

2855

4-679

BOOK 2855

Book "A"

FIELD NOTES

OF THE SURVEY OF THE

Gila and Salt River Meridian through Ts. 37, 38, 39, and 40 N.
 Ninth Standard Parallel North, through Rs. 1, 2, 3, and 4 W.
 Tenth Standard Parallel North, through Rs. 3, 4, and 5 W.
 First Guide Meridian West, through Ts. 37, 38, 39, 40 and part of 41 N.

Of the Gila and Salt River Base and Meridian,

In the State of A R I Z O N A.

EXECUTED BY

Jos. C. Thoma,

In the capacity of U. S. Surveyor ~~X~~, under instructions dated March 11, 1913,

issued by the United States Surveyor General to govern surveys included in

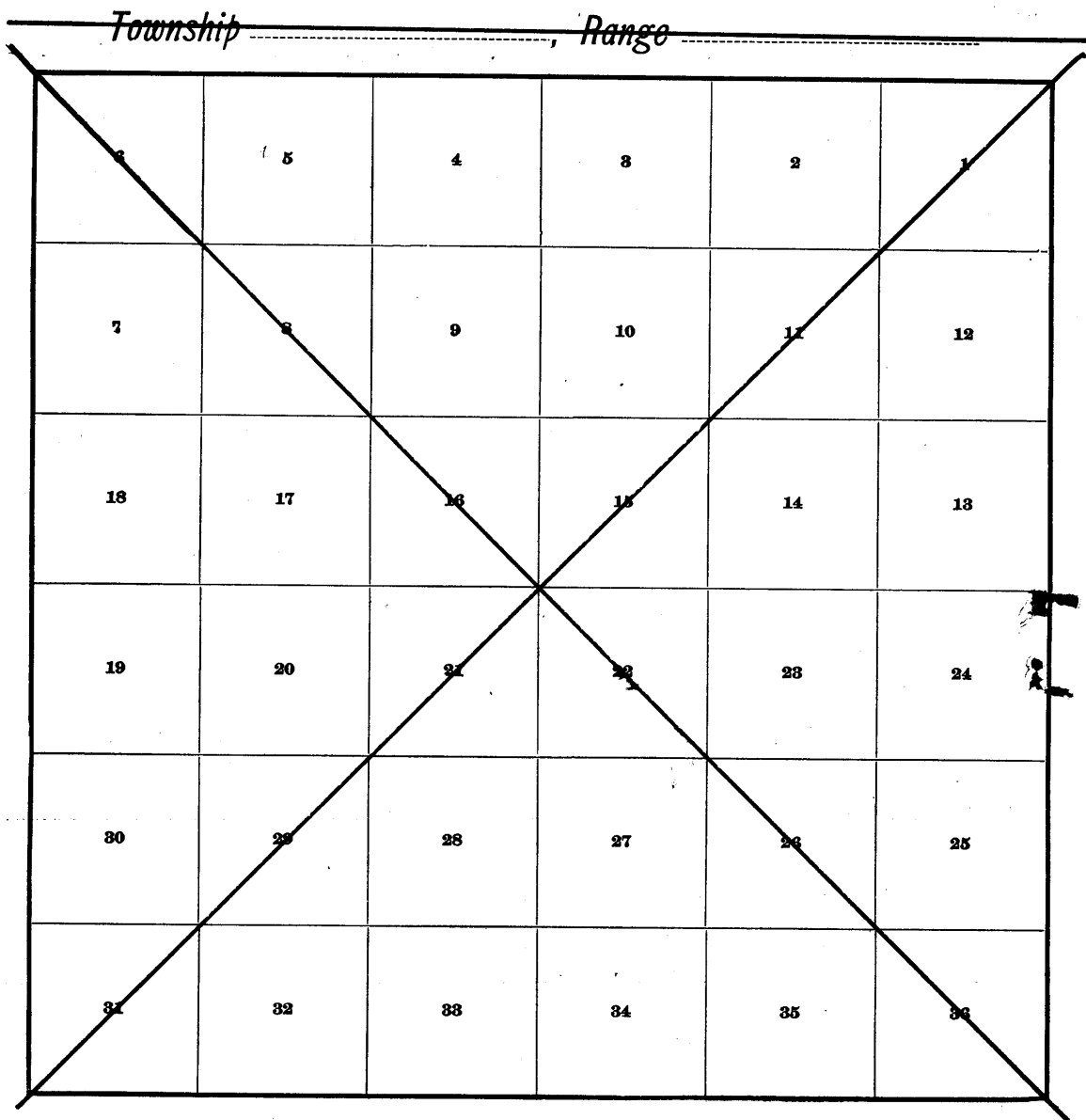
Group No. 29, which were approved by the Commissioner of the General Land

Office, March 26, 1913.

Survey commenced May 3, 1914,

Survey completed September 4, 1914.

~~INDEX DIAGRAM.~~



Book "A"

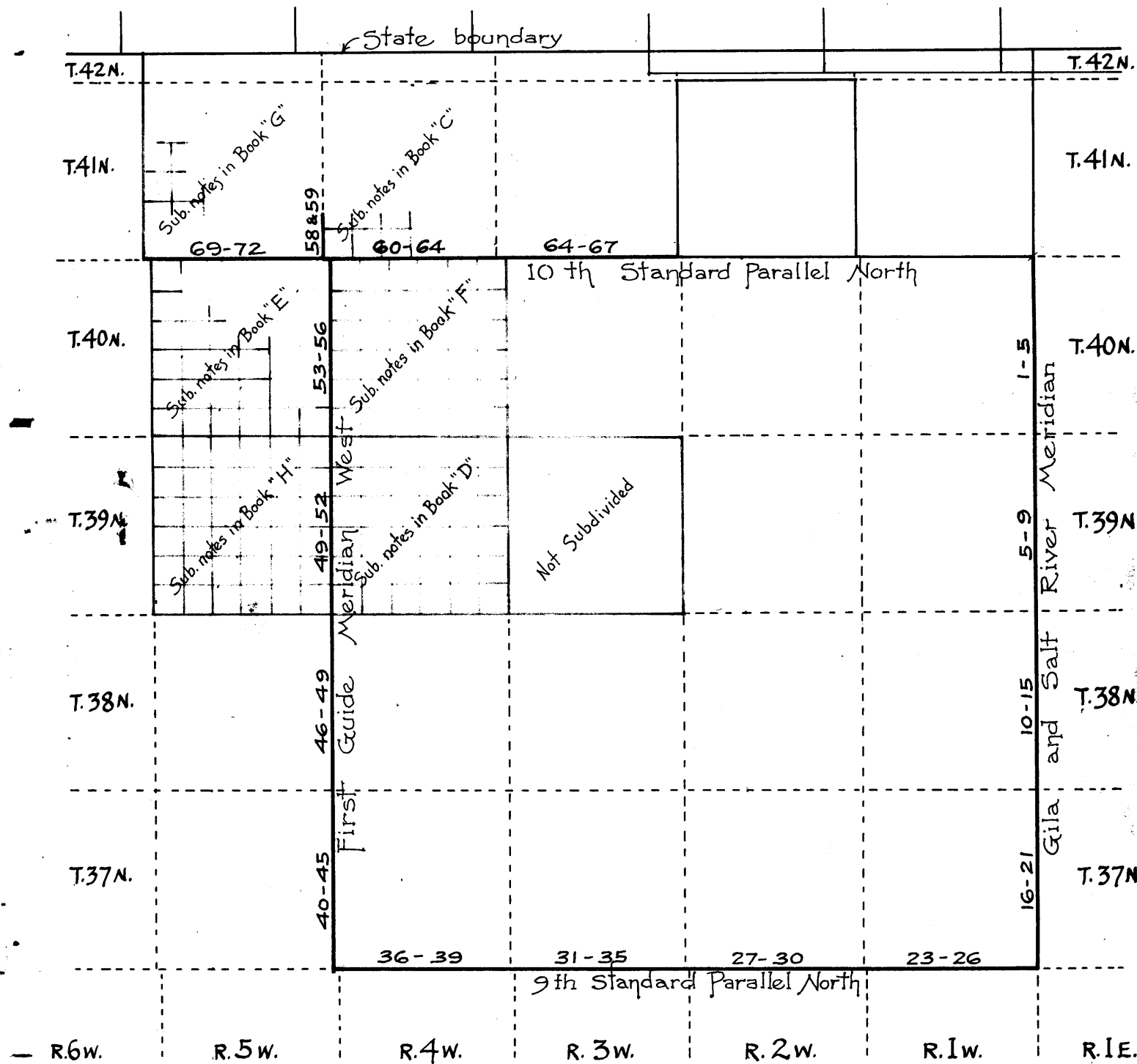
Group 29 - Arizona

INDEX DIAGRAM

BOOK 2855

- 1-5 Notes in this book (indexed)
- Notes in book "B"
- Accepted surveys.
- Unsurveyed lines.
- Subdivision lines - this Group.

STATE OF UTAH



Gila and Salt River Meridian, through T. 40 N.

13

Chains

Survey commenced May 3, 1914, and executed with a Young & Sons' light mountain transit, No. 8535; the horizontal limb having two double verniers placed opposite to each other and reading to single minutes of arc. The instrument was examined, tested on the true meridian at Salt Lake City, Utah, found correct, and was approved by the Assistant Supervisor of Surveys April 18, 1914.

I begin at the standard corner of Ts. 40 and 41 N., Rs. 1 E. and 1 W., which is a 3-in. iron post, firmly set in a mound of earth and stone, marked and witnessed as described by the Surveyor-General.

May 3, 1914: At said township corner, I make a noon observation for time as follows:

	Watch time.		
	h.	m.	s.
Sun's W. limb, - - - - -	12	24	40
Sun's E. limb, - - - - -	12	26	50
Mean, - - - - -	12	25	45

	h.	m.	s.
Apparent noon, - - - - -	12	00	00
Equation of time, May 3d, - - - - -	00	03	08
L. m. t. of apparent noon, - - - - -	11	56	52
Watch time of apparent noon, - - - - -	12	25	45
Watch fast, l. m. t., - - - - -	00	28	53

At said township corner, in latitude 36° 54' N.; longitude 112° 21' W., I observe Polaris as follows: I set a wooden peg 9.50 chs. north of the corner and proceed:

Telescope Direct:	Horizontal Angle			Watch time.		
	o	'	"	h.	m.	s.
Star,	1	16	00	7	11	20 p.m.
Flag,	0	00	00			
Star,	1	16	00	7	13	14
Flag,	0	00	00			
Star,	1	16	30	7	15	20
Flag,	0	00	00			
Star,	1	16	00	7	16	40
Flag,	0	00	00			
Telescope Reversed:						
Star,	1	17	00	7	18	40
Flag,	0	00	00			
Star,	1	17	00	7	20	30
Flag,	0	00	00			
Star,	1	16	30	7	22	10
Flag,	0	00	00			
Star,	1	16	30	7	25	00
Mean,	1	16	26	7	17	55 p.m.
Watch fast, l. m. t.,				0	28	53
L. m. t. of observation,				6	49	02 p.m.
U. C. of Polaris, May 3, 1914,				10h	45.6m	a.m.
Red. to long. of station,					1.2	
U. C. of Polaris at station,				10h	44.4m	a.m.
Hour angle of Polaris,				8h	04.6m	
W. azimuth of Polaris 73.1', equals 1° 13' 06"						
Angle, W., flag to star,	1	16	26			
Flag bears,	N.0	03	20 E.			

May 4, 1914: I set another peg 9.50' chs. N. of my station, 7 3/8 ins. W. of the peg used in the observation, and mark a point thereon.

This line I project as a transit line, using double back and fore sights.

Measurements were made by two sets of chainmen, using five-chain Lallie steel tapes, with clinometer for determining slopes.

From the standard cor. above described, I run S. on a true line, bet. secs. 1 and 6. Over rolling land, covered with dense sagebrush.

2.25
36.00

Old road, bears N. 40° W. and S. 40° E.
Low ridge, bears N. 85° W. and S. 85° E.

2. Gila and Salt River Meridian, through T. 40 N.

Chains	Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks.; position of middle point By 1st set, 39.98½ chs. By 2d set, 40.01½ chs.; the mean of which is
40.00	Set an iron post, 3 ft. long, 1 in. diam., 6 ins. in the ground, on solid rock, with mound of earth and stone around post, for ¼ sec. cor., marked on brass cap 1914 on S. rim; ½S1 in W. and S6 in E. half; and raise a mound of stone, 2 ft. base, 1½ ft. high, W. of cor. Pits impracticable.
43.00	Desc. abruptly 30 ft.,
44.75	Small wash, 10 lks. wide, course SW.; asc.
55.00	Top of low ridge, 75 ft. above wash, bears E. and W.; desc
71.00	Small wash, 10 lks. wide; course N. 80° W.; asc. gradually Difference between measurements of 80.00 chs. by two sets of chainmen is 3 lks.; position of middle point By 1st set, 79.98½ chs. By 2d set, 80.01½ chs.; the mean of which is
80.00	Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for cor. of secs. 1, 6, 7, and 12, marked on brass cap 1914 on S. rim; T40N in N., R1E in E., and R1W in W. half; S1 in NW., S6 in NE., S7 in SE., and S12 in SW. quadrant; and raise a mound of stone, 2 ft. base, 1½ ft. high, W. of cor. Pits impracticable. Land, rolling. Soil, gravel and coarse yellow sand with subsoil of coarse gravel and rock. Dense sagebrush undergrowth. Poor grazing.

16.80	South, bet. secs. 7 and 12. Overrolling land, covered with dense sagebrush. Wagon road from Kanab to Bright Angel, bears N. 70° W. and S. 70° E.
40.00	Difference between measurements of 40.00 chs. by two sets of chainmen is 1 lk.; position of middle point By 1st set, 39.99½ chs. By 2d set, 40.00½ chs.; the mean of which is Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for ¼ sec. cor., marked on brass cap 1914 on S. rim; ½S12 in W. and S7 in E. half; dig pits, 18x18x12 ins., N. and S. of post, 3 ft. dist.; and raise a mound of earth, 3½ ft. base, 1½ ft. high, W. of cor.
52.00	Low ridge, bears E. and W.; desc. gradually.
57.00	Dry draw, 10 lks. wide, 32 ft. below ridge; asc.
58.30	Spur of low ridge, projects W.
61.60	Dry draw, 20 lks. wide; course, W.; asc. abruptly 20 ft.
63.50	Low rim, Bears NW. and SE.; desc. gradually. Difference between measurements of 80.00 chs. by two sets of chainmen is nothing.
80.00	Point for sec. cor. falls on rock in place. Set an iron post, 3 ft. long, 3 ins. diam., on bed rock in a mound of earth and stone, for the cor. of secs. 7, 12, 13, and 18, marked on brass cap 1914 on S. rim; T40N in N., R1E in E., and R1W in W. half; S12 in NW., S7 in NE., S18 in SE., and S13 in SW. quadrant;

Gila and Salt River Meridian, through T. 40 N. . 3.

Chains and raise a mound of stone, 2 ft. base, 1½ ft. high, W. of cor. Pits impracticable.
 Land, rolling.
 Soil, gravel and coarse yellow sand, 6 ins. deep, on solid sandstone bed rock.
 Dense sage brush undergrowth. Poor grazing.

South, bet. secs. 13 and 18.
 Over rolling land, covered with sagebrush and scattering scrub cedar timber.

0.75 Bottom of gulch, 50 ft. deep; course NW.
 14.00 Top of low ridge, bears W. and SE.
 31.40 Bottom of gulch, 50 ft. deep, or 110 ft. below top of ridge.
 Difference between measurements of 40.00 chs. by two sets of chainmen is 1 lk.; position of middle point
 By 1st set, 39.99½ chs.
 By 2d set, 40.00½ chs.; the mean of which is

40.00 Set an iron post, 3 ft. long, 1 in. diam., 6 ins. in the ground on solid rock, in a mound of earth and stone, for ¼ sec. cor., marked on brass cap
 1914 on S. rim;
 ¼S13 in W. and
 S18 in E. half;
 and raise a mound of stone, 2 ft. base, 1½ ft. high, W. of cor. Pits impracticable. No trees within limits suitable for bearing trees.
 Leave scattering scrub cedar timber, bears NW. and SE.
 Difference between measurements of 80.00 chs. by two sets of chainmen is 2 lks.; position of middle point
 By 1st set, 79.99 chs.
 By 2d set, 80.01 chs., the mean of which is

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 10 ins. in the ground on solid rock, in a mound of earth and stone, for the cor. of secs. 13, 18, 19, and 24, marked on brass cap
 1914 on S. rim;
 T40N in N.,
 R1E in E., and
 R1W in W. half;
 S13 in NW.,
 S18 in NE.,
 S19 in SE., and
 S24 in SW. quadrant;
 and build mound of stone, 2 ft. base, 1½ ft. high, W. of cor. Pits impracticable.
 Land, rolling.
 Soil, coarse gravel and stones about 1 ft. deep on solid rock.
 Scattering scrub cedar timber on north half mile.
 Dense sagebrush undergrowth. Poor grazing.
 May 4, 1914.

May 5, 1914.
 South, bet. secs. 19 and 24.
 Over rolling land, covered with sagebrush and scattering scrub cedar timber.

14.00 Low ridge, bears E. and W.; desc.
 37.00 Bottom of gulch, 60 ft. deep, course N. 40° W.
 Difference between measurements of 40.00 chs. by two sets of chainmen is 2 lks.; position of middle point
 By 1st set, 39.99 chs.
 By 2d set, 40.01 chs., the mean of which is

40.00 Point for sec. cor. falls on rock in place.
 Set an iron post, 3 ft. long, 1 in. diam., on bed rock in a mound of stone, for ¼ sec. cor., marked on brass cap
 1914 on S. rim;
 ¼S24 in W. and
 S19 in E. half; from which
 A cedar, 12 ins. diam., bears S. 43° 40' E., 200 lks. dist., marked ¼S19BT.

4. Gila and Salt River Meridian, through T. 40 N.

Chains A cedar, 10 ins. diam., bears S, 16° W., 81 lks. dist., marked $\frac{1}{4}$ S24BT.
 43.00 Low ridge, bears W. and SE.
 Difference between measurements of 80.00 chs. by two sets of chainmen is nothing.
 80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the cor. of secs. 19, 24, 25, and 30, marked on brass cap
 1914 on S. rim;
 T40N in N.,
 R1E in E., and
 R1W in W. half;
 S24 in NW.,
 S19 in NE.,
 S30 in SE., and
 S25 in SW. quadrant;
 and raise a mound of stone, 2 ft. base, 1½ ft. high, W. of cor. Pits impracticable. No trees within limits suitable for bearing trees.
 Land, rolling.
 Soil, yellow gravel, 8 ins. deep, on sandstone bed rock.
 Timber, scattering scrub cedar.
 Undergrowth, sagebrush.

 South, bet. secs. 25 and 30.
 Over rolling land, covered with scattering scrub cedar and pinion timber and sagebrush undergrowth.
 4.70 Bottom of gulch, 120 ft. deep; course, N. 35° W.; asc.
 31.00 Spur of rolling ridge, 120 ft. above bottom of gulch, bears N. 35° W. and S. 35° E.
 Difference between measurements of 40.00 chs. by two sets of chainmen is 2 lks.; position of middle point
 By 1st set, 39.99 chs.
 By 2d set, 40.01 chs., the mean of which is
 40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ S25 in W. and
 S30 in E. half;
 and raise a mound of stone, 2 ft. base, 1½ ft. high, W. of cor. Pits impracticable. No trees within limits suitable for bearing trees.
 Leave cedar and pinion timber, bears NW. and SE.
 41.25 Bottom of gulch, 25 ft. deep; course, N. 35° W.
 49.00 Top of flat ridge, 8 chs. wide; bears E. and W.
 57.00 Desc. gradually over SW. slope.
 Difference between measurements of 80.00 chs. by two sets of chainmen is 2 lks.; position of middle point
 By 1st set, 79.99 chs.
 By 2d set, 80.01 chs., the mean of which is
 80.00 Point for cor. falls in dry wash, 10 lks. wide; course, W. for 10.00 chs., thence N. 20° W.
 80.20 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground for witness corner to the corner of secs. 25, 30, 31, and 36, marked on brass cap
 1914 on S. rim;
 T40NWC in N.,
 R1E in E., and
 R1W in W. half;
 S25 in NW.,
 S30 in NE.,
 S31 in SE., and
 S36 in SW. quadrant;
 and raise a mound of stone, 2 ft. base, 1½ ft. high, W. of cor. Pits impracticable.
 Land, rolling.
 Soil, gravel and coarse yellow sand, 12 to 36 ins. deep, on solid sandstone bedrock.
 Undergrowth, sagebrush.
 Timber, scattering scrub cedar and pinion in north half mile.

Gila and Salt River Meridian, through Township 40 North. 5.

Chains South, bet. secs. 31 and 36, from true point for cor.
 0.20 Asc. gradually over gently rolling land covered with sage.
 Witness corner to cor. of secs. 25, 30, 31, and 36.
 Difference between measurements of 40.00 chs. by two sets
 of chainmen is nothing.
 40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the
 ground for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ S36 in W. and
 S31 in E. half;
 and raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high,
 W. of cor. Pits impracticable.
 65.00 Top of ascent, bears NW. and SE.; desc. gradually; enter
 dense scrub cedar and pinion timber.
 Difference between measurements of 80.00 chs. by two sets
 of chainmen is nothing.
 80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in
 the ground for the cor. of Ts. 39 and 40 N., Rs. 1 E.
 and 1 W., marked on brass cap
 1914 on S. rim;
 T40N in N.,
 R1E in E.,
 T39N in S., and
 R1W in W. half;
 S36 in NW.,
 S31 in NE.,
 S6 in SE., and
 S1 in SW. quadrant; from which
 A pinion, 16 ins. diam., bears N. 42° E., 95 lks. dist.,
 marked T40NR1ES31BT.
 A Pinion, 12 ins. diam., bears S. 28° 10' E., 64 lks.
 dist., marked T39NR1ES6BT.
 A pinion, 10 ins. diam., bears S. 50° 30' W., 136 lks.
 dist., marked T39NR1WS1BT.
 A pinion, 8 ins. diam., bears N. 32° 30' W., 79 lks..
 dist., marked T40NR1WS36BT.
 Land, rolling.
 Soil, gravel and coarse yellow sand.
 Timber, scattering scrub cedar and pinion, 15 chs.
 Undergrowth, sagebrush.

May 5, 1914.

-----T. 39 N.-----

May 7, 1914.

South, bet. secs. 1 and 6, T. 39 N., R. 1 E. and R. 1 W.
 Over rolling land, covered with dense sage brush under-
 growth and cedar and pinion timber.

7.50 Leave dense cedar and pinion timber, bears NW. and SE.
 15.50 Gulch, 34 ft. deep; course, NW.; asc. 118 ft. to rolling
 hills.
 23.50 Enter dense scrub cedar and pinion timber, bears NW. and
 SE.
 Difference between measurements of 40.00 chs. by two sets
 of chainmen is 2 lks.; position of middle point
 By 1st set, 39.99 chs.,
 By 2d set, 40.01 chs., the mean of which is
 40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the
 ground for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ S1 in W. and
 S6 in E. half; from which
 A pinion, 8 ins. diam., bears S. 44° 40' E., 11 lks.
 dist., marked $\frac{1}{4}$ S6BT.
 A pinion, 12 ins. diam., bears S. 83° 45' W., 106 lks.
 dist., marked $\frac{1}{4}$ S1BT.
 Cor. established on N. edge of flat, 30 chs. wide, bears
 NW. and SE.
 63.00 Leave dense scrub cedar and pinion, enter scattering scrub
 cedar and pinion, bears E. and SW.
 Difference between measurements of 80.00 chs., by two
 sets of chainmen is 2 lks; position of middle point
 By 1st set, 79.99 chs.,
 By 2d set, 80.01 chs., the mean of which is

6. Gila and Salt River Meridian, through T. 39 N.

Chains 80.00	<p>Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the corner of secs. 1, 6, 7, and 12, marked on brass cap</p> <p style="padding-left: 40px;">1914 on S. rim; T39N in N., R1E in E., and R1W in W. half; S1 in NW., S6 in NE., S7 in SE., and S12 in SW. quadrant; from which</p> <p>A pinion, 5 ins. diam., bears N. 60° 30' E., 59 lks. dist., marked T39NR1ES6BT.</p> <p>A pinion, 8 ins. dia., bears S. 42° 30' E., 160 lks. dist., marked T39NR1ES7BT.</p> <p>A pinion, 5 ins. diam., bears S. 44° 10' W., 117 lks. dist., marked T39NR1WS12BT.</p> <p>A pinion, 8 ins. diam., bears N. 47° W., 58 lks. dist., marked T39NR1WS1BT.</p> <p>Land, rolling. Soil, gravel and coarse sand. Rocky subsoil. Timber, dense scrub cedar and pinion, 63 chs.; scattering, 17 chs. Undergrowth, sagebrush.</p> <p>-----</p> <p>South, bet. secs. 7 and 12, Over rolling land, covered with sagebrush undergrowth and scattering scrub cedar and pinion timber.</p> <p>4.50 Dry gulch, 30 ft. deep; course, W.; asc. 30 ft.</p> <p>13.50 Spur of low ridge, projects W.; desc.</p> <p>21.50 Dry gulch, 40 ft. deep; course NW.</p> <p>34.00 Spur of low ridge, projects E.; desc.</p> <p>Difference between measurements of 40.00 chs., by two sets of chainmen is 4 lks.; position of middle point</p> <p style="padding-left: 40px;">By 1st set, 39.98 chs. By 2d set, 40.02 chs., the mean of which is</p> <p>40.00 Set an iron post, 3 ft. long, 1 in. diam., 12 ins. in the ground to bedrock, surrounded by a mound of stone and earth, for $\frac{1}{4}$ sec., cor., marked on brass cap</p> <p style="padding-left: 40px;">1914 on S. rim; $\frac{1}{4}$S12 in W. and S7 in E. half; from which</p> <p>A cedar, 10 ins. diam., bears N. 30° 40' E., 451 lks. dist., marked $\frac{1}{4}$S7BT.</p> <p>A forked pinion, 10 ins. diam., bears N. 36° 30' W., 178 lks. dist., marked $\frac{1}{4}$S12BT.</p> <p>Continue along W. edge of sagebrush opening.</p> <p>65.00 Head of gulch; course, NE.</p> <p>73.40 Road to Brown's ranch, which is located about 2 miles W. Road bears N. 70° W. and S. 70° E.</p> <p>Difference between measurements of 80.00 chs. by two sets of chainmen is 1 lk., position of middle point</p> <p style="padding-left: 40px;">By 1st set, 79.99$\frac{1}{2}$ chs., By 2d set, 80.00$\frac{1}{2}$ chs., the mean of which is</p> <p>80.00 Set an iron post, 3 ft. long, 3 ins. diam., 10 ins. in the ground to bedrock, surrounded by a mound of stone and earth, for cor. of secs. 7, 12, 13, and 18, marked on brass cap</p> <p style="padding-left: 40px;">1914 on S. rim; T39N in N., R1E in E., and R1W in W. half; S12 in NW., S7 in NE., S18 in SE., and S13 in SW. quadrant;</p> <p>dig pits, 18x18x12 ins., in each sec., 5$\frac{1}{2}$ ft. dist.; and raise a mound of earth, 4 ft. base, 2 ft. high, W. of cor. No trees within limits suitable for bearing trees.</p> <p>Land, rolling.</p>
-----------------	---

Chains Soil, gravel and coarse yellow sand, 1 ft. deep, on solid sandstone bedrock.
 Undergrowth, sage brush.
 Timber, scattering scrub cedar and pinion.
 May 7, 1914.

May 8, 1914.
 South, bet. secs. 13 and 18.
 Asc. gradually over rolling land, covered with sagebrush undergrowth and scattering scrub cedar and pinion timber, with a general drainage to the NW.
 Difference between measurements of 40.00 chs. by two sets of chainmen is 2 lks., position of middle point
 By 1st set, 39.99 chs.,
 By 2d set, 40.01 chs., the mean of which is

40.00 Set an iron post, 3 ft. long, 1 in. diam., 6 ins. in the ground to bedrock, surrounded by a mound of stone and earth, for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ S13 in W. and
 S18 in E. half;
 and raise a mound of stone, 2 ft. base, 1 $\frac{1}{2}$ ft. high, W. of cor. Pits impracticable.

49.00 Cor. set on spur of ridge, projecting W. about 25 chs.
 61.50 Gulch, 35 ft. deep; course, N. 65° W.
 66.50 Spur of low ridge, projects W. about 15 chs.; desc.
 80.00 Gulch, 35 ft. deep, 55 ft. below top of spur; course, N. 80° W.
 Difference between measurements of 80.00 chs. by two sets of chainmen is nothing.

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the cor. of secs. 13, 18, 19, and 24, marked on brass cap
 1914 on S. rim;
 T39N in N.,
 R1E in E., and
 R1W in W. half;
 S13 in NW.,
 S18 in NE.,
 S19 in SE., and
 S24 in SW. quadrant; from which

A pinion, 12 ins. diam., bears N. 46° 20' E., 90 lks. dist., marked T39NRLES18BT.
 A cedar, 8 ins. diam., bears S. 48° 30' E., 101 lks. dist., marked T39NRLES19BT.
 A pinion, 12 ins. diam., bears S. 24° 10' W., 136 lks. dist., marked T39NR1WS24BT.
 A pinion, 10 ins. diam., bears N. 16° W., 160 lks. dist., marked T39NR1WS13BT.

Land, rolling.
 Soil, gravel and coarse yellow sand, 6 ins. to 3 ft. deep, on sandstone bedrock.
 Undergrowth, sagebrush.
 Timber, scattering scrub cedar and pinion.

South, bet. secs. 19 and 24.
 Asc. gradually over rolling land, covered with dense sagebrush.

20.00 Enter dense scrub cedar and pinion timber, bears E. and W.
 27.00 Point of low ridge, projecting W.; desc. gradually 85 ft. to
 35.00 Gulch, 50 ft. deep; course, W.; asc.
 Difference between measurements of 40.00 chains by two sets of chainmen is 3 lks.; position of middle point
 By 1st set, 39.98 $\frac{1}{2}$ chs.,
 By 2d set, 40.01 $\frac{1}{2}$ chs., the mean of which is

40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ S24 in W. and
 S19 in E. half; from which

8. Gila and Salt River Meridian, through T. 39 N.

Chains A pinion, 8 ins. diam., bears N. $86^{\circ} 45'$ E., 18 lks. dist., marked $\frac{1}{4}$ S19BT.
 A pinion, 8 ins. diam., bears S. $39^{\circ} 40'$ W., 53 lks. dist., marked $\frac{1}{4}$ S24BT.
 54.00 Top of ridge, 40 ft. above $\frac{1}{4}$ cor., bears E. and W.; leave dense scrub cedar and pinion timber, enter scattering timber.
 66.90 Gulch, 75 ft. deep; course, SW. 20 chs., thence NW.
 67.15 Wagon road from Fredonia to Jacob's Pool, follows bottom of gulch.
 Difference between measurements of 80.00 chs. by two sets of chainmen is 1 lk.; position of middle point
 By 1st set, 79.99 $\frac{1}{2}$ chs.
 By 2d set, 80.00 $\frac{1}{2}$ chs., the mean of which is
 80.00 Set an iron post, 3 ft. long, 3 ins. diam., 6 ins. in the ground to bedrock, surrounded by a mound of stone and earth, for the cor. of secs. 19, 24, 25, and 30, marked on brass cap
 1914 on S. rim;
 T39N in N.,
 R1E in E., and
 R1W in W. half;
 S24 in NW.,
 S19 in NE.,
 S30 in SE., and
 S25 in SW. quadrant; from which
 A cedar, 10 ins. diam., bears N. $48^{\circ} 20'$ E., 741 lks. dist., marked T39NR1ES19BT
 A pinion, 15 ins. diam., bears S. $42^{\circ} 30'$ E., 79 lks. dist., marked T39NR1ES30BT.
 A pinion, 12 ins. diam., bears S. 60° W., 691 lks. dist., marked T39NR1WS25BT.
 A pinion, 8 ins. diam., bears N. $38^{\circ} 15'$ W., 82 lks. dist., marked T39NR1WS24BT.
 Cor. established on NW. slope of ridge, bearing NW. and SE.
 Land, rolling.
 Soil, gravel and coarse yellow sand, from 6 ins. to 3 ft. deep on solid sandstone bedrock.
 Undergrowth, sage and buck brush.
 Timber, scrub cedar and pinion.

May 8, 1914.

 May 9, 1914.

South, bet. secs. 25 and 30.
 Asc. gradually over rolling land, covered with sagebrush undergrowth and dense scrub cedar and pinion timber, with a general drainage to the NW.
 9.00 Top of low ridge, 35 ft. above cor.; desc. E. and W.
 15.00 Gulch, 154 ft. deep; course, W. 25 chs., thence NW.
 34.00 Ridge, bears NW. for 30 chs., thence SE., 154 ft. above gulch.
 Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks.; position of middle point
 By 1st set, 39.98 $\frac{1}{2}$ chs.
 By 2d set, 40.01 $\frac{1}{2}$ chs., the mean of which is
 40.00 Set and iron post, 3 ft. long, 1 in. diam., 20 ins. in the ground, surrounded by a mound of stone and earth, for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ S30 in E. and
 S25 in W. half; from which
 A cedar, 12 ins. diam., bears S. $66^{\circ} 10'$ E., 72 lks. dist., marked $\frac{1}{4}$ S30BT.
 A pinion, 10 ins. diam., bears S. $63^{\circ} 10'$ W., 66 lks. dist., marked $\frac{1}{4}$ S25BT.
 56.30 Desc. abruptly, 95 ft., bears E. and W.
 63.60 Road from Jacob Canyon to Fredonia, bears E. and W.
 64.60 Gulch, 130 ft. deep; course, W. Sheep corral bears E. 8 chs. distant.
 Difference between measurements of 80.00 chs. by two sets

Gila and Salt River Meridian, through T. 39 N. 9.

Chains of chainmen is 3 lks., the position of middle point
 By 1st set, 79.98 $\frac{1}{2}$ chs.
 By 2d set, 80.01 $\frac{1}{2}$ chs., the mean of which is
 80.00 Set an iron post, 3 ft. long, 3 ins. diam., 20 ins. in the
 ground to bedrock, surrounded by a mound of stone and
 earth, for the cor. of secs. 25, 30, 31, and 36, marked
 on brass cap
 1914 on S. rim;
 T39N in N.,
 R1E in E., and
 R1W in W. half;
 S25 in NW.,
 S30 in NE.,
 S31 in SE., and
 S36 in SW. quadrant; from which
 A pinion, 14 ins. diam., bears N. 48° 40' E., 112 lks.
 dist., marked T39NR1ES30BT.
 A Pinion, 16 ins. diam., bears S. 47° 45' E., 115 lks.
 dist., marked T39NR1ES31BT.
 A cedar, 15 ins. diam., bears S. 21° 15' W., 87 lks.
 dist., marked T39NR1WS36BT.
 A cedar, 17 ins. diam., bears N. 55° 05' W., 56 lks.
 dist., marked T39NR1WS25BT.
 Land, rolling.
 Soil, gravel and coarse yellow sand, 1 $\frac{1}{2}$ ft. deep, on sand-
 stone bedrock.
 Undergrowth, sagebrush and buck brush.
 Timber, scrub cedar and pinion.

 South, bet. secs. 31 and 36.
 Asc. gradually over rolling land, covered with dense scrub
 cedar and pinion timber and sagebrush.
 5.00 Leave dense timber, enter dense scrub oak brush, bears E.
 and W.
 7.00 Leave dense oak brush; enter dense timber, bears E. and W.
 24.00 Ridge, 110 ft. above cor., bears E. and W.
 36.00 Gulch, 97 ft. deep, 8 lks. wide at bottom; course, W.
 Ascend gradually.
 Difference between measurements of 40.00 chs. by two sets
 of chainmen is 1 lk.; position of middle point,
 By 1st set, 39.99 $\frac{1}{2}$ chs.,
 By 2d set, 40.00 $\frac{1}{2}$ chs., the mean of which is
 40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the
 ground for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ S36 in W. and
 S31 in E. half; from which
 A cor. of the Kaibab National Forest bears N. 74° E.,
 43 lks. dist. This cor. is a cedar post, 7x7x72
 ins. above ground, set in a mound of stone and
 marked "1/4 S31 T39 NR1 E" on E. side; 'S1' on S. side;
 '1/4 S36 R1 W' on W. side; and 'National Forest Boundary'
 (tin sign) tacked on N. side, with two pinion
 trees blazed for bearing trees. I use the same
 blazed trees as witness to my $\frac{1}{4}$ sec. cor.
 From $\frac{1}{4}$ sec. cor.
 A pinion, 8 ins. diam., bears S. 50° 50' E., 84 lks..
 dist., marked FS $\frac{1}{4}$ S31 T39 NR1 E.
 A pinion, 12 ins. diam., bears N. 75° 30' W., 210 lks.
 dist., marked FS $\frac{1}{4}$ S36 T39 NR1 W.
 (These trees had been previously blazed and marked.)
 43.50 Dry draw, 10 lks. deep; course, NW.; asc.
 54.00 Ridge, 110 ft. above draw, bears E. and W.; desc. grad-
 ually.
 Difference in measurement of 80.00 chs. by two sets of
 chainmen is 3 lks.; position of middle point
 By 1st set, 79.98 $\frac{1}{2}$ chs.
 By 2d set, 80.01 $\frac{1}{2}$ chs., the mean of which is
 80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the
 ground for the cor. of Ts. 38 and 39 N., Rs. 1 E and
 1 W., marked on brass cap

10. Gila and Salt River Meridian, through Township 39 North.

Chains

1914 on S. rim;
T39N in N.,
R1E in E.,
T38N in S., and
R1W in W. half;
S36 in NW.,
S31 in NE.,
S6 in SE., and
S1 in SW. quadrant; from which

- A pinion, 10 ins. diam., bears N. 24° 40' E., 60 lks. dist., marked T39NR1ES31BT.
- A pinion, 12 ins. diam., bears S. 46° 20' E., 89 lks. dist., marked T38NR1ES6BT.
- A cedar, 9 ins. diam., bears S. 54° 40' W., 129 lks. dist., marked T38NR1WS1BT.
- A cedar, 17 ins. diam., bears N. 79° W., 114 lks. dist., marked T39NR1WS36BT.

Land, rolling.

Soil, gravel and coarse yellow sand, over two ft. deep. Undergrowth, sage and buck brush and scattering patches of scrub oak.

Timber, scrub cedar and pinion.

At this corner, I observe Polaris as follows:

Telescope Direct:	Horizontal Angle	Watch time.
	o ' "	h. m. s.
Star,	1 8 00	7 14 20 p. m.
Flag,	0 0 00	
Star,	1 8 00	7 17 10
Flag,	0 0 00	
Telescope Reversed:		
Star,	1 9 00	7 19 10
Flag,	0 0 00	
Star,	1 9 00	7 20 10
Flag,	0 0 00	
Mean,	1 8 30	7 17 42 p. m.
Watch fast, 1. m. t.,		0 28 53
L. m. t. of observation,		6 48 49 p. m.
U. C. Polaris, May 9, 1914,		10h. 22.0 m.
Red. to long. of station,		1.2
U. C. Polaris at station,		10h. 20.8 a. m.
Hour angle of Polaris,		8h 28.0 m.
W. azimuth of Polaris, 68.2',		1° 08' 12"
Angle W., flag to star,		1 08 30
Flag, or line, bears,		N. 0° 00' 18" E.
		May 9, 1914.

T. 38 N.

May 11, 1914.

S., bet. secs. 1 and 6, T. 38 N., Rs. 1 E and 1 W. Asc. over rolling land, covered with scattering scrub cedar and pinion timber, sage and buck brush undergrowth.

12.50

Ridge, 20 ft. above cor., bears E. and W.; desc.

23.00

Dry wash, 5 lks. wide, 100 ft. below cor.; course, W.; asc.

27.50

Low spur of ridge, 40 ft. above wash, bears E. and W.; desc. 15 ft. to 1/4 sec. cor.

Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks.; position of middle point

By 1st set, 39.98 1/2 chs.

By 2d set, 40.01 1/2 chs., the mean of which is

40.00

Set an iron post, 3 ft. long, 1 in. diam., 24 ins. in the ground to bed rock, for 1/4 sec. cor., (marked on brass cap

1914 on S. rim;

1/2 S1 in W. and

S6 in E. half; from which

A pinion, 16 ins. diam., bears S. 42° 15' E., 188 lks. dist., marked 1/2 S6BT.

A pinion, 8 ins. diam., bears N. 42° 10' W., 29 lks. dist., marked 1/2 S1BT.

omit

Chains
41.60 Dry draw, 10 lks. wide; course, N. 35° W.; 20 ft. below, $\frac{1}{4}$ sec. cor.; asc.
52.00 Top of ascent, 30 ft. above draw, bears NW. and SE.
69.00 Dry draw, 6 lks. wide, 40 ft. below top of ridge; course, W. about 25 chs., thence NW.; asc.
73.75 Old Johnson-Ryan wagon road, bears NE. and SW.
7 Difference between measurements of 80.00 chs. by two sets of chainmen is 3 lks.; position of middle point
By 1st set, 79.98 $\frac{1}{2}$ chs.
By 2d set, 80.01 $\frac{1}{2}$ chs., the mean of which is
80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground for the cor. of secs. 1, 6, 7, and 12, marked on brass cap

1914 on S. rim;
T38N in N.,
R1E in E., and
R1W in W. half; *cut*
S1 in NW.,
S6 in NE.,
S7 in SE., and
S12 in SW. quadrant;

and raise a mound of stone, 2 ft. base, 1 $\frac{1}{2}$ ft. high, W. of cor. No trees within limits suitable for bearing trees. Pits impracticable.

high
Land, rolling.

Soil, gravel and coarse yellow sand, about 2 ft. deep, on subsoil of coarse gravel and bedrock.

Undergrowth, sage and buck brush.

Timber, scattering scrub cedar and pinion.

The old Johnson-Ryan road joins the Fredonia-Ryan road about 7 chs. W. of cor. Fredonia-Ryan road bears N. 35° W.

The land to the north has a gradual ascent from the corner of Ts. 40 and 41 N., Rs. 1 E. and 1 W., to the corner of secs. 1, 6, 7, and 12, T. 38 N., Rs. 1 E. and 1 W., which is located near the slope of the Kaibab plateau. It has a western exposure with a general drainage NW. into Johnson wash and Kanab creek.

The soil is gravel and coarse yellow sand of shallow depth with sandstone bedrock close to the surface, rendering it useless for agricultural purposes and offering scant grazing.

About three miles west of the line, the land becomes flat and large areas of open sagebrush flats are found. Rex Brown has located a dry farm on one of these flats, his principal crop being wheat. The only source of water is by catching the melting snow in the winter, and the spring rains, and storing the water in reservoirs. No living water was found along the line. Water for this survey was hauled from Fredonia and Ryan.

Scattering scrub cedar and pinion is the only timber, with undergrowth of sage and buck brush.

South, on true line, bet. secs. 7 and 12.

Asc. gradually over NW. slope of Kaibab plateau, through scattering scrub cedar and pinion timber and short sagebrush undergrowth.

7 Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks; position of middle point

By 1st set, 39.98 $\frac{1}{2}$ chs.

By 2d set, 40.01 $\frac{1}{2}$ chs., the mean of which is

40.00 Set an iron post, 3 ft. long, 1 in. dia., 17 ins. in the ground to bedrock, surrounded by a mound of stone and earth, for $\frac{1}{4}$ sec. cor., (marked on brass cap

1914 on S. rim;

$\frac{1}{4}$ S12 in W. and

S7 in E. half; from which

A cedar, 24 ins. diam., bears N. 51° 45' E., 53 lks. dist., marked $\frac{1}{4}$ S7BT.

A cedar, 16 ins. diam., bears N. 63° 40' W., 256 lks. dist., marked $\frac{1}{4}$ S12BT.

58.00 Start abrupt ascent and leave sagebrush, bears NE. and SW.

12. Gila and Salt River Meridian, through T. 38 N.

Chains 67.10	Ledge, 20 ft. high, bears NE. and SW.; enter dense scrub cedar and pinion timber, bears NE. and SW. Difference in measurements of 80.00 chs. by two sets of chainmen is 3 lks.; position of middle point By 1st set, 79.98 $\frac{1}{2}$ lks. By 2d set, 80.01 $\frac{1}{2}$ chs., the mean of which is
80.00	Set an iron post, 3 ft. long, 3 ins. diam., 15 ins. in the ground to bedrock, surrounded by a mound of stone and earth, for the cor. of secs. 7, 12, 13, and 18, marked on brass cap 1914 on S. rim; T38N in N., R1E in E., and R1W in W. half; S12 in NW., S7 in NE., S18 in SE., and S13 in SW. quadrant; from which A pinion, 16 ins. diam., bears N. 48° 30' E., 25 lks. dist., marked T38NR1ES7BT. A forked pinion, 17 ins. diam., bears S. 69° 15' E., 126 lks. dist., marked T38NR1ES18BT. A pinion, 12 ins. diam., bears S. 46° 30' W., 98 lks. dist., marked T38NR1WS13BT. A pinion, 9 ins. diam., bears N. 18° 45' W., 60 lks. dist., marked T38NR1WS12BT. This cor. is established 355 ft. above the base of the abrupt ascent which begins at the 58-ch. point. Land, mountainous and hilly. Soil, coarse gravel and stony on solid bedrock. Undergrowth, sagebrush, 58.00 chs., and buck brush. Timber, scrub cedar and pinion. May 11, 1914.

	May 13, 1914. S., bet. secs. 13 and 18. Asc. over broken NW. slope of Kaibab Plateau, through dense scrub cedar and pinion timber and buck brush undergrowth.
16.75	Top of Buck Ridge Point of the Kaibab plateau; projects W.; 70 ft. above sec. cor.
16.88	Forest rangers' station in deserted mining town of Ryan bears S. 30° 45' W. The town comprises 15 frame cabins and an abandoned smelter.
27.00	Desc. 50 ft., over SW. slope of Buck Ridge Point to Desc. abruptly over SW. slope of Buck Ridge Point, 410 ft. to $\frac{1}{4}$ sec. cor.
32.75	Top of series of ledges, bears NW. and S. 35° E.
34.60	Base of series of ledges bears NW. and S. 35° E.; 95 ft. below top. Small prehistoric ruin on line at base of ledges. Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks.; position of middle point, By 1st set, 39.98 $\frac{1}{2}$ chs., By 2d set, 40.01 $\frac{1}{2}$ chs., the mean of which is
40.00	Set an iron post, 3 ft. long, 1 in. diam., 24 ins. in mound of earth and stone, on solid rock, for $\frac{1}{4}$ sec. cor., marked on brass cap .1914 on S. rim; $\frac{1}{4}$ S13 in W. and S18 in E. half; from which A pinion, 10 ins. diam., bears S. 86° E., 34 lks. dist., marked $\frac{1}{4}$ S18BT. A pinion, 12 ins. diam., bears N. 6° W., 91 lks. dist., marked $\frac{1}{4}$ S13BT. This cor. is established at brush drift fence, bears E. and W.
53.70	Base of abrupt desc., 420 ft. below $\frac{1}{4}$ sec. cor., and bottom of Warm Springs Canyon, bears E. and W.; thence across level bottom land.
55.50	Warm Springs Canyon wash, 80 lks. wide; course, W.

Chains	
59.60	U. S. Forest Service telephone line, bears E. and W.
60.30	Old road from mine to smelter at Ryan along S. side of bottom of canyon, bears E. and W.; ascend abruptly over NW. slope of canyon.
62.40	Wire fence, bears NE. and SW.
67.80	Brush drift fence, bears NW. and SE.
	Difference between measurements of 80.00 chs. by two sets of chainmen is 8 lks.; position of middle point By 1st set, 79.96 chs. By 2d set, 80.04 chs., the mean of which is
80.00	Set an iron post, 3 ft. long, 3 ins. diam., 12 ins. in the ground to bedrock, surrounded by a mound of stone and earth, for cor. of secs. 13, 18, 19, and 24, marked on brass cap 1914 on S. rim; T38N in N., R1E in E., and R1W in W. half; S13 in NW., S18 in NE., S19 in SE., and S24 in SW. quadrant; from which A pinion, 8 ins. diam., bears N. 39° 45' E., 42 lks. dist., marked T38NR1ES18BT. A spruce, 24 ins. diam., bears S. 18° 45' E., 131 lks. dist., marked T38NR1ES19BT. A pinion, 8 ins. diam., bears S. 35° 50' W., 33 lks. dist., marked T38NR1WS24BT. A pinion, 6 ins. diam., bears N. 74° 40' W., 82 lks. dist., marked T38NR1WS13BT. This corner is 550 ft. above the bottom of the canyon. Land, mountainous and covered with dense timber. Soil, coarse gravel and rocky, with bedrock close to the surface. Undergrowth, wild crab apple and service brush. Timber, dense scrub cedar and pinion and scattering spruce. May 13, 1914.

	May 14, 1914. S., bet. secs. 19 and 24. Ascend NW. slope of canyon, through dense scrub cedar and pinion timber and scattering yellow pine, with undergrowth of service brush.
1.45	Spur, 45 ft. above cor.; projects W. The forest ranger's station in the abandoned mining town of Ryan bears N. 67° 37' W.
9.00	Dry gulch, 80 ft. below spur; course, W.; asc.
15.50	Top of abrupt ascent, 290 ft. above gulch, bears E. and W.; asc. gradually.
28.00	Spur, projects W., 25 ft. above abrupt ascent; desc. gradually. Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks.; position of middle point By 1st set, 39.98½ chs., By 2d set, 40.01½ chs., the mean of which is
40.00	Set an iron post, 3 ft. long, 1 in. diam., 6 ins. in the ground to bedrock, surrounded by a mound of stone and earth, for ¼ sec. cor., marked on brass cap 1914 on S. rim; ¼S24 in W. and S19 in E. half; from which A pinion, 10 ins. diam., bears N. 65° 30' E., 113 lks. dist., marked ¼S 19BT. A pinion, 8 ins. diam., bears S. 87° W., 56 lks. dist., marked ¼S24BT.
44.00	Top of series of perpendicular ledges, bears N. 80° E. and W. 5 chs.; thence, N.
45.30	Base of series of ledges, 130 ft. below top, bears N. 80° E. and N. 65° W., 5 chs.; thence, N.; desc. over boulders and slide rock.
59.20	N. fork Oak Canyon, 430 ft. below bottom of ledges, 10 lks.

14. Gila and Salt River Meridian, through T. 38 N.

Chains	wide, 3 ft. deep; course, W. About 13 chs. W., in the bottom of canyon, is a log cabin and brush fence across canyon. Ascend abruptly over N. slope of canyon.
69.50	Top of earth slide, about 4 chs. wide.
73.50	Base of series of ledges, 650 ft. above bottom of canyon, bears NE. and SW.
75.50	Top of ledges, 95 ft. above base, bears NE. and SW.; also
77.50	Spur, projects W.; ascend over broken W. slope of ridge. Difference in measurements of 80.00 chs. by two sets of chainmen is 4 lks.; position of middle point
	By 1st set, 79.98 chs.,
	By 2d set, 80.02 chs., the mean of which is
80.00	Set an iron post, 3 ft. long, 3 ins. diam., over a cross (X) on solid ledge, in a mound of earth and stone, for the cor. of secs. 19, 24, 25, and 30, marked on brass cap
	1914 on S. rim; T38N in N., R1E in E., and R1W in W. half; S24 in NW., S19 in NE., S30 in SE., and S25 in SW. quadrant; from which
	A cross (X) on ledge, 15x10x10 ft., bears N. 55° 45' E. 34 lks. dist., marked S19B0.
	A cedar, 6 ins. diam., bears S. 43° 55' E., 64 lks. dist., marked T38NR1ES30BT.
	A pinion, 8 ins. diam., bears S. 45° 20' W., 29 lks. dist., marked T38NR1WS25BT.
	A pinion, 8 ins. diam., bears N. 39° W., 32 lks. dist., marked T38NR1WS24BT.
	Land, mountainous. Soil, yellow clay and rocky; 4th rate. Timber, dense scrub cedar, pinion, and yellow pine, with undergrowth of manzanita and service brush.
	May 14, 1914.

	May 15, 1914. S., bet. secs. 25 and 30. Descend abruptly over SW. slope, covered with dense scrub cedar, pinion, and yellow pine timber, with dense scrub oak and service brush.
5.15	Top of 20 ft. ledge, bears N. 35° W. and S. 35° E.
7.20	Bottom of gulch, 150 ft. below cor.; course, N. 70° W.; ascend abruptly.
10.00	Watering trough at forks of canyon bears W. about 20 chs.
21.00	Base of ledges, 260 ft. above gulch, bears NE. and SW.
25.30	Point of Kaibab plateau and top of ledges, 190 ft. above base; projects N. 70° W.; descend abruptly, along broken E. slope of canyon.
28.50	Base of ledges, 130 ft. below top, bears N. 20° E., and S. 20° W.
39.80	Gulch, 100 ft. below base of ledge; course, W. Difference between measurements of 40.00 chs. by two sets of chainmen is 11 lks.; position of middle point,
	By 1st set, 39.94½ chs.,
	By 2d set, 40.05½ chs., the mean of which is
40.00	Set an iron post, 3 ft. long, 1 in. diam., over a cross (X) on solid rock, in a mound of earth and stone, for ¼ sec. cor., marked on brass cap
	1914 on S. rim; ¼S25 in W. and S30 in E. half; from which
	A pinion, 7 ins. diam., bears N. 86° 45' E., 53 lks. dist., marked ¼S30BT.
	A pinion, 8 ins. diam., bears N. 40° W., 14 lks. dist., marked ¼S25BT.
56.00	Gulch, 120 ft. below cor.; drains, W.
60.90	Spur, from point of ledges 9 chs. E., projects W., 40 ft.

Chains
 69.00 above gulch; desc.
 73.50 Gulch, 120 ft. below spur; course, W.; asc.
 Spur, from point of ledges, 12 chs., E., bears N. 80° W.,
 and S. 80° E. Descend 70 ft. to cor.
 Difference in measurements of 80.00 chs. by two sets of
 chainmen is 14 lks.; position of middle point
 By 1st set 79.93 chs.,
 By 2d set, 80.07 chs., the mean of which is
 80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in
 the ground, for the cor. of secs. 25, 30, 31 and 36,
 marked on brass cap
 1914 on S. rim;
 T38N in N.,
 R1E in E., and
 R1W in W. half;
 S25 in NW.,
 S30 in NE.,
 S31 in SE., and
 S36 in SW. quadrant; from which
 A cross (X), on sandstone boulder in place, 5x4x4 ft.
 above ground, bears N. 48° 50' E., 110 lks. dist.,
 marked S30B0.
 A cedar, 14 ins. diam., bears S. 35° 10' E., 15 lks.
 dist., marked T38NR1ES31BT.
 A pinion, 12 ins. diam., bears S. 41° W., 57 lks. dist.,
 marked T38NR1WS36BT.
 A pinion, 6 ins. diam., bears N. 49° 40' W., 46 lks.
 dist., marked T38NR1WS25BT.
 Land, mountainous.
 Soil, yellow clay and rocky.
 Timber, dense scrub cedar and pinion and scatter-
 ing yellow pine with undergrowth of scrub oak and ser-
 vice brush.

 S., bet. secs. 31 and 36.
 Descend gradually, over small ridges and ravines, through
 scrub cedar, pinion, and yellow pine timber, with dense
 scrub oak and service undergrowth.
 32.00 Bottom of main canyon, 60 ft. below cor., bears N. 20° W.
 and S. 20° W.; ascend.
 Difference between measurements of 40.00 chs. by two sets
 of chainmen is 1 lk.; position of middle point
 By 1st set, 39.99½ chs.,
 By 2d set, 40.00½ chs., the mean of which is
 40.00 Set an iron post, 3 ft. long, 1 in. dia., 26 ins. in the
 ground, for ¼ sec. cor., marked on brass cap
 1914 on S. rim;
 ¼S36 in W. and
 S31 in E. half; from which
 A pinion, 10 ins. diam., bears N. 63° 35' E., 65 lks.
 dist., marked ¼S31BT.
 A yellow pine, 14 ins. diam., bears S. 11° 25' W., 22
 lks. dist., marked ¼S36BT.

May 15, 1914.
 At this corner, I observe Polaris as follows:

Telescope Direct:	Horizontal		Watch time.		
	Angle.		h.	m.	s.
	o	'			
Star,	1	02	00	7	19 50 p. m.
Flag,	0	00	00		
Star,	1	02	00	7	22 10
Flag,	0	00	00		
Telescope Reversed:					
Star,	1	01	30	7	24 20
Flag,	0	00	00		
Star,	1	01	00	7	26 40
Flag,	0	00	00		
Mean,	1	01	37	7	23 15 p. m.
Watch fast, lmt.,				0	28 53
L. m. t. of observation,				6	54 22 p. m.

16 Gila and Salt River Meridian, through T. 38 N.

Chains

U. C. Polaris, May 15, 1914, . . . 9h 58.5m a. m.
Reduction to longitude of station, 1.2
U. C. Polaris at station, . . . 9h 57.3m a. m.

Hour angle of Polaris, 8h 57.3m

W. azimuth of Polaris, . . . 61.3' 1° 01' 18"

Angle W., flag to star, 1 01 37

Flag bears. N. 0° 00' 19" E
May 15, 1914.

May 17, 1914. Continue line and measurement
From 1/4 sec. cor., bet. secs. 31 and 36, set May 15, 1914.

41.50
48.00
63.20
71.00

Spur, from ridge, projects N. 60° W.; desc.
Gulch, 30 ft. below spur; drains, W.; asc.
Spur, from ridge, projects W.; 290 ft. above gulch.
Gulch, 40 ft. deep; drains, W.; asc.
Difference between measurements of 80.00 chs. by two sets
of chainmen is 4 lks.; position of middle point

80.00

By 1st set, 79.98 chs.,
By 2d set, 80.02 chs., the mean of which is
Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in
the ground, for the cor. of Ts. 37 and 38 N., R. 1 E.
and R. 1 W., marked on brass cap

1914 on S. rim;
T38 N in N.,
R1E in E.,
T37N in S., and
R1W in W. half;
S36 in NW.,
S31 in NE.,
S6 in SE., and
S1 in SW. quadrant; from which

A pinion, 8 ins. diam., bears N. 54° 40' E., 49 lks.
dist., marked T38NR1ES31BT.
A pinion, 10 ins. diam., bears S. 51° 50' E., 25 lks.
dist., marked T37NR1ES6BT.
A pinion, 10 ins. diam., bears S. 54° 50' W., 56 lks.
dist., marked T37NR1WS1BT.
A pinion, 8 ins. diam., bears N. 20° 15' W., 40 lks.
dist., marked T38NR1WS36BT.

Land, mountainous.
Soil, yellow clay and rocky on slopes; dark, sandy loam
in canyon bottoms.
Timber, scrub cedar, pinion, and yellow pine, with under-
growth of dense scrub oak, service, and thorn brush.

----- T. 37 N. -----

S., bet. secs. 1 and 6, T. 37 N., Rs. 1 E. and 1 W.
Ascending over mountainous land, covered with dense tim-
ber and undergrowth.

0.75
16.80
20.30

Spur, from ledges 6 chs. E., projects W.; 20 ft. above
cor.
N. side Oak Canyon bottom, bears S. 75° E. and N. 75° W.
Dry wash, in bottom of Oak Canyon, 20 lks. wide, 6 ft.
deep; course, W.
Thence, over N. slope.

40.00

Difference between measurements of 40.00 chs. by two sets
of chainmen is 2 lks.; position of middle point

By 1st set, 39.99 chs.,
By 2d set, 40.01 chs., the mean of which is
Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in
the ground, for 1/4 sec. cor., marked on brass cap

1914 on S. rim;
1/4 S1 in W., and
S6 in E. half; from which

A yellow pine, 24 ins. diam., bears S. 85° E., 72 lks.
dist., marked 1/4 S6BT.
A pinion, 14 ins. diam., bears N. 50° W., 47 lks. dist.,
marked 1/4 S1BT.

59.50

This cor. is 610 ft. above bottom of canyon.
Top of spur, projecting W.; 220 ft. above cor.; desc.

Gila and Salt River Meridian, through T. 37 N.

Chains
65.50 Bottom of gulch, 160 ft. below spur; course, W.; asc.
72.00 Top of spur, projecting W.; 140 ft. above bottom of gulch;
desc.
Difference between measurements of 80.00 chs. by two sets
of chainmen is 10 lks.; position of middle point
By 1st set, 79.95 chs.,
By 2d set, 80.05 chs., the mean of which is
80.00 Set an iron post, 3 ft. long, 3 ins. diam., 12 ins. in
the ground to bedrock, surrounded by a mound of earth
and stone, for the cor. of secs. 1, 6, 7, and 12,
marked on brass cap
1914 on S. rim;
T37N in N.,
R1E in E., and
R1W in W. half;
S1 in NW.,
S6 in NE.,
S7 in SE., and
S12 in SW. quadrant; from which
A red cedar, 8 ins. diam., bears N. 41° 40' E., 56
lks. dist., marked T37NR1ES6BT.
A pinion, 8 ins. diam., bears S. 69° 30' E., 78 lks.
dist., marked T37NR1ES7BT.
A pinion, 8 ins. diam., bears S. 34° 10' W., 85 lks.
dist., marked T37NR1WS12BT.
A pinion, 10 ins. diam., bears N. 22° 10' W., 61 lks.
dist., marked T37NR1WS1BT.
Land, mountainous.
Soil, clay and rocky, with dark, sandy loam in bottom of
canyons.
Timber, scrub cedar and pinion and yellow pine, with
dense scrub oak, service, and thorn brush undergrowth.
May 17, 1914.

May 18, 1914.
S., bet. secs. 7 and 12.
Descending over mountainous land, covered with scrub ce-
dar, pinion, yellow pine, and red cedar timber, with
undergrowth of dense service, scrub oak, and thorn
brush.
13.00 Top of series of ledges, 450 ft. below sec. cor.; bears
NW. and SE.
19.25 Base of ledges, 150 ft. high, bears NW. and SE. Seeping
spring at base.
22.50 Mangram Canyon wash, 15 lks. wide, 8 ft. deep, drains N.
60° W. Spring on N. bank of wash, E. 50 lks. Ascend
over NE. slope.
23.05 Base of ledges, 530 ft. above bottom, 15 ft. high, bears
N. 70° W. and S. 70° E. Mangram spring is under ledge
about 16 chs. E.
24.00 Spring, 4 chs. E. of line.
28.00 Base of ledges, 50 ft. high, bears N. 70° W. and S. 70° E.
Difference between measurements of 40.00 chs. by two sets
of chainmen is 2 lks.; position of middle point
By 1st set, 39.99 chs.,
By 2d set, 40.01 chs., the mean of which is
40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the
ground, for $\frac{1}{4}$ sec. cor., marked on brass cap
1914 on S. rim;
 $\frac{1}{4}$ S12 in W. and
S7 in E. half; from which
A yellow pine, 12 ins. diam., bears S. 89° E., 195
lks. dist., marked $\frac{1}{4}$ S7BT.
A yellow pine, 24 ins. diam., bears S. 33° 30' W., 170
lks. dist., marked $\frac{1}{4}$ S12BT.
This corner is located in a dense oak thicket on the NE.
slope of the canyon.
46.75 Top of abrupt ascent, bears E. and W., 220 ft. above
the $\frac{1}{4}$ sec. cor.; ascend gradually.
52.00 Top of ridges, bears NE. and SW.; leave dense undergrowth.
64.00 Draw, 100 ft. below ridge, drains N. 65° W.; ascend.

18. Gila and Salt River Meridian, through T. 37 N.

Chains
75.75 Top of ascent, bears E. and W., 70 ft. above draw.
Difference between measurements of 80.00 chs. by two sets
of chainmen is 2 lks.; position of middle point
By 1st set, 79.99 chs.,
By 2d set, 80.01 chs., the mean of which is

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 12 ins. in
the ground to bedrock, surrounded by a mound of earth
and stone, for the cor. of secs. 7, 12, 13, and 18,
marked on brass cap
1914 on S. rim;
T37N in N.,
R1E in E., and
R1W in W. half;
S12 in NW.,
S7 in NE.,
S18 in SE. and
S13 in SW. quadrant; from which
A pinion, 8 ins. diam., bears N. 51° 15' E., 54 lks.
dist., marked T37NR1ES7BT.
A pinion, 8 ins. diam., bears S. 60° 15' E., 30 lks.
dist., marked T37NR1ES18BT.
A pinion, 10 ins. diam., bears S. 47° 15' W., 38 lks.
dist., marked T37NR1WS13BT.
A pinion, 7 ins. diam., bears N. 55° 30' W., 51 lks.
dist., marked T37NR1WS12BT.
This cor. is set 65 ft. below ridge.
Land, mountainous.
Soil, clay and rocky; sandy loam in bottom of canyons.
Timber, cedar, pinion, yellow pine, and red cedar, with
undergrowth of service, oak, and thorn brush.
May 18, 1914.

May 19, 1914.

S., bet. secs. 13 and 18.
Descending over mountainous land, covered with dense yellow
pine, cedar, and pinion timber, through bunches
of scrub oak, service, and thorn brush.

8.00 Dry draw, 110 ft. below cor., drains N. 65° W.; ascend
over NE. slope.

20.00 Ridge, bears NW. and SE., 175 ft. above draw; descend ab-
ruptly.

30.00 Dry draw, 240 ft. below ridge, drains NW.; ascend. Leave
dense timber and undergrowth, bears NW. and SE.
Difference between measurements of 40.00 chs. by two sets
of chainmen is 6 lks.; position of middle point
By 1st set, 39.97 chs.,
By 2d set, 40.03 chs., the mean of which is

40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the
ground, for $\frac{1}{4}$ sec. cor., marked on brass cap
1914 on S. rim;
 $\frac{1}{4}$ S13 in W. and
S18 in E. half; from which
A yellow pine, 20 ins. diam., bears N. 74° E., 45 lks.
dist., marked $\frac{1}{4}$ S18BT.
A yellow pine, 24 ins. diam., bears N. 22° 40' W., 52
lks. dist., marked $\frac{1}{4}$ S13BT.
This cor. is 300 ft. above draw.

42.00 Top of abrupt ascent, bears NW. and SE., 20 ft. above cor.
Continue over nearly level top of the Kaibab plateau,
covered with dense yellow pine timber.

60.00 Descend gently; enter scattering aspen timber, bears NW.
and SE.
Difference in measurements of 80.00 chs. by two sets of
chainmen is nothing.

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in
the ground, for the cor. of secs. 13, 18, 19, and 24,
marked on brass cap
1914 on S. rim;
T37N in N.,
R1E in E., and

Gila and Salt River Meridian, through T. 37 N.

Chains	<p>R1W in W.;</p> <p>S13 in NW.,</p> <p>S18 in NE.,</p> <p>S19 in SE., and</p> <p>S24 in SW. quadrant; from which</p> <p>A yellow pine, 18 ins. diam., bears N. 43° 15' E., 44 lks. dist., marked T37NR1ES18BT.</p> <p>A yellow pine, 10 ins. diam., bears S. 42° 15' E., 68 lks. dist., marked T37NR1ES19BT.</p> <p>A yellow pine, 14 ins. diam., bears S. 19° 50' W., 185 lks. dist., marked T37NR1WS24BT.</p> <p>A yellow pine, 30 ins. diam., bears N. 15° 50' W., 12 lks. dist., marked T37NR1WS13BT.</p> <p>This cor. is established on the edge of the Kaibab plateau; bears E. and W.</p> <p>Land, mountainous.</p> <p>Soil, light, sandy loam, on subsoil of light gravel.</p> <p>Good grazing.</p> <p>Timber, yellow pine, spruce, red and white cedar, aspen, and pinion. Yellow pine ranges from 6 ins. to 4 ft. in diam.,</p> <p>Undergrowth, oak, service, and thorn brush.</p> <p>General drainage of the land is NW.</p> <p style="text-align: right;">May 19, 1914.</p> <p>-----</p> <p>May 21, 1914.</p> <p>S., bet. secs. 19 and 24.</p> <p>Descending abruptly over broken W. slope of Kaibab plateau, through dense yellow pine, spruce, aspen, red cedar, and pinion timber, with undergrowth of scrub oak, service, and thorn brush.</p> <p>8.50 Dry draw, 180 ft. below cor.; drains, W.</p> <p>19.00 Spur, projects W., 170 ft. above draw.</p> <p>28.50 Dry draw, 240 ft. below spur; drains, W.; ascend abruptly.</p> <p>Difference between measurements of 40.00 chs. by two sets of chainmen is 5 lks.; position of middle point is</p> <p style="padding-left: 40px;">By 1st set, 39.97½ chs.,</p> <p style="padding-left: 40px;">By 2d set, 40.02½ chs., the mean of which is</p> <p>40.00 Set an iron post, 3 ft. long, 1 in. diam., 20 ins. in the ground to bedrock, surrounded by a mound of earth, for ¼ sec. cor., marked on brass cap</p> <p style="padding-left: 40px;">1914 on S. rim;</p> <p style="padding-left: 40px;">¼S24 in W. and</p> <p style="padding-left: 40px;">S19 in E. half; from which</p> <p style="padding-left: 40px;">A pinion, 6 ins. diam., bears S. 65° E., 28 lks. dist., marked ¼S19BT.</p> <p style="padding-left: 40px;">A pinion, 7 ins. diam., bears S. 65° 30' W., 18 lks. dist., marked ¼S24BT.</p> <p>This cor. is 260 ft. above draw, on spur of ridge projecting W.</p> <p>Leave aspen timber; descend.</p> <p>67.60 Top of ledges, bears E. and W., 410 ft. below ¼ sec. cor.</p> <p>70;30 Base of ledges and bottom of Castle Canyon, 160 ft. below top of ledges. Castle spring bears E. about 1½ chs.. Spring is in shallow cove, with corral extending S. to wash.</p> <p>74.40 Castle Canyon wash, 15 lks. wide, 3 ft. deep, drains W. Log cabin on knoll, bears W. about 15 chs. dist.</p> <p>75.40 S. side Castle canyon, bears E. and W.; ascend.</p> <p>77.00 Base of ledges, 340 ft. above wash, 40 ft. high; bears E. and W.</p> <p>Difference between measurements of 80.00 chs. by two sets of chainmen is 3 lks., position of middle point</p> <p style="padding-left: 40px;">By 1st set, 79.98½ chs.,</p> <p style="padding-left: 40px;">By 2d set, 80.01½ chs., the mean of which is</p> <p>80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the cor. of secs. 19, 24, 25, and 30, marked on brass cap</p> <p style="padding-left: 40px;">1914 on S. rim</p> <p style="padding-left: 40px;">T37N in N.,</p> <p style="padding-left: 40px;">R1E in E., and</p>
--------	--

20. Gila and Salt River Meridian, through T. 37 N.

Chains	<p> RLW in W. half; S24 in NW., S19 in NE., S30 in SE., and S25 in SW. quadrant; from which A spruce, 14 ins. diam., bears N. $67^{\circ} 10'$ E., 37 lks. dist., marked T37NR1ES19BT. A spruce, 20 ins. diam., bears S $33^{\circ} 20'$ E., 7 lks. dist., marked T37NR1ES30BT. A spruce, 12 ins. diam., bears S. $83^{\circ} 20'$ W., 34 lks. dist., marked T37NR1WS25BT. A spruce, 16 ins. diam., bears N. 26° W., 30 lks. dist., marked T37NR1WS24BT. Land, mountainous. Soil, coarse gravel and rocky. Timber, yellow pine, spruce, cedar, aspen, and pinion, with dense undergrowth of oak, service, and thorn brush. <div style="text-align: right;">May 21, 1914.</div> </p> <hr style="border-top: 1px dashed black;"/> <p> May 22, 1914. S., bet. secs. 25 and 30. Over broken W. slope of Kaibab plateau, through scattering yellow pine, spruce timber, and undergrowth of service, oak, and thorn brush. 1.50 Spur from ridge, projects W., 50 ft. above cor.; descend, SW. slope towards Nail's canyon. 20.00 Enter dense yellow pine timber, bears E. and W. Difference between measurements of 40.00 chs. by two sets of chainmen is nothing. 40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim; $\frac{1}{4}$S25 in W. and S30 in E. half; from which A yellow pine, 20 ins. diam., bears S. 86° E., 127 lks. dist., marked $\frac{1}{4}$S30BT. A yellow pine, 30 ins. diam., bears S. $82^{\circ} 15'$ W., 244 lks. dist., marked $\frac{1}{4}$S25BT. This cor. is 300 ft. below spur and on E. side of Nail's canyon. Leave dense timber and undergrowth, bears NW. and SE.; enter scattering aspen timber. 44.00 Top of low spur, 40 ft. above cor.; projects W. 50.00 Bottom of Nail's canyon, 50 ft. below spur, N. side, bears NW. and SE. Thence across canyon bottom. 50.80 U. S. Forest Service telephone line, from Kanab to VT Park, bears NW. and SE. 51.48 Set a pine post, 4x4 ins., $7\frac{1}{2}$ ft. long, in the ground on line to mark the line crossing the main road. 51.60 Wagon road from Kanab to Bright Angel Point, bears NW. and SE. 53.00 New barbed wire fence, bears NW. and SE. 59.00 S. side Nail's canyon, bears NW. and SE.; enter dense pine timber; ascend abruptly over NE. slope of little mountain. Difference between measurements of 80.00 chs. by two sets of chainmen is 1 lk.; position of middle point By 1st set, 79.99$\frac{1}{2}$ chs., By 2d set, 80.00$\frac{1}{2}$ chs., the mean of which is 80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the cor. of secs. 25, 30, 31, and 36, marked on brass cap 1914 on S. rim; T37N in N., R1E in E., and RLW in W. half; S25 in NW., S30 in NE., S31 in SE., and S36 in SW. quadrant; from which </p>
--------	--

2855

Gila and Salt River Meridian, through T. 37 N.

21.

Chains

A jack pine, 14 ins. diam., bears N. $42^{\circ} 15'$ E., 21 lks. dist., marked T37NR1ES30BT.

A jack pine, 14 ins. diam., bears S. $45^{\circ} 45'$ E., 29 lks. dist., marked T37NR1ES31BT.

A jack pine, 14 ins. diam., bears S. $63^{\circ} 30'$ W., 39 lks. dist., marked T37NR1WS36BT.

A jack pine, 17 ins. diam., bears N. $42^{\circ} 30'$ W., 89 lks. dist., marked T37NR1WS25BT.

This cor. is on a ridge, bearing east and west, 220 ft. above bottom of canyon.

Land, mountainous.

Soil, coarse gravel and rocky, on red clay subsoil; soil in bottom of canyon, black, sandy loam of fine texture, with red clay subsoil.

Timber, yellow and jack pine, spruce, and aspen, with undergrowth of scrub oak, service, and thorn brush in north half mile.

May 22, 1914.

May 23, 1914.

S., bet. secs. 31 and 36.

Over general ascent on NE. slope of Little mountain, through dense yellow and jack pine, spruce, and scattering aspen timber, with oak brush undergrowth.

10.10 Ravine, 80 ft. below cor., drains N. 70° E.; asc.

20.00 Top of ascent, 100 ft. above bottom of ravine, bears NW. and SE.;

22.40 Same ravine, 10 ft. below top of ascent, course, NW.; asc.

30.00 Top abrupt ascent, 110 ft. above ravine; bears NW. and SE.; asc.

Difference between measurements of 40.00 chs. by two sets of chainmen is 5 lks.; position of middle point

By 1st set, 39.97 $\frac{1}{2}$ chs.,

By 2d set, 40.02 $\frac{1}{2}$ chs., the mean of which is

40:00 Set an iron post, 3 ft. long, 1 in. diam., 20 ins. in the ground, to bedrock, surrounded by a mound of earth and stone, for $\frac{1}{4}$ sec. cor., marked on brass cap

1914 on S. rim;

$\frac{1}{4}$ S36 in W. and

S31 in E. half; from which

A yellow pine, 12 ins. diam., bears N. $51^{\circ} 15'$ E., 16 lks. dist., marked $\frac{1}{4}$ S31BT.

A yellow pine, 10 ins. diam., bears N. 85° W., 63 lks. dist., marked $\frac{1}{4}$ S36BT.

This cor. is 10 ft. above top of abrupt ascent at 30-ch. point.

69.00 Ridge, bears NW. and SE., 30 ft. above $\frac{1}{4}$ sec. cor.; desc.

73.00 Bottom of ravine, 50 ft. below ridge; course, NW.; asc.

Difference between measurements of 80.00 chs. by two sets of chainmen is 1 lk.; position of middle point

By 1st set, 79.99 $\frac{1}{2}$ chs.,

By 2d set, 80.00 $\frac{1}{2}$ chs., the mean of which is

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the cor. of Ts. 36 and 37 N., Rs. 1 E. and 1 W., marked on brass cap

1914 on S. rim;

T37N in N.,

R1E in E.,

T36N in S., and

R1W in W. half;

S36 in NW.,

S31 in NE.,

S6 in SE., and

S1 in SW. quadrant; from which

A jack pine, 16 ins. diam., bears N. 59° E., 10 lks. dist., marked T37NR1ES31BT.

A jack pine, 10 ins. diam., bears S. 12° E., 47 lks. dist., marked T36NR1ES6BT.

A jack pine, 18 ins. diam., bears S. $71^{\circ} 10'$ W., 59 lks. dist., marked T36NR1WS1BT.

A yellow pine, 30 ins. diam., bears N. 61° W., 72 lks. dist., marked T37NR1WS36BT.

-22.

Gila and Salt River Meridian, through T. 37 N.

Chains

Land, hilly.

Soil, light, fine gravel and light sandy loam on subsoil of light gravel,

Timber, yellow and jack pine and scattering aspen, with scattering patches of scrub oak undergrowth.

At this cor., I observe Polaris as follows:

Telescope Direct:	Horizontal			Watch time		
	Angle			h.	m.	s.
	°	'	"			
Star,	0	49	00	7	30	30 p.m.
Flag,	0	00	00			
Star,	0	48	30	7	32	30
Flag,	0	00	00			
Telescope reversed:						
Star,	0	49	00	7	35	10
Flag,	0	00	00			
Star,	0	49	00	7	37	00
Flag,	0	00	00			
Mean,	0	48	53	7	33	48 p.m.
Watch fast, l. m. t.,					28	53
L. M. T. of observation,				7	04	55 p. m.
U. C. of Polaris, May 23, 1914,	9h	27.2m	a. m.			
Red. to long. of station,		1.2				
U. C. of Polaris at station,	9h	26.0m	a. m.			
Hour angle of Polaris,	9h	38.9m				
W. azimuth of Polaris, 48.9',	0°	48'	54"			
Angle, W., flag to star,	0	48	53			
Flag bears,	N.	00'	01" W.			
						May 23, 1914.

GENERAL DESCRIPTION.

The G. & S.R. Meridian, from the cor. of secs. 25, 30, 31, and 36, T. 39 N., Rs. 1 E. and 1 W., runs along the broken west slope of the Kaibab plateau or Buckskin mountain, in the Kaibab National Forest, crossing the mouths of the several canyons draining from the east into Nail's canyon, which runs north, about parallel to and 20 chs. west of the line. The line reaches the top of the plateau in only one place, and then only for a fractional part of a mile.

The land is mountainous and exceptionally rough and is valuable only for the timber, grazing, and possibly mineral. While I did not find evidences of mineral, there are two mining companies holding claims in the vicinity of Ryan, which, when transportation facilities improve, can work to a profit. Copper seems to be the principal mineral.

The land lying to the east of Nail's Canyon is locally called the "Big Mountain," while that to the west is called the "Little Mountain."

The town of Ryan has been abandoned. The U. S. Forest Service maintains a ranger's station at this point, as well as one at Big Springs.

Good water is frequently found in the bottom of Nail's canyon and its tributaries. The principal springs are Magnum, Big, and Riggs springs.

Wild game is found in abundance, the Kaibab National Forest being a national game preserve.

Ninth Standard Parallel North, through R. 1 W. 23.

Chains	NOTE: This line was projected as a transit line, using double back and fore sights. Measurements were made by two sets of chainmen, using five-chain Lallie steel tapes, with clinometer for determining slopes.
	May 24, 1914.
	From a point 4 lks. S. of the cor. of Ts. 36 and 37 N., Rs. 1 E. and 1 W., I run
	N. 89° 58' W., on the secant, S. of sec. 36.
	Over summit of Little mountain, through dense timber.
8.00	Ravine, 40 ft. below cor.; course, N. 20° W.
27.00	Ridge, bears NW. and SE., 60 ft. above ravine.
39.00	Ravine, 80 ft. below ridge; course, N. 35° W.
	Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.
40.00	N. 2 lks. from the secant.
	Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard 1/4 sec. cor., marked on brass cap
	1914 on S. rim;
	SC 1/4 S36 in N. half; from which
	A jack pine, 14 ins. diam., bears N. 6° 30' W., 30 lks. dist., marked 1/4 S36BT.
	May 24, 1914.
	May 25, 1914.
45.00	Top of ascent, bears NW. and SE.; desc.
53.00	Ravine, course, N. 20° W.; 50 ft. below top; asc.
58.00	Top of ascent, bears NW. and SE.; 30 ft. above ravine.
65.75	Draw, drains NW.; 50 ft. below top; asc.
73.00	Top of ascent, bears NW. and SE.; 20 ft. above draw; desc.
77.00	Draw, drains NW.; 20 ft. below top.
	Difference between measurements of 80.00 chs. by two sets of chainmen is nothing.
80.00	Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for standard cor. of secs. 35 and 36, marked on brass cap
	1914 on S. rim;
	SCT37NRLW in N. half;
	S35 in NW. and
	S36 in NE. quadrant; from which
	A jack pine, 30 ins. diam., bears N. 44° E., 151 lks. dist., marked T37NRLWS36BT.
	A yellow pine, 32 ins. diam., bears N. 28° 30' W., 124 lks. dist., marked T37NRLWS35BT.
	Land, rolling hills.
	Soil, light gravel and rocky; subsoil, red clay.
	Timber, yellow and jack pine, with scattering bunches of dense scrub oak undergrowth.

	N. 89° 59' W., on the secant, through sec. 35.
	Over NW. slope of Little mountain, through dense timber.
2.00	Top of ascent, bears NW. and SE.; 30 ft. above cor.
	Corral bears 5 chs. S.
8.00	Dry draw, course NW.; 30 ft. below top of ascent.
10.00	Intersect blazed line, running N. and S.
12.00	Top of ascent, bears NW.; descend gradually over rolling land.
28.00	Enter dense scrub oak undergrowth, bears N. and S.
	Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.
40.00	S. 1 lk. from the secant.
	Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard 1/4 sec. cor., marked on brass cap
	1914 on S. rim;
	SC 1/4 S35 in N. half; from which
	A yellow pine, 24 ins. diam., bears N. 7° 30' E., 88 lks. dist., marked 1/4 S35BT.
	May 25, 1914.
	May 26, 1914.
43.00	Ravine, course, NW.; 60 ft. below top of ascent.
67.60	Draw, course, NW.; asc.
70.75	Top of ascent, bears N. and S.; 20 ft. above draw.

24. Ninth Standard Parallel North, through R. 1 W.

Chains	
74.75	Draw, course N.; 20 ft. below top. Difference between measurements of 80.00 chs. by two sets of chainmen is 2 lks; position of middle point By 1st set, 79.99 chs., By 2d set, 80.01 chs., the mean of which is
80.00	S. 2 lks. from the secant. Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the standard cor. of secs. 34 and 35, marked on brass cap 1914 on S. rim; SCT37NRLW in N. half; S34 in NW. and S35 in NE. quadrant; from which A jack pine, 18 ins. diam., bears N. 39° E., 26 lks. dist., marked T37NRLWS35BT. A jack pine, 16 ins. diam., bears N. 15° W., 15 lks. dist., marked T37NRLWS34BT. Land, rolling and hilly. Soil, light, sandy loam, with subsoil of light gravel. Timber, yellow and jack pine, with scrub oak undergrowth. Timber ranges in size from saplings to 3½ ft. in diam.

	N. 89° 59' W., on the secant, through sec. 34. Over NW. slope of Little mountain, through dense timber and undergrowth.
4.00	Top of ascent, 20 ft. above cor., bears N. 35° W. and S.
11.00	Draw, 30 ft. below top, drains NW.
15.00	Top of ascent, 20 ft. above draw, bears N. and S.
25.00	Start abrupt descent, bears N. and S.
27.75	Draw, 90 ft. below top of ascent; course, N. Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks.; position of middle point By 1st set, 40.01½ chs., By 2d set, 39.98½ chs., the mean of which is
40.00	S. 3 lks. from the secant. Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard ¼ sec. cor., marked on brass cap 1914 on S. rim; SC¼S34 in N. half; from which A yellow pine, 18 ins. diam., bears N. 42° 30' E., 111 lks. dist., marked ¼S34BT.
	May 26, 1914.
	May 28, 1914.
42.00	Spur, projects N., 120 ft. above cor.
49.40	Draw, 50 ft. below spur; course, NW.
52.00	Spur, projects N., 50 ft. above draw.
57.00	Draw, 75 ft. below spur; course, N.
70.00	Spur, projects N., 50 ft. above draw.
72.50	Draw, 20 ft. below spur; course, N. Difference between measurements of 80.00 chs. by two sets of chainmen is nothing.
80.00	S. 3 lks. from the secant. Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the standard cor. of secs. 33 and 34, marked on brass cap 1914 on S. rim; SCT37NRLW in N. half; S33 in NW. and S34 in NE. quadrant; from which A yellow pine, 36 ins. diam., bears N. 61° 30' E., 235 lks. dist., marked T37NRLWS34BT. A yellow pine, 24 ins. diam., bears N. 59° 30' W., 84 lks. dist., marked T37NRLWS33BT. This cor. is located on the N. slope of point of ridge, 20 ft. above draw. Land, hilly and rolling. Soil, dark, rich loam and decayed vegetation, on subsoil of red clay. Timber, yellow and jack pine, with dense scrub oak and buck thorn undergrowth. Land drains N. into deep ravine, 10 chs. N. of line; course, W.

Chains West, on the secant through sec. 33.
Over mountainous land, covered with dense timber and undergrowth.

11.00 Point of ridge, 70 ft. above cor.; projects NW.; desc. abruptly.

39.90 Draw, drains N.; 450 ft. below point of ridge.
Difference between measurements of 40.00 chs. by two sets of chainmen is 1 lk.; position of middle point
By 1st set, 40.00 $\frac{1}{2}$ chs.,
By 2d set, 39.99 $\frac{1}{2}$ chs., the mean of which is

40.00 S. 3 lks. from the secant.
Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim;
SCT33 in N. half; from which
A yellow pine, 38 ins. diam., bears N. 29° 15' W., 69 lks. dist., marked $\frac{1}{4}$ S33BT.
May 28, 1914.

May 29, 1914.

42.50 Top of ascent, 40 ft. above cor.; bears N. and S.

64.00 Ravine, 45 ft. deep, drains N.; old dim road, bears N. and S.
Difference in measurements of 80.00 chs. by two sets of chainmen is 4 lks.; position of middle point
By 1st set, 80.02 chs.,
By 2d set, 79.98 chs., the mean of which is

80.00 S. 2 lks. from the secant.
Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the standard cor. