001
Salem, at northwest corner of crossroads, on bank; iron post			
stamped "Prim. Trav. Sta. No. 3, 1915"	37 15 57.8	88 14 35.6	5,098
Salem, 0.86 mile south of, 20 feet southwest to telephone pole,			l '
road forks.	37 15 32.1	88 13 49.8	4,532
1044 101AD	01 10 02.1	00 10 15.0	1,002
			1

Along highways near south border of quadrangle.

J. I. Clements residence, just south of T road forks Enon, 2 miles west of, four mail boxes on revolving frame at south-	37 15 04.2	88 07 33.4	
west corner of crossroads; center of crossroads	37 15 01.1	88 01 02.9	•••••

Magnetic declination on north border of quadrangle 4° 20' E.; on south border, 4° 26' E.; on east border, 4° 27' E.; on west border, 4° 42' E.; in center, 4° 35' E.

#### GOLCONDA QUADRANGLE.

Along highways through center of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
<ul> <li>Golconda (in Illinois), in northwest corner of courthouse yard, and 71 feet northwest of U. S. A. Engineers' bench mark, in center of triangle formed by supports of city fire bell; iron post stamped "Prim. Trav. Sta. No. 10, 1913 llinois".</li> <li>Comptons Landing, in fence line, on north side of road, and at edge of river bank; flagstaff.</li> <li>Comptons Landing, 0.68 mile east of, crossroads.</li> <li>Comptons Landing, 140 miles northeast of, at road leading to Middle Landing, road forks.</li> <li>Berry Ferry, 60 feet south of southeast corner of post-office porch, center of road forks.</li> <li>Berry Ferry, 0.90 mile northeast of, 180 feet south of small iron bridge, 25 feet north and 15 feet east of mail box, road orks.</li> <li>Berry Ferry, 2.70 miles northeast of, 180 feet southeast of right-angle turn in road, at road leading through gate to edge of river, just west of house, T road southwest.</li> </ul>	o       ,       ,         37       22       05.0         37       21       19.0         37       21       14.1         37       21       49.5         37       22       20.4         37       23       02.7         37       23       31.5         37       24       27.4	88 29 02.8 88 28 21.6 88 27 37.5 88 27 31.4 88 27 32.0 88 27 06.5 88 27 08.4 88 26 23.1	3, 600 3, 610 3, 110 4, 737 2, 914

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# GOLCONDA QUADRANGLE-Continued.

# Along highways through center of quadrangle-Continued.

Station.	Latitude.	Longitude.	Distance between stations.
McElroy Landing, 1.30 miles southwest of, 180 feet east of second- class road at gate, just east of small pond, west end of small iron bridge. McElroy Landing, about 200 feet south of, center of road at gate (there is no road to landing, only a path through cornfield) McElroy Landing, 0.50 mile southeast of, center of iron bridge over small creak. Carrsville, at southeast corner of crossroads at Albert Boyd's store, first cross streets south of river and post office; iron post stamped "Prim. Trav. Sta. No. 6, 1915" Carrsville, 1.34 miles southeast of, 270 feet west of house on hillside on north side of road, at second-classroad, gate Carrsville, 2.14 miles southeast of, just west of creek, road forks Carrsville, 2.14 miles southeast of, just west of creek, road forks Carrsville, 2.14 miles southeast of, just west of orce west of old mine at top of ridge, between white oak tree on north side and gate on south side of road, center of road Carrsville, 2.90 miles southeast of, 25 feet northeast of corner of picket fence, 30 feet northwest of intersection of wirefence and railfence, Troad south Crawford schoolhouse, 0.90 mile southeast of, 100 feet east of road south, 10 feet east, road forks Deer Creek, center of ford at Livingston-Crittenden county line Deer Creek, 0.66 mile southeast of intorsection of w. H. Clark's	<ul> <li>, , , , , , , , , , , , , , , , , , ,</li></ul>	<ul> <li>* / ''</li> <li>88 25 00.4</li> <li>88 23 38.8</li> <li>88 23 11.5</li> <li>88 22 20.5</li> <li>88 21 39.5</li> <li>88 21 02.5</li> <li>88 20 11.1</li> <li>88 19 21.0</li> <li>88 19 08.2</li> <li>88 18 37.9</li> <li>88 18 37.9</li> <li>88 18 7.9</li> <li>88 17 29.0</li> </ul>	stations. <i>Feet.</i> 7,002 6,653 2,632 6,227 3,814 3,265 4,202 4,095 2,443 4,859 2,770 3,480
residence, telephone pole Deer Creek, 1.50 miles southeast of ford at, center of bridge Sullingersschoolhouse, 1.10 miles west of, in front of mail box No. 51, road forks	37 21 42.4 37 21 33.5 37 22 16.7	88 16 33.3 88 15 43.3	4,585

