

## IDAHO.

### TRIANGULATION STATIONS.

Bay Horse, Crooks, Custer, and Mackay quadrangles.

#### CUSTER COUNTY.

The following geographic positions on approximate North American datum result from triangulation by T. M. Bannon in 1914-1915. They are supplemental to positions published on pages 179-220 of Bulletin 644.

#### ALDER KNOB, CUSTER COUNTY, IDAHO. (Not occupied.)

A prominent, square-looking, rocky knob on the divide between the waters of Alder, Cherry, and Antelope creeks, 6 miles a little east of south of Mackay town, 5 miles north of Grouse post office on Antelope Creek.

Station mark: Tallest tree.

[Latitude 43° 46' 52.21." Longitude 113° 35' 02.09."]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Smiley.....	114	04	32.4	203	58	29.4	4.30696	12.60
Shelly.....	142	23	25.7	322	18	36.9	4.09600	7.75
Mackay.....							4.18309	9.47
Crawford.....							4.04170	6.84

#### BIG BLACK DOME, CUSTER COUNTY, IDAHO. (Not occupied.)

A big, dome-shaped mountain, very prominent, on the north end of the divide between Star Hope and Fall creeks, about 3 miles south of the East Fork of Salmon River and about 10 miles west of Reed & Davis Copper Camp in Copper Basin.

Station mark: Highest point of mountain.

[Latitude 43° 49' 22.70." Longitude 113° 58' 45.85."]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	<i>Log. meters.</i>	<i>Miles.</i>
Porphyry.....	268	40	56	88	51	29	4.08568	7.57
Shelly.....	314	54	06	135	01	10	4.31000	12.661
Smiley.....							4.28679	12.03

#### BIRDIE, CUSTER COUNTY, IDAHO. (Not occupied.)

On a flat, low, grassy hill between Sheep and Warm Springs creeks, 12 miles south-east of Challis City. The hill is between the present Challis-Mackay stage road up Warm Springs Creek and the old stage road over Lone Pine divide and down Sheep Creek.

Station mark: Center of the sheep herder's monument

[Latitude 44° 21' 17.26". Longitude 114° 07' 06.04".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Klug.....	134 02 20	313 55 52	4.23264	10.62
Challis.....	147 31 25	327 25 21	4.33034	13.30
Grouse.....	184 41 07	04 42 08	4.37163	14.62
Anderson.....			4.28734	11.80
Spar.....			4.11308	8.06

**BLACK NOSE, BLAINE COUNTY, IDAHO. (Not occupied.)**

On a black rocky knob at east end of grassy ridge on divide between West Fork of Fish Creek and Muldoon Creek drainage, 0.5 mile south of wagon road in pass, near head of Trail and West Fork of Fish creeks. Two miles northeast of Laidlows big ranch on Muldoon Creek and about same distance west of Wards ranch on West Fork of Fish Creek. Easily reached from all directions.

Station mark: Center of sheep herder's monument.

[Latitude 43° 29' 11.90". Longitude 113° 52' 21.57".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Scorpion.....	176 32 42.22	356 32 12.10	4.21110	10.10
Freedom.....			3.40733	1.59
Blizzard.....	265 14 14.91	85 22 42.43	4.22075	10.33

**BRIDGE, CUSTER COUNTY, IDAHO.**

On a low, sagebrush hill south of Spar Creek and east of the East Fork of Salmon River. About 1 mile east of the East Fork bridge at the mouth of Spar Creek and Gossi ranch on the Clayton-Mackay wagon road.

Station mark: A chiseled cross on solid rock under a rock monument.

Reference mark: The small iron section corner post between sections  $\frac{7}{8}$ , T. 10 N., R. 19 E., 347 feet, true azimuth 322° 03' 24".

[Latitude 44° 13' 11.44". Longitude 114° 15' 44.13".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Redwings.....			4.27620	11.74
Potaman.....	90 45 21	270 39 45	4.02891	6.64
Ram.....	158 30 41	338 27 17	4.24692	10.97

**CABIN CREEK PEAK, CUSTER COUNTY, IDAHO. (Not occupied.)**

On a high, rocky, prominent peak on the divide between drainage of the West Fork of Yankee Fork and the Middle Fork of Salmon River. Ten miles a little north of west from Bonanza post office. About 3 miles north of Hyndman Lake. The trail from Bonanza to Cape Horn ranger station up the West Fork crosses the divide 2 miles south of the peak.

Station mark: None (highest point).

[Latitude 44° 24' 30.44". Longitude 114° 53' 50.42".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
The General.....			4.05344	7.07
Mount Jordan.....			4.06716	7.25
Bonanza.....	288 52 50.5	109 01 31.4	4.24131	10.83
McGowan.....	330 02 06.5	150 04 23	3.93735	5.38

**CASTLE PEAK, CUSTER COUNTY, IDAHO. (Not occupied.)**

The east end of the highest peak in Idaho, locally known as Castle Peak. Several forks of the East Fork of Salmon River head around the east foot of the peak. About 15 miles southwest of Clayton post office. The foot of the peak can easily be reached from the road and trail up East Fork of Salmon River. Can only be ascended by a long difficult climb afoot. The peak has a very sharp appearance from the northeast and southwest directions; from other directions it shows more as a ridge with three small tops. Sighted the east end, which is a few feet lower than the center.

Station mark: None (east end).

[Latitude 44° 02' 24.45". Longitude 114° 35' 05.27".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Ram.....	207 50 43	28 00 48	4.61481	25.59
Spar.....			4.62368	26.12
Anderson.....			4.68350	29.98
Redwings.....	261 14 38	81 24 02	4.26168	11.35

**CHALLIS CITY HILL, CUSTER COUNTY, IDAHO.**

Located from one triangle on a low isolated hill less than 0.25 miles south of McGowan's store on the same street extended. McGowan's store is at the intersection of the two main streets of Challis City.

Station mark: A triangulation tablet set in solid rock under a small monument.

[Latitude 44° 28' 48.68". Longitude 114° 12' 46.76".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Klug.....	66 31 13	246 28 43	3.71417	3.22
Grouse.....	224 45 13	44 50 13	4.12741	8.33

**CLARK, CUSTER COUNTY, IDAHO.**

On the slope of a small hill less than 0.25 mile south of Joe Clark's house on the East Fork of Salmon River. One mile northwest of the East Fork bridge and Gossi ranch on the Clayton-Mackay wagon road. Two miles southeast of the forks of the Clayton-Mackay and the Clayton-Challis wagon roads. Over iron post marked 35, which is at quarter-section corner on the township line between Tps. 10 and 11 N., R. 18 E.

Station mark: The small iron quarter-section corner post in small pile of rock.

[Latitude 44° 14' 58.18". Longitude 114° 18' 7.02".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Ram.....	167 33 55	347 32 11.2	4.18597	9.54
Bridge.....			3.54200	2.16
Gossi.....	299 04 26	119 06 34	3.66988	2.91

**CRIMSON (RED MOUNTAIN), CUSTER COUNTY, IDAHO. (Not occupied.)**

Highest point of Red Mountain, a prominent red mountain on the north side of the West Fork of the Yankee Fork of Salmon River. Six miles northwest of Bonanza post office. The trail from Bonanza to Cape Horn ranger station up West Fork passes about 2 miles south of the mountain.

Station mark: A small rock pile on the highest point.

158 TRIANGULATION AND PRIMARY TRAVERSE, 1916-1918.

[Latitude 44° 24' 22.84". Longitude 114° 51' 45.72".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
The General.....			3.99513	6.14
Bonanza.....	291 30 47	111 38 01	4.16908	9.17
McGowan.....	347 51 40	167 52 20	3.87108	4.62

C. M. SMALL, CUSTER COUNTY, IDAHO.

On a partly timbered, grassy, dome-shaped hill on the north side of Salmon River on the ridge between Thompson Creek and Salmon River. Three miles northwest of C. M. Small's ranch on Salmon River, about 10 miles west of Clayton post office and 6 miles east of Robinson Bar Hotel on Warm Springs Creek. Easily reached from C. M. Small's ranch by crossing the Salmon River over his private bridge and across his meadow to the first dry gulch, about 0.25 mile west of Thompson Creek, thence by horse trail up the gulch to its head, and thence west along the ridge to the hill.

Station mark: A chiseled cross on placed rock centered under a rock monument and quadripod signal.

Reference mark: A chiseled cross on placed rock 15.3 feet west.

[Latitude 44° 16' 30.00". Longitude 114° 33' 17.07".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Robinson Bar.....	62 40 16.7	212 32 30.2	4.22283	10.38
U. S. M. M. No. 3.....	74 23 51.7	254 18 52.6	3.99443	6.13
McGowan.....	107 46 08.3	287 34 03.3	4.38280	15.00
Ram.....	238 30 35.5	58 39 27.0	4.25576	12.28
Redwings.....	326 08 55.3	146 17 05.1	4.44847	17.45

CHASE, CUSTER COUNTY, IDAHO. (Not occupied.)

The highest point of the south of two peaks on the west side of Warm Springs Creek, 5 miles south of Robinson Bar Hotel on the stage road, at the junction of Warm Springs Creek and Salmon River. The north peak, Robinson Bar triangulation station, has a monument on it.

Station mark: None (highest point).

[Latitude 44° 11' 35.16". Longitude 114° 45' 28.67".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
McGowan.....	157 33 22	337 29 48	4.24990	11.08
Bonanza.....	196 24 16	16 27 06	4.27979	11.83
Robinson Bar.....			3.29750	1.23

CUSTER, CUSTER COUNTY, IDAHO. (Not occupied.)

On a hill on divide between Salmon River and Yankee Fork of Salmon River, at the heads of Five Mile, Thompson, and Peach creeks, about 5 miles southeast of Custer town and 4 miles a little south of east from Bonanza post office.

Station mark: Center of monument.

[Latitude 44° 20' 59.1". Longitude 114° 37' 24.3".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Robinson Bar.....	30 20 15.29	210 15 21.06	4.26777	11.51
McGowan.....	86 52 34.93	266 43 22.18	4.24413	10.90
Bonanza.....			3.73366	3.37
The General.....			4.31431	12.84
Mount Eustes.....			4.10585	7.93

**GOSSI, CUSTER COUNTY, IDAHO.**

On a prominent, white, grassy, dome-shaped hill on ridge between Spar and Road Canyon creeks, about 1.5 miles southeast of Gossi ranch and the East Fork bridge on the Clayton-Mackey wagon road.

Station mark: A small rock buried under center of small monument.

[Latitude 44° 12' 44.48". Longitude 114° 15' 02.91".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Redwings.....			4.26825	11.52
Potaman.....	94 48 09	274 42 05	4.06607	17.23
Ram.....	156 51 02	336 47 09	4.27358	11.67

**HILSKIE, CUSTER COUNTY, IDAHO.**

On a low, flat, sagebrush hill just south of the lowest saddle between McDonald and Taylor creeks, 6 miles south of the junction of McDonald Creek and Main East Fork of Salmon River, about 12 miles south of the East Fork Bridge, at the mouth of Spar Creek, on the Clayton-Mackay wagon road, 622.5 feet north and east of quarter-section iron post marked Sec.  $\frac{37}{4}$ . This iron section-corner post was poorly set and is liable to be destroyed, as it is in the center of the drag road that the ranchers use in getting out timber in the winter.

Station mark: Center of tall monument.

Reference mark: Small iron quarter-section corner post between secs. 27 and 34, T. 9 N., R. 18 E., 622.5 feet, true azimuth 55° 51' 00".

[Latitude 44° 04' 27.11". Longitude 114° 19' 11.30".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Potaman.....	159 32 20.1	339 29 09.0	4.24102	10.82
Ram.....	176 41 54.5	356 40 55.2	4.51408	20.30
Lone Pine.....			4.51128	20.17

**IRON, CUSTER COUNTY, IDAHO. (Not occupied.)**

Highest point of square-looking peak in the Sawtooth Range.

[Latitude 44° 08' 32.00". Longitude 115° 00' 33.54".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Prominent.....	183 51 33	08 55 28	4.08244	29.91
Eustes.....			4.61618	25.67
McGowan.....	210 57 41	31 04 38	4.41100	16.01
Trap.....	213 55 45	34 11 11	4.71913	32.54

**LINE, CUSTER COUNTY, IDAHO. (Not occupied.)**

A rocky-topped, detached, timbered hill on the west side of the mountains dividing the waters of Salmon and Pahsimeroi rivers. These mountains are the north-west extension of Big Lost River Range. The hill is very prominent and has a small red seam about at center of top. Easily reached from the Challis-Mackay stage road. About 15 miles southeast and visible from Challis City.

Station mark: Center of red spot.

[Latitude 44° 21' 49.36''. Longitude 114° 00' 02.45'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Anderson.....			4.26621	11.47
Spar.....	38 15 29	218 09 45	4.24691	10.97
Ram.....	91 02 35	270 48 13	4.43654	16.98
Grouse.....			4.37360	14.69

**LOPE, CUSTER COUNTY, IDAHO. (Not occupied.)**

On a low grassy hill on side ridge, west side of Antelope Creek. About 3 miles north of Grouse post office.

Station mark: Center of sheep herder's monument.

[Latitude 43° 45' 00.75''. Longitude 113° 35' 29.96'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Smiley.....	72 22 45	252 13 43	4.26500	11.44
Ante.....			4.13689	8.52
Shelly.....	128 22 19	308 16 45	4.13809	8.54

**MOUNT JORDAN, CUSTER COUNTY, IDAHO.**

On a high, sharp, white peak on the main divide between the waters of Salmon and the Middle Fork of Salmon rivers, at the heads of Jordan, Mayfield, and Lightning creeks, about 5 miles northwest of Sunbeam mill on Jordan Creek, 3 miles west of the road crossing the main divide between Jordan and Mayfield creeks. Good route up Jordan Creek.

Station mark: A chiseled cross on placed rock centered under a quadripod tree signal and a small monument.

Reference mark: A chiseled cross on placed rock buried 6.5 feet east.

[Latitude 44° 28' 16.2''. Longitude 114° 46' 46.2'']

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
McGowan.....	19 19 00.04	199 16 19.84	4.18572	9.530
The General.....			4.36135	2.16
Eustes.....	297 10 18.47	117 13 11.36	3.78775	3.81
Bonanza.....			4.16075	9.00
Robinson Bar.....			4.42793	16.65

**PROSPECT, CUSTER COUNTY, IDAHO. (Not occupied.)**

Rock on the highest point of a partly timbered hill on ridge east side of Prospect Creek, 3 miles south of Salmon River, 1.25 miles northwest of Robinson Bar triangulation station and monument.

Station mark: Rock on highest point.

[Latitude 44° 13' 12.56". Longitude 114° 45' 17.92".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
McGowan.....	152 22 26	332 18 45	4.18041	9.41
Bonanza.....	193 36 42	18 39 24	4.20698	10.01
Robinson Bar.....			3.29579	1.23

**RED FISH LAKE, CUSTER COUNTY, IDAHO. (Not occupied.)**

Small monument or rock on east knob of big mountain in the Sawtooth Range, about 5 miles southwest of Red Fish Lake on tributaries of Salmon River.

Station mark: Small monument or rock on East Knob.

[Latitude 44° 02' 36.6". Longitude 114° 57' 59.7".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Prominent.....	183 55 38	03 57 45	4.76835	36.45
McGowan.....	196 35 29	16 40 39	4.53772	21.44
Trap.....	205 23 59	25 37 37	4.78000	37.44

**ROAD CANYON, CUSTER COUNTY, IDAHO. (Not occupied.)**

On a white, low grassy hill on the main divide between Salmon and Lost rivers, at the head of Anderson Fork of Road Canyon Creek, about 6 miles a little north of west from Dickey post office.

[Latitude 44° 08' 55.60". Longitude 114° 00' 49.26".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Jerry.....	37 20 49.6	217 16 55	4.09181	7.68
Spar.....			4.14855	8.75
Anderson.....	172 02 37.6	352 02 06.7	3.74418	3.45

**SPEED, CUSTER COUNTY, IDAHO.**

On the east hill between the Clayton-Mackay road and the trail that branches from this road and leads from Joe Clark's ranch to Bradshaw's ranch on Speed Creek. Hill is 1 mile northwest of Joe Clark's house and 1.5 miles southeast of the forks of the Clayton-Mackay and the Clayton-Challis wagon roads.

Station mark: A chiseled cross on rock under a rock monument.

[Latitude 44° 14' 33.83". Longitude 114° 19' 09.55".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Ram.....	172 07 37	352 06 36	4.14661	8.71
Bridge.....			3.71239	3.20
Goss.....	301 37 52	121 40 44	3.80825	4.00

**STEEL BRIDGE, CUSTER COUNTY, IDAHO. (Not occupied.)**

The steel bridge on the Challis-McKay stage road across Salmon River, 3 miles southeast of Challis City.

Station mark: Northwest end of bridge.

[Latitude 44° 28' 17.29". Longitude 114° 11' 55.24".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Klug.....			3.77748	3.72
Challis.....	134 48 52	314 46 10	3.85694	4.47
Grouse.....	218 22 01	38 26 25	4.12640	8.31

**SUNBEAM (GREYLOCK MOUNTAIN), CUSTER COUNTY, IDAHO. (Not occupied.)**

On Greylock Mountain a big, white, dome-shaped mountain on the divide between Jordan and Eight Mile creeks, 1 mile east of Sunbeam Mill on Jordan Creek, 6 miles north and a little east of Bonanza post office. Easily reached from Jordan Creek side.

Station mark: A small monument.

[Latitude 44° 25' 13.08". Longitude 114° 41' 48.38".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Robinson Bar.....	08 20 09	188 18 27	4.38182	14.97
McGowan.....	52 56 28	232 50 47	4.16495	9.08
Bonanza.....			3.84486	4.35

**TANGO, CUSTER COUNTY, IDAHO. (Not occupied.)**

On a rock peak on divide between tributaries of the West Fork of the Yankee Fork and the Middle Fork of Salmon rivers, 10 miles northwest of Bonanza post office, 4 miles north of Hyndman Lake. Most easily reached from the Bonanza-Cape Horn ranger station trail.

Station mark: Highest point of peak.

[Latitude 44° 27' 02.33". Longitude 114° 54' 05.62".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Bonanza.....	301 32 34.0	121 41 26	4.29551	12.27
Robinson Bar.....			4.57834	23.53
McGowan.....	339 04 37.0	139 07 04	4.11560	8.11

**U. S. M. M. NO. 3, CUSTER COUNTY, IDAHO. (From one triangle only, unchecked.)**

On a low hill, about 800 feet south of the junction of Warm Springs Creek and Salmon River, on the north side of the stage road, less than 0.25 mile north of the Robinson Bar Hotel, and 18 miles west of Clayton post office.

Station mark: A chiseled cross on placed rock centered under a small monument.

Reference mark: Nail in top of the 848 post in big rock pile marked U.S.M.M. No. 3, 9.50 feet west.

[Latitude 44° 15' 03.68". Longitude 114° 40' 25.78".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	<i>Log. meters.</i>	<i>Miles.</i>
Robinson Bar.....	46 40 55.6	226 38 08.2	3.86458	4.55
C. M. Small.....	254 18 52.6	74 23 51.7	3.99443	6.13



# MONTANA.

## TRIANGULATION STATIONS.

Fattig and Huntley quadrangles.

MUSSELSHELL AND YELLOWSTONE COUNTIES.

During the season of 1916 George T. Hawkins extended triangulation northward from the line Absaroka-Billings so as to control the Fattig 30-minute quadrangle.

Eight new stations were occupied and one point was located by intersection.

Distances depend on the value of the line Absaroka-Billings, as given on pages 310-311, Bulletin 122.

Azimuths depend on Polaris observations made at station Rattlesnake, August 16, 1916. The position of Billings given on Bozeman datum in Bulletin 122 was corrected to approximate North American datum by subtracting 5.3'' from its latitude and 0.0'' from its longitude. Absaroka was then recomputed with the observed azimuth, and points to the north were computed from these corrected positions.

### ABSAROKA, YELLOWSTONE COUNTY, MONT.

In sec. 28, T. 1 S., R. 29 E., on grassy knoll which breaks off abruptly on the south and east sides and is nearly level to the northwest. Knoll is 6 miles south of Haley's ranch and about 1 mile north of old railroad grade.

Signal: Small pine tree set in ground.

Station mark: Stone 10 by 12 by 24 inches, set 22 inches in the ground, in the approximate position of the original station. Cross cut on top.

[Latitude 45° 42' 34.52''. Longitude 108° 08' 56.74'']

(H)=by G. T. Hawkins in 1916. (B)=Bozeman base.

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	''	°	'	''	<i>Log. meters.</i>	<i>Miles.</i>
Billings (H).....	91	32	19.16	271	19	00.66	4.3826370	14.996
Rattlesnake (H).....	134	30	54.24	314	18	26.81	4.4984376	19.579
Arrow (H).....	171	20	31.25	351	19	06.48	4.2291342	10.531
Mesa (B).....	241	06	23	61	19	21	4.4279156	
Far West (B).....	291	01	30	111	17	09	4.4838382	
Billings (B).....	91	33	05	271	19	46	4.3826370	
Mauvais Terre (B).....	40	10	49	219	59	09	4.3362426	
Boundary (B).....	58	55	29	238	36	17	4.6111079	
Canyon (B).....	105	29	06	285	01	21	4.7164202	

### ARROW, YELLOWSTONE COUNTY, MONT.

About 6 miles south of Warden (a station of the Northern Pacific Railway), near the corner of Tps. 1 and 2 N., Rs. 28 and 29 E., on north end of a butte which projects north from table-land, and about 0.75 mile west of Arrow Creek.

Signal: Small cedar tree set in ground and braced.

Station mark: Stone 5 by 6 by 18 inches, set flush with surface; tablet in top.

Reference mark: Pile of stones 6 feet southeast.

[Latitude 45° 51' 37.21". Longitude 108° 10' 55.01".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Rattlesnake.....	104	58	24.71	284	47	21.24	4.3142685	12.812
Justice.....	137	14	05.64	316	58	31.61	4.6133731	25.511
Shepherd.....	154	42	09.37	334	37	19.72	4.3072185	12.606
Absaroka.....	351	19	06.48	171	20	31.25	4.2291342	10.531

**BILLINGS, YELLOWSTONE COUNTY, MONT.**

On bald butte, 5 miles south and 2 miles east of Billings. Has scattering trees on south end, which is 100 feet lower than the top. About 100 feet north of east and west section line.

Signal: Small pine tree set 2 feet in ground.

Station mark: Stone 5 by 6 by 20 inches, set 20 inches in ground in approximate position of original station. Cross and U. S. on top.

[Latitude 45° 42' 54.0". Longitude 108° 27' 32.2".]

(H)=By G. T. Hawkins in 1916. (B)=Bozeman Base..

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Justice (H).....	172	02	04.50	351	58	28.01	4.6691784	29.009
Rattlesnake (H).....	184	11	53.54	4	12	45.92	4.3325775	13.364
Shepherd (H).....	200	19	26.15	20	26	32.60	4.5657634	22.862
Absaroka (H).....	271	19	00.66	91	32	19.16	4.3826370	14.996
Absaroka (B).....	271	19	46	91	33	05	4.3826370	.....
Mauvais Terre (B).....	329	17	20	149	22	57	4.3011815	.....
Canyon (B).....	116	44	22	296	29	56	4.4655250	.....
Boundary (B).....	26	19	05	206	13	10	4.3855090	.....

**BULL, MUSSELSHELL COUNTY, MONT.**

In northeast corner of sec. 33, T. 6 N., R. 27 E., on highest part and near southeast part of Bull Mountain, which is a high butte nearly level on top and breaks off sharply on the south side. There is a fringe of trees near the south edge; those near the signal were cut and one tree (pine) about 12 inches in diameter trimmed with tuft in top for signal.

Signal: Pine tree.

Station mark: Tablet in big rock flush with surface, 50 feet north of bluff and 13 feet S. 81° W. of lone pine.

[Latitude 46° 13' 35.28". Longitude 108° 20' 51.41".]

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Rattlesnake.....	11	17	08.34	191	13	12.31	4.5574806	22.430
Justice.....	54	52	35.76	234	44	09.16	4.2655048	11.451
Rater.....	161	51	37.51	341	49	51.83	4.0022363	6.246
Fattig.....	226	34	26.78	46	39	30.33	4.0927025	7.692
Shepherd.....	349	27	55.62	169	30	14.99	4.3568994	14.133

**CHIMNEY, MUSSELSHELL COUNTY, MONT. (Not occupied.)**

Sighted from only two points.

In sec. 20, T. 8 N., R. 28 E., is a column of rock about 40 feet high and about 12 feet across on top, which stands on top of a low hill, about 0.5 mile east of Fattig Creek and about 5 miles nearly north from Fattig post office.

Signal and station mark: Center of rock column.

[Latitude 46° 25' 11.79". Longitude 108° 13' 39.24".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Fattig.....	1 08 11	181 08 02	4.11401	8.079
Gibby.....	136 07 42	316 01 18	4.21143	10.111

**FATTIG, MUSSELSHELL COUNTY, MONT.**

A high bald butte about 4 miles south and 1 mile east of Fattig post office, in sec. 4, T. 6 N., R. 28 E.; and about 1.5 miles southeast from Miss E. M. George's house.

Signal: Small pine trimmed, which is 25 feet west from highest part of butte.

Station mark: Sandstone block 8 by 12 by 24 inches set 20 inches in the ground.

[Latitude 46° 18' 10.78". Longitude 108° 13' 51.29".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Bull.....	46 39 30.33	226 34 26.78	4.0927025	7.692
Rater.....	94 59 56.90	274 53 07.38	4.0851085	7.559
Gibby.....	155 58 50	335 52 35	4.43255	16.823
Chimney.....	181 08 02	1 08 11	4.11401	8.079

**GIBBY, MUSSELSHELL COUNTY, MONT.**

About 3 miles north and 1 mile east of Gage (a station on the Chicago, Milwaukee & St. Paul Railway), on a bald butte, which is the highest ground in the neighborhood and a very prominent landmark. It is near the northeast corner of sec. 25, T. 9 N., R. 26 E.

Signal: Small pine tree braced with stones.

Station mark: Tablet in solid rock.

Reference marks: (1) 10 feet from south face of butte; (2) 10 feet from west face of butte; (3) 60 feet from rock on north face of butte.

[Latitude 46° 31' 31.34". Longitude 108° 22' 28.33".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Rater.....	2 33 13	182 32 37	4.37465	14.723
Chimney.....	316 01 18	136 07 42	4.21143	10.111
Fattig.....	335 52 35	155 58 50	4.43255	16.823

**JUSTICE, YELLOWSTONE COUNTY, MONT.**

On a wooded butte in sec. 6, T. 4 N., R. 26 E., known locally as Justice Butte. The butte has about 1 acre on top and is nearly flat. The timber was partly cleared from top and one pine tree near western edge was trimmed and used for a signal.

Signal: Pine tree 12 inches in diameter. Tuft in top.

Station mark: Tablet cemented in solid rock 6 inches below surface and pile of stone over it.

Reference mark: Signal tree 9 feet northeast.

[Latitude 46° 07' 51.38". Longitude 108° 32' 33.56".]

To station—	Azimuth.	Back azimuth.	Distance.	
	° ' "	° ' "	Log. meters.	Miles.
Rater.....	210 30 37.95	30 37 19.32	4.3697415	14.558
Bull.....	234 44 09.16	54 52 35.76	4.2655048	11.451
Shepherd.....	301 18 10.50	121 28 55.51	4.3529962	14.007
Arrow.....	316 58 31.61	137 14 05.64	4.6133731	25.511
Rattlesnake.....	341 57 34.54	162 02 03.95	4.4159425	16.192
Billings.....	351 58 28.01	172 02 04.50	4.6691784	29.009

**RATER, MUSSELSHELL COUNTY, MONT.**

Near corner of secs. 20, 21, 28, and 29, T. 7 N., R. 26 E., on a bald butte about 3 miles northeast of Mr. Rater's ranch, on Halfbreed Creek, and on highest part of butte. Good view in all directions.

Signal: Tuft in top of pine tree just over west slope of butte and 68 feet nearly west from mark.

Station mark: Tablet set in stone 10 by 12 by 24 inches set 20 inches in ground.

[Latitude 46° 18' 44.72". Longitude 108° 23' 17.66'']

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Justice.....	30	37	19.32	210	30	37.95	4.3697415	14.558
Gibby.....	182	32	37	2	33	13	4.37465	14.723
Fattig.....	274	53	07.38	94	59	56.90	4.0851085	7.559
Bull.....	341	49	51.83	161	51	37.51	4.0022363	6.246

**RATTLESNAKE, YELLOWSTONE COUNTY, MONT.**

On a well-known and prominent bald butte about 11 miles north and 3 miles east of Billings. About 15 feet wide east and west and 30 feet long north and south on top.

Signal: Sawed lumber tripod.

Station mark: Tablet in solid rock.

[Latitude 45° 54' 28.72". Longitude 108° 26' 19.16'']

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Billings.....	4	12	45.92	184	11	53.54	4.3325775	13.364
Justice.....	162	02	08.95	341	57	34.54	4.4159425	16.192
Bull.....	191	13	12.31	11	17	08.34	4.5574806	22.430
Shepherd.....	220	39	25.23	40	45	39.86	4.2355932	10.689
Arrow.....	284	47	21.24	104	58	24.71	4.3142685	12.812
Absaroka.....	314	18	26.81	134	30	54.24	4.4984376	19.579

**SHEPHERD, YELLOWSTONE COUNTY, MONT.**

About 7 miles northeast of the town of Shepherd, on wooded hill in sec. 18, T. 3 N., R. 28 E., 0.25 mile west of Custer-Billings road and on west end of ridge. Timber cleared from west end of hill and one tree (pine 10 inches in diameter) trimmed and left for signal.

Signal: Lone pine tree 6.7 feet S. 27° 48' W. of station mark.

Station mark: Stone 6 by 10 by 24 inches set 22 inches in ground. Tablet in top.

Reference mark: Lone pine tree 6.7 feet S. 27° 48' W.

[Latitude 46° 01' 31.07". Longitude 108° 17' 38.06'']

To station—	Azimuth.			Back azimuth.			Distance.	
	°	'	"	°	'	"	Log. meters.	Miles.
Billings.....	20	26	32.60	200	19	26.15	4.5657634	22.862
Rattlesnake.....	40	45	39.86	220	39	25.23	4.2355932	10.689
Justice.....	121	28	55.51	301	18	10.50	4.3529962	14.007
Bull.....	169	30	14.99	349	27	55.62	4.3568994	14.133
Fattig.....	188	56	05.01	8	58	48.59	4.4948230	19.417
Arrow.....	334	37	19.72	154	42	09.37	4.3072185	12.606