# Along highways near west border of quadrangle.

Bay City (in Illinois), 70 feet north of Glass's store, 30 feet west of center of north and south road, U. S. Army Engineers' bench-			
mark post. Bay City, 0.75 mile northeast of, lane southwest to cornfield, in	37 15 03.1	88 29 47.6	
river bottom at Threikeld's residence Bay City, 2.16 miles northeast of, second-class road through gate	37 15 21.6	88 29 03.3	3,982
to river bottom, road forks	37 16 30.9	88 29 34,6	7, 465
washed front, road forks at road east. Bay City, 3.60 miles north of, on east bank of bayou, forked cypress	37 16 35.2	88 29 03.1	2, 575
tree. Comptons Landing, 3.90 miles south of, right-angle turn in road, at road west to river bottom, 25 feet north of "No Hunting" sign	37 17 13.2	88 29 35.1	4,639
road west to river bottom, 25 feet north of "No Hunting" sign by O. Kuebler Comptons Landing, 2.90 miles south of, about 300 feet southwest of a house and 150 feet west of another house, at road west through	37 18 09.3	88 28 53.3	6, 610
gate to river bottom, crossroads	37 18 58.9	88 28 33.5	5, 278
Comptons Landing, 0.90 mile southeast of, 60 feet east of gate, 10 feet south of oak tree, near bend in road, road forks	37 20 40.6	88 27 49.7	10, 886

# Along highways near south border of quadrangle.

Sandy Creek, south end of bridge over		88 16 12.3	
Center of crossroads, 15 feet west of wooden culvert	37 15 53.6	88 16 45.7	2,698
Old Salem schoolhouse and church, wooden culvert at road forks			, i
between	37 15 58.7	88 17 24.0	3,135
O, T, English's and C. C. Alsobrook's mail boxes	37 15 24.9	88 18 42.5	7,202
G. W. Riddle's mail box, 230 feet west of, 20 feet north of tele-			.,
phone pole No 2560, T road north	37 15 15.3	88 19 50.4	5,567
T road southeast, just west of three mail boxes	37 15 02.0	88 20 22.3	2,902
Road forks, T road north		88 25 37.2	لا ال ال
Culbert schoolhouse, at northeast corner of yard, road forks	37 15 10.0	88 26 13.7	2,948
McMurray's chapel, 700 feet northeast of, T road southwest	37 15 33.5		
McMurray's chapel, 7001eet northeast of, 1 road south west			
McMurray's chapel, 0.90 mile southwest of, T road east	37 15 00.4	88 27 39.1	4,743
L. Highfils mail box (No. 68), 25 feet south of, at top of rise, road			1
forks	37 24 05.7	88 15 24.5	
Mail box No. 69, near second-class road forks	37 24 47.8	88 15 20.9	4,280
Tolu, 1 mile southwest of, 1 mile northeast of J. L. Franklin's			
brick residence, road forks	37 25 48.0	88 15 04.7	
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## GOLCONDA QUADRANGLE-Continued.

## Along highways in northeast quarter of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
J. A. Worley's mail box (No. 3), 25 feet east and 25 feet north of, at top of ridge, oak tree at second-class road fork Fred Hill's residence, about 400 feet south of, at forks of road,	。,, 37 25 47.0	88 16 24.8	Feet. 6, 463
C. E. Donakey's mail box Concrete bridge in Ohio River bottom. Elizabethtown, at landing opposite, pole with ferry bell and flag Elizabethtown (in Illinois), on limestone point on bank of river, directly in front of Rose House, 5 feet west of summer house, a triangle and letters "U. S." cut in solid rock, U. S. Engineers'	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	88 17 07.3 88 17 25.8 88 18 21.9	4,328 3,565 4,704
base-line triangulation station	37 26 46.2	88 18 11.8	4, 240

Magnetic declination along north border of quadrangle, 4° 32' E.; along south border, 4° 25' E.; along east border, 4° 42' E.; along west border, 4° 25' E.; in center, 4° 34' E.

## KUTTAWA QUADRANGLE.

#### Along highways near north border of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
<ul> <li>Dry Creek, center of bridge over.</li> <li>S. L. Shelby's store, 40 feet southeast of corner of store porch.</li> <li>J. C. Kinsolving's house, 250 feet south of, T road west.</li> <li>Emmaus Church, about 800 feet northeast of, 100 feet west of covered bridge over Clay Lick Creek, road forks.</li> <li>Emmaus Church, 1.20 miles east of, 20 feet east of mail box No. 35 Å, road forks.</li> <li>J. A. Patton's mail box, at road southwest, about 500 feet east of road, northeast.</li> <li>Mexico, about 0.30 mile north of depot, 150 feet east of J. T. Nelson's store, 60 feet west of T road south, center of east and west road, a trailroad crossing.</li> <li>Fredonia, about 1.50 miles northwest of, 25 feet south and 30 feet west of T. W. Young's mail box (No. 13), in triangle formed by intersection of Marion-Fredonia State road and Salem-Fredonia road; iron post stamped "Prim. Trav. Sta. No. 4, 1915".</li> <li>Fredonia, about 1.50 miles northeast of, opposite front gate of residence of Joe Guess, center of Enon-Fredonia road.</li> </ul>	<ul> <li>, <i>i</i>,</li> <li>37 14 50.0</li> <li>37 14 19.7</li> <li>37 14 12.6</li> <li>37 14 51.2</li> <li>37 14 55.8</li> <li>37 14 55.8</li> <li>37 14 16.8</li> <li>.37 14 11.8</li> <li>37 13 56.4</li> <li>37 14 06.6</li> </ul>	° , '' 88 12 51.4 88 12 38.8 88 11 55.5 88 10 37.9 88 08 55.4 88 06 27.5 88 05 35.3 88 04 48.4 88 02 09.5	Feet. 3, 226 3, 575 7, 397 8, 303 4, 253 4, 100 12, 910

Magnetic declination along north border of quadrangle 4° 26' E.

## PROVIDENCE QUADRANGLE.

## Along highway near west border of quadrangle.

1		
22 35.1 15 15.7	87.59 48.1 87 59 21.8	Feet.
	22 35.1	22 35.1 87.59 48.1 15 15.7 87 59 21.8

## SMITHLAND QUADRANGLE.

## Along highways near north border of quadrangle.

Station.	Latitude.	Longitude.	Distance between stations.
Burna, 160 feet northeast of post office, T road southwest Burna, 0.58 mile southwest of, on east side of north and south road	o , , , , , , , , , , , , , , , , , , ,	88 21 33.0	Fcet.
at T road west; iron post stamped "Prim. Trav. Sta. No. 5, 1915" Burna, 2 miles west of, 110 feet east of bridge over small creek, T	37 14 22.2	88 21 52,5	3,063
road north. Burna, about 2.50 miles west of, at Midway schoolhouse, center of road forks	37 14 43.5 37 14 42.7	88 23 24, 1 88 23 54, 6	7,712
Midway schoolhouse, about 0.40 mile west of, 75 feet north of road forks at road leading up creek, road forks at road leading down creek. Bayou, 115 feet northeast of post office, T "oad forks	37 14 44.7 37 14 47.5	88 24 22.2 88 28 31.4	2,234

Magnetic declination along north border of quadrangle 4° 25' E.

# TRIANGULATION STATIONS.

## Goodloe, Inez, and Paintsville quadrangles.

## FLOYD, JOHNSON, MAGOFFIN, AND MORGAN COUNTIES.

In the summer of 1915 C. L. Nelson extended triangulation over the above-named quadrangles, starting from Collins Rock, Porter, and Standifer stations, on North American datum.

In addition to reoccupying these three stations, Mr. Nelson occupied five stations and located four points by intersections.

#### BRUSH CREEK, FLOYD COUNTY, KY. (Not occupied.)

Flag in top of oak tree, at head of Grassy Creek. Station was not occupied, but it is fairly open and can be occupied by topographer.

Station mark: Oak signal tree.

To station—	Azimuth.	Back azimuth.	Distance.
Quicksand Hicks Collins Rock		6 36 27.40	Log. meters.         Miles.           3. 6900906         3. 044           3. 5735542         2. 328           4. 0140178         6. 418

[Latitude 37° 30' 55.95". Longitude 82° 53' 25.04".]

#### COE FLAG, MAGOFFIN COUNTY, KY. (Not occupied.)

Flag in 8-inch black oak on top of knob on property of Albert Coe at head of Puncheon Creek, Gun Creek, and Big Ditch Fork of Middle Creek. Flag is about  $1\frac{1}{2}$  miles south of Ivyton.

Station mark: Center of oak signal tree.

Latitude 37° 40' 53.57".	Longitude 82° 58' 09.39".]
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To station—	Azimuth.	Back azimuth.	Distanc	20.
Preston Webb	200 57 57.88 254 37 00.05	20 59 45. 84 74 40 53. 82	Log. meters. 4. 0815157 3. 9874018	<i>Miles.</i> 7. 497 6. 036

62510°-Bull. 644-17-26

#### COLLINS ROCK, FLOYD COUNTY, KY.

On a high cleared knob between the forks of Beaver Creek and about 4 miles above their junction. It is at head of Turkey Branch and Henry Branch of Right Fork of Beaver Creek, and may be reached from either fork.

Signal: Quadripod of usual form set on center.

Station mark: Aluminum-bronze tablet set flush in solid rock.

Reference marks: (1) Chisel mark (+) on rock; distance 8.28 feet, true azimuth 188° 29'. (2) Chisel mark (+) on rock; distance 7.20 feet, true azimuth 285° 04'. (3) Chestnut oak 20 inches in diameter; distance 24.74 feet, true azimuth 32° 28'.

Aluminum tablet had been destroyed. It was replaced by bronze tablet.

To station—	Azimuth.	Back azimuth.	Distance.
Quicksand Hueysville Brushey Creek Hicks Preston Webb Porter Ivy Stratton	83 35 00.41 91 17 15.90 111 47 04.01 156 38 01.26	•         •	Log. meters. Miles. 4. 1519805 8. 817 3. 7043490 3. 144 4. 0140178 6. 418 4. 0273465 6. 618 4. 5131857 20. 255 4. 3550107 14. 077 4. 3766449 14. 991 4. 2101409 10. 083

[Latitude 37° 30' 48.63". Longitude 82° 46' 24.59".]

HUEYSVILLE, FLOYD COUNTY, KY. (Not occupied.)

Flag set on rock and braced by branches of tree on knob, about 1 mile east of Hueysville and 1 mile southeast of junction of Brush Creek and Right Fork of Beaver. Station can be occupied.

[Latitude 37° 30' 30.23". Longitude 82° 49' 49.41".]

Station mark: Old bolt was found set in rock at foot of flag.

• •				
To station—	Azimuth.	Back azimuth.	Distan	ce.
Hicks Collins Rock	• / // 132 52 57.38 263 32 55.69	<b>312 50 57.49</b> 83 35 00.41	Log. meters. 3. 8218690 3. 7043490	<i>Miles.</i> 4, 123 3, 146

# MILLERS FLAG, MAGOFFIN COUNTY, KY. (Not occupied.)

Station mark: Flag in oak tree on top of knob, about 1 mile east of Millersville, on Mine Fork.

[Latitude 37° 48' 20.84". Longitude 82° 59' 40.09".]

To station—	Azimuth.	Back azimuth.	Distance.
Peach Orchard Preston		354 07 31.97 111 08 17.19	Log. meters. Miles. 4. 2731041 11.65 3. 8454842 4. 35

#### NELSON, LAWRENCE COUNTY, KY.

On a cleared knob between the right and left forks of George Creek, about 2 miles northeast of Lowmansville. It can be reached from Jim Bryant's place on Nelson Branch of Left Fork.

Station mark: Bronze triangulation tablet countersunk and cemented in rock.

Reference marks: (1) Chisel mark (+) on rock, distance 16.90 feet, true azimuth 155° 26'; (2) chestnut tree 18 inches in diameter, distance 23.20 feet, true azimuth 150° 38'.

Signal: Quadripod of usual form set on center.

[Latitude 37° 57' 16.485". Longitude 82° 43' 56.125".]

To station—	Azimuth.	Back azimuth.	Distance.
Preston Peach Orchard Anthony. Hurricane. Standifer	94 59 20.446 282 53 32 311 34 37.004	•         ,         ,           220         55         38.039           274         48         51.496           173         08         52           131         43         24.455           166         35         52.653	

#### PEACH ORCHARD, MORGAN COUNTY, KY.

On partly cleared knob at head of Fife Branch of Blain Creek, on the property of Leo Skags: Reached via Big John Ferguson's place on Open Fork of Paint Creek.

Signal: Quadripod of usual form set over center.

Station mark: Bronze tablet in rock set in ground.

Reference marks: (1) White-oak stump of old signal tree 36 inches in diameter, 107 feet distant, true azimuth  $2^{\circ}$  50"; (2) oak tree, 14 inches in diameter, leaning toward north, 186 feet distant, true azimuth  $45^{\circ}$  49"; (3) peach tree 8 inches in diameter, 19 feet distant, true azimuth 93° 33'.

To station—	Azimuth.	Back azimuth.	Distance.
Nelson Standifer Preston Millers Flag	303 00 00.177 338 13 47.576	94 59 20.446 123 12 08.423 158 17 19.771	Log. meters. Miles. 4. 3987861 15, 565 4. 5389719 21, 494 4. 3579744 14, 169 4. 2731041 11, 654

#### PORTER, FLOYD COUNTY, KY.

On an east-west ridge on the north side of Johns Creek about 2.5 miles (air line) above the mouth, between the properties of Lee Hall and John Porter. Station is best reached by following ridge to east from residence of William Nesbit.

Signal: Quadripod of usual form set over center.

Station mark: Aluminum triangulation tablet countersunk and cemented in solid rock.

Reference marks: (1) Chisel mark (+) on rock, distance 7.95 feet, true azimuth 304° 47'; (2) chisel mark (+) on rock, distance 10.65 feet, true azimuth 59° 10'.

To station—	Azimuth.	Back azimuth.	Distan	ce. '
Collins Rock. Hicks. Webb. Preston Standifer. Flag. Brandy Keg. Ivy.	36 27 58.29 80 07 17.98 110 39 05.94 199 49 57.77 289 42 03.94 327 25 39.25	0         7         10.23           100         47         10.23           216         22         01.20           260         02         09.48           290         31         51.08           19         51         17.42           109         50         31.89           147         27         08.20           147         55         34.98	Log. meters. 4. 3766449 4. 3829495 4. 0982839 4. 2688842 3. 9721055 4. 3350551 3. 8209275 4. 2484148	Miles. 14. 791 15. 007 7. 792 11. 541 6. 827 13. 440 4. 114 11. 009

[Latitude 37° 43' 27.06".	Longitude 82° 43'	22.69".1
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#### PRESTON, JOHNSON COUNTY,

On cleared knob at head of Barnett Creek, about 7 miles southwest of Paintsville. It can be reached by way of Will Blair's residence on Barnett Creek.

Signal: Chestnut-oak tree 10 inches in diameter which forms southern support for observing structure 20 feet high. Tree is 7.8 feet distant; true azimuth 0° 55'.

Station mark: Bronze tablet in rock set in ground.

Reference marks: Fence corner between properties of Blair, Blanton, and Salyers, • distance 30.8 feet, true azimuth 110° 55'; black-oak tree, 1 foot in diameter, on fence line between Salyers's and Blairs's properties, distance 167 feet, true azimuth 177° 10'; stump of old signal tree; large chestnut tree 4 feet in diameter, distance 44.6 feet, true azimuth 319° 35'.

To station—	Azimuth.	Back azimuth.	Distance.	
Quicksand Coe Flag. Millers Flag. Peach Orchard. Nelson. Standifer. Porter. Webb. Collins Rock. Hicks.	111 08 17.19 158 17 19.77 220 55 38.04 263 34 32.86 290 31 51.08 329 52 09.76	• , , , , , , , , , , , , , , , , , , ,	Log. meters. Miles. 4. 5202281 20, 586 4. 0815157 7, 497 3. 8454842 4. 353 4. 3579744 14, 169 4. 4017542 15, 672 4. 3156842 11, 547 4. 2688842 11, 541 4. 0021168 6, 244 4. 5131857 20, 255 4. 4174560 16, 248	

[Latitude 37° 46' 58.93". Longitude 82° 55' 12.93".]

#### QUICKSAND, FLOYD COUNTY,

On a high ridge separating the headwaters of Quicksand Creek from Salt Lick Creek, 3 miles northwest of Hippo post office.

Station mark: Bowlder inground, in top of which is cemented a bronze triangulation tablet.

Reference marks: (1) Chestnut-oak tree 2 feet in diameter; distance 6.6 feet, true azimuth  $165^{\circ} 04'$ ; (2) position of former signal tree and station mark (recently blown down); distance 13 feet, azimuth  $16^{\circ} 00'$ .

Old stone with tablet had been removed; replaced by bronze tablet in stone set in ground in same position.

Latitude 37° 29'04.65''; longitude 82° 55' 47.34'' from north. Latitude 37° 29'04.52''; longitude 82° 55' 47.19'' from south.]

To station—	Azimuth.	Back azimuth.	Distance.
From north: Preston. Collins Rock. From south: Lost. Frazier. Beaver. Walnut.	256 53 45.712 50 37 18.14 291 47 34.35	0       7         1       27       44.742         76       59       28.238         230       28       01.35         111       57       06.21         143       37       19.47         170       31       19.40	Log. meters. Miles. 4. 5202281 20. 586 4. 1519805 8. 817 4. 4653955 18. 145 4. 3964679 15. 482 4. 4681256 18. 256 4. 3106744 12. 706

#### STANDIFER, JOHNSON COUNTY.

On a high cleared knob between main Greasy Creek and Pigeon Roost Fork, at head of Buffalo Creek. It can be reached from Greasy Creek or from Pigeon Roost Fork.

Signal: 26-inch chestnut, oak tree; distance 7.8 feet, true azimuth 127° 13'. Station mark: Aluminum tablet countersunk and cemented in sandstone 28 by 20 by 14 inches.

To station—	Azimuth.	Back azimuth.	Distanc	20.
Porter	83 43 07.803 123 12 08.423 166 35 52.653 276 23 42.60	o         ,         ,           199         49         57.72           234         40         48.050           263         34         32.858           303         00         00.177           346         34         12.267           96         30         48.92           178         30         06.71	Log. meters. 3. 9721055 4. 2792061 4. 3156842 4. 5389719 4. 2360553 4. 2337179 4. 1585556	Miles. 5. 827 11. 818 12. 854 21. 494 10. 701 10. 643 8. 952

[Latitude 37° 48' 13.17". Longitude 82° 41' 12.63".]

#### WEBB, FLOYD AND JOHNSON COUNTIES.

Cleared hill about 1 mile north of Bonanza on Abbott Creek. Best reached by going up Conley Branch about half a mile and climbing spur. Properties of Dutch Webb, B. A. Conley, and Thomas Stanley join on the hill.

Signal: Hickory tree, 14 inches in diameter, distance 5.8 feet, true azimuth 190° 48'. Tree leans so that flag in tree is directly over station. (All angles were read to flag.)

Station mark: Bronze tablet in stone 6 by 8 by 14 inches, set in ground.

Reference marks: (1) Property corner between B. A. Conley, Dutch Webb, and Thomas Stanley, distance 207 feet, true azimuth 328° 44'; (2) black-gum tree, 10 inches in diameter, distance 102 feet, true azimuth 35° 59'.

To station—	Azimuth.	Back azimuth.	Distance.	
Hicks Coe Flag Preston Standifer Porter Collins Rock	149 54 15.80 234 40 48.050 260 02 09.480	•         •	Log. meters. 4. 2402324 3. 9874018 4. 0021168 4. 2792061 4. 0982839 4. 3550107	Miles. 10. 804 6. 036 6. 244 11. 818 7. 792 14. 072

[Latitude 37° 42' 16.98". Longitude 82° 51' 47.00".]

# 400 TRIANGULATION AND PRIMARY TRAVERSE, 1913-1915.

## HICKS, FLOYD-MAGOFFIN COUNTIES, KY.

Cleared knob at head of Left Fork of Middle Creek and Brushy Fork of Licking River. Station is near north edge of large flat sandstone rock, on highest part of knob, where properties of James Allen, John M. Hale, and Smith Hicks corner.

Signal: Tall pine 18 inches in diameter, distant 28.1 feet, true azimuth 168° 35'. Station mark: Aluminum tablet set in rock in place.

Reference marks: (1) Chestnut-oak tree, 2 feet in diameter, separating into two trunks 6 feet from ground, distant 47.7 feet, true azimuth 351° 12'; (2) cross chiseled in rock, distant 7.5 feet, azimuth 355° 22'; (3) cross chiseled in rock, distant 12.5 feet, azimuth 48° 35'.

To station—	Azimuth.	Back azimuth.	Distanc	
Preston Webb. Porter Collins Rock. Hueysville. Brush Creek.	186 30 31.86 216 22 01.20 291 42 58.59 312 50 57.49	*         '         ''           353         14         10.58           6         31         20.98           36         27         58.30           111         47         04.02           132         52         57.38	Log. meters. 4. 4174560 4. 2402324 4. 3829495 4. 0273465 3. 8218690 3.5735542	Miles. 16. 248 10. 804 15. 007 6. 618 4. 123 2. 328

[Latitude 37° 32' 56.64''. Longitude 82° 53' 07.46''.]

# TENNESSEE AND ARKANSAS.

# PRIMARY TRAVERSE.

# SHELBY COUNTY, TENN.; CRITTENDEN COUNTY, ARK.

# Bartlett and Memphis quadrangles.

The following geographic positions were determined by F. W. Crisp in 1915, and are based upon United States Coast and Geodetic Survey triangulation stations, Exchange, Hopefield, South Base, and Weaver, North American datum:

# MEMPHIS QUADRANGLE.

#### Along highways and Yazoo & Mississippi Valley Railroad

Station.	Latitude.	Longitude.	Distance between stations.
· TENNESSEE			
Exchange triangulation station, a Coast and Geodetic Survey sta-			
tion in the city of Memphis, on the top of the Cotton Exchange Building on the corner of Second and Madison streets. A			
standard station mark was set flush with the surface of the con-			
crete roof in the southeast corner of the building, 1.38 meters from the inside of the cornice on the Second Street side and 1.48			
meters from the inside of the cornice on the Madison Street side,	• / //	• / //	Feet.
and 3.08 meters from the center of the iron flagpole Memphis, Third and Union avenues, intersection of	35 08 42.05 35 08 33.1	90 03 04.85 90 03 02.8	919
Memphis, Third and Linden avenues, intersection of	35 08 14.6	90 03 03.8	1,875
Memphis, South Third Street and East Georgia Avenue, inter- section of	35 07 44.9	90 03 06.5	3,017
Memphis, intersection of southbound main track of Yazoo & Mis-	00 01 44.0	00 00 00.0	0,017
sissippi Valley R. R. and northbound main track of Chicago,	35 07 36.9	90 03 34.4	2,456
Rock Island & Pacific Ry Memphis, center of southbound Illinois Central R. R. track and	30 07 30.9	90 03 34.4	2,400
center of Iowa Avenue where it crosses under railroad	35 07 28.6	90 03 34.4	840
Memphis, intersection of southbound track Illinois Central R. R. and McLemore Avenue	35 06 57.9	90 03 26.7	3,172
Memphis, center of main track Yazoo & Mississippi Valley R. R.		00 00 07 0	
under center of viaduct on speedway Memphis, Rayburn Street, center of main track Illinois Central	35 06 27.6	90 03 27.3	3,070
R. R. and electric railway. Horn Lake Road, center of track at intersection with, 35 feet	35 05 51.2	90 03 44.9	3,955
southeast to milepost, "Memphis, 3 miles"	35 05 33.2	90 04 01.3	2,276
McLean lumberyard, 635 feet south of, under Yazoo & Mississippi			
Valley R. R. crossing Noncannah Creek, iron bridge over, center of track	35 05 07.6 35 04 48.2	90 04 24.5 90 04 42.1	3,225 2,452
West Junction station, 20 feet southeast of, 15 feet west of center	00 01 1012		-,
of main track, 35 feet north of tall switchstand at north end of Yazoo R. R. loop; iron post stamped "Prim. Trav. Sta. No. 1,			
1915"	35 04 03.4	90 05 23.8	5, 701
Milepost, "Memphis 6 miles," center of track at Ensley, flag station, center of track at road crossing	35 04 02.8 35 04 06.8	90 06 20.5 90 07 35.2	4, 703 6, 221
Ensley, flag station, 0.90 mile southwest of, center of track at			
second-class road crossing. Ensley station, 2.24 miles south of, center of second-classroad cross-	35 03 20.1	90 07 49.8	4,876
ing at west loop of Yazoo & Mississippi Valley R. R.	35 02 11.5	90 07 46.7	6,938
Weaver triangulation station, a Coast and Geodetic Survey station about 81 miles south of west from Court Square, Memphis,			
4 miles west of south from West Junction, and 2 miles north			
from Darwin railroad station, on the highest knoll on the Weaver farm, in a cultivated field, near the bluff overlooking the Mis-			
sissippi River bottom, about 1 mile east from the west line of	-		
the loop of the Yazoo & Mississippi Valley R. R. The ends of			
the loop are at West Junction and Darwin, 1 mile west from the east line of this railroad, about 40 meters west from the "Bluff			
Road," which runs north and south near the bluffs through the	25 00 04 00	00.07.05.01	1 601
Weaver plantation. Mark: Standard disc	35 02 24.82 I	90 07 35.61	1,631

# MEMPHIS QUADRANGLE-Continued.

# Along highways and Yazoo & Mississippi Valley Railroad-Continued.

Station.	Latitude.	Longitude.	Distance between stations.
Fields Avenue at intersection with T road north Fields Avenue, center of track at railroad crossing Mount Pisgah Baptish Church, T road west at Levi Avenue, center of intersection with T road south Horn Lake road, intersection with T road west Horn Lake road, intersection with T road east Horn Lake road, intersection with C road east Horn Lake road, intersection with Lake View road Horn Lake road, intersection with Lake View road Worn Lake road, intersection with crossroad at mail box No. 109, belonging to J. B. Bulford. Whitehaven, 0.20 mile north of station, 60 feet east of center of Illinois Central R. R. track, 5 feet south of intersection with T road north, 270 feet southeast of milepost "N. O. 386"; iron post stamped "Prim. Trav. Sta. No. 2, 1915".	35 02 58.8 35 02 32.8 35 02 34.2 35 02 34.3	•••         •	Feet. 5, 133 3, 130 2, 050 2, 634 5, 478 2, 583 2, 728 1, 127 4, 152 8, 816

Along Illinois Central Railroad.

Whitehaven, 1 mile north of, center of main track at public road crossing. Whitehaven, 1.50 miles north of, crossing of Lake View Electric Ry. and Ilinois Central R. R., center of Illinois Central R. R.	35 02 07.3	90 02 29.5	5, 324
track under electric railway	35 02 30.8	90 02 34.3	2,411
Whitehaven, 2.30 miles north of, center of track at second-class	35 03 14.4	00.00.40.0	4 550
road crossing Whitehaven, 2.96 miles north of, center of track at east and west	35 03 14.4	90 02 48.2	4,559
public road crossing	35 03 46.6	90 02 57.3	3,333
Noncannah Creek, center of track at center of iron bridge over Noncannah Creek, 0.30 mile north of, center of track at east and	35 04 17.6	90 03 03.2	3, 175
west public road crossing	35 04 32.8	90 03 06.0	1,556
Noncannah Creek, 0.75 mile north of, center of southbound track,	00 01 0200		1,000
at road crossing	35 04, 56.6	90 03 10.5	2, 441
Noncannah Creek, 1 mile north of, center of southbound track at east and west public road under railroad	35 05 11.4	90 03 13.3	1,510
Noncannah Creek, 2.50 miles north of, center of northbound track,		30 03 13.3	1,010
"Speedway" crossing	35 06 27.4	90 03 11.1	7,679

Along highways and Illinois Central Railroad (checked spur line).

Washington and Third streets, intersection of	35 08 54.6	90 02 54.3	
Jackson Avenue and Third Street, intersection of	35 09 12.5	90 02 47.2	1,903
Suffaran Avenue and Third Street, intersection of	35 09 37.7	90 02 37.1	2,687
	35 09 49.3		
Keel Avenue and Illinois Central R. R., intersection of	35 09 49.3	90 02 50.5	1,612
of	35 10 29.9	90 02 37.4	4, 244
Plum Street and main track Illinois Central R. R., intersection of	35 10 51.2	90 02 25.4	2, 371
Wolf Creek, center of Illinois Central R. R. track at center of iron	30 10 01.2	50 02 20.4	2,311
bridge even	35 11 22.6	90 02 13.5	0 004
bridge over			3, 324
Wolf Creek, 1.10 miles northeast of, second-class road crossing	35 12 18.2	90 02 03.0	5,697
Fraser, overhead crossing of public road, center of track at	35 12 38.2	90 01 41.4	2,700
Fraser, 0.47 mile northeast of, second-class crossing, center of track			
at.	35 12 58.5	90 01 24.7	2,470
Felts station second-class crossing center of track at	35 13 37.8	90 00 52.4	4,799
Felts station, second-class crossing, center of track at Felts station, 0.40 mile northeast of, center of track at public road	00 10 0.00		-,
	35 13 56.9	90 00 36.6	2,330
crossing	20 12 20.9	90 00 30.0	2,330
Felts station, about 1.40 miles northeast of, 0.50 mile north of			
Douglas Felts store, at T road east, 21 feet west from fence corner			
in yard of cabin, and in line with east and west fence running			
from corner to railroad tracks; iron post stamped "Prim. Trav.			
Sta. No. 4, 1915"	35 14 40.4	90 00 13.0	4,812
618.110.4, 1910	00 14 40.4	20 00 19.0	1,012

# Along Yazoo & Mississippi Valley Railroad.

Memphis bridge, center of track at, east end of	35 07 33.9	90 04 21.6	
ARKANSAS.			
Memphis bridge, center of track at west end of Hopefield, south base triangulation station	35 08 08.2 35 07 51.69	90 05 05.4 90 04 54.85	5,017 1,881

# TENNESSEE AND ARKANSAS.

#### MEMPHIS QUADRANGLE-Continued.

## Along Union Belt Line Railway and highways.

e. Longitude	Distance between stations.
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1,750 3,538 2,815 1,008 1,109 1,869 3,438 2,872 2,600 1,783
	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$

## Along Iron Mountain Railway.

			·····
ARKANSAS.			
Hopefield south base triangulation station, a Coast and Geodetic			1
Survey station in the village of West Memphis, about 300 meters			
west from the Mississippi River, 170 meters south from the rail- road bridge approach, 50 meters north from the road leading			1
west from the ferry landing, 47 meters east from the store belong-			
ing to Mr. J. A. Templin, in the rear of the house on the lot be-			
longing to Mr. Douglas Owens and 28 meters east from his west			
property line and 12 meters south from his north line. The			
stone projects 14 inches and is marked on the south, "U. S.			ł
Coast Survey," on the west, "S. Base," and on the east, "1879"	35 07 51.69	90 04 54.85	
Intersection of Chicago, Rock Island & Pacific Ry. and Iron			
Mountain R. R.	35 08 43.9	90 06 04.3	7,822
Intersection of Chicago, Rock Island & Pacific Ry. and levee in			
Arkansas.	35 08 33.8	90 07 30.6	7,242
Chicago, Rock Island & Pacific Ry. at point where it leaves levee,	07 00 10 0	00.00.01.0	10.040
center of track at.	35 08 10.2	90 09 31.8	10,340
Hulbert, 1 mile east of, intersection of tangents of Iron Mountain and Rock Island & Pacific railroads	25 00 00 4	00 10 01 0	4 970
Hulbert station, center of track opposite	35 08 00.4 35 07 45.9	90 10 21.8 90 11 36.6	4,270 6,390
Riceville, public road crossing under track at	35 07 24.5	90 13 27.4	9,450
Riceville, 0.80 mile southwest of, center of track, at second-class		30 10 21.4	0, 100
road crossing	35 07 15.2	90 14 15.2	4,080
Mounds Arkansas, at southeast corner of post office and general	00 01 2012		] -,
store of Mounds Lumber Co., 47 feet north of main track of Chi-			1
cago, Rock Island & Pacific Ry., 1 foot south of southeast corner			
of porch; iron post stamped "Prim. Trav. Sta. No. 5, 1915"	35 06 54.9	90 16 03.6	9,235
	I	·	

Along St. Louis & San Francisco Railroad.

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	1		1
Frisco, at crossing of levee, center of tracks at		90 06 58.0	
Creek crossing under trestle, center of track at		90 08 22.4	8,539
Trestle No. 4769, second-class road crossing under center of track at.	35 11 01.5	90 09 12.0	5.021
Second-class road crossing, center of track at	35 11 21.9	90 09 47.6	3,601
Road crossing, center of track at	35 11 35.7	90 10 11.7	2,441
		90 10 39.1	
Do	35 11 51.3		2,770
Public road crossing, center of track at	35 12 21.2	90 11 30.2	5,205
Marion station, 150 feet north of, center of main track at public			· ·
road crossing	35 12 51.8	90 11 47.9	3,422
Harvard station, 420 feet west of, 600 feet south of Frisco ice plant,	00 12 01.0	00 11 11.0	0,100
Harvard station, 420 left west of, doo left south of Frisco ice plant,			
on west side of road, 30 feet east and 16.6 feet north of front gate			
at house of superintendent of ice plant; iron post stamped	1.		•
"Prim. Trav. Sta. No. 6, 1915"	35 14 22.3	90 12 32.7	9,877
			,,,,,,

Magnetic declination near east border of quadrangle,  $5_4^{\circ}$  E.; in northwest quarter, from  $3_4^{\circ}$  to  $6_4^{\circ}$  E.; near south border of southeast quarter,  $5^{\circ}$  26' E.

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# BARTLETT QUADRANGLE.

# Along Union Belt Line Railway and highways.

Station.	Latitude.	Longitude.	Distance between stations.
TENNESSEE.	• • • •	• • • • •	Feet.
Evergreen Avenue crossing, center of track at McLean Avenue crossing, center of track at Patterson Transfer Co'.s farm, on the Raleigh Springs Road, ‡ mile south of, in northwest corner of Springdale Avenue crossing	35 10 20. 35 10 20.		1,390
of Belt Line, iron post stamped "Prim. Trav. Sta. No. 3, 1915" Springdale Avenue crossing of Louisville & Nashville R. R.,	35 10 18.	89 59 00.4	3, 541
center of track at	35 09 42.	5 89 59 01.9	3,683
Jackson Boulevard and Parkway Drive, intersection of Overton Park, northeast corner of, intersection of Parkway and	35 09 29.	89 58 47.8	1,789
Speedway	35 09 03.		2,590
East Parkway and Poplar Avenue, intersection of	35 08 25.		3,854
Parkway and East Madison Avenue, intersection of			1,663
Parkway, under center of concrete railway bridge Intersection of southbound drive of Parkway and Central Avenue.	35 07 45.		2,413
also of iron railroad bridge overhead Intersection of southbound drive of Parkway and Nelson Avenue,	35 07 33.	5 89 59 02.4	1,250
opposite Agricultural Building of Tri-State Fair Grounds Tri-State Fair Grounds, at southwest corner of, intersection of	35 07 18.	5 89 59 03.0	1,510
southbound drive of Parkway and Southern Ry, tracks	35 06 57.	1 89 59 03.6	2,170
Spotswood Avenue and South Trezevant Avenue, intersection of. Parkway, intersection of southbound driveway of, with Carnes	35 06 52.		510
A venue.	35 06 47.	7 89 59 29.5	2,186
Parkway Drive and South Barkdale Street, intersection of			2,762
Intersection of South Cooper and Union streets	35 08 03.		
Intersection of Cooper Street and McLean Boulevard	35 08 06.	89 59 59.4	2,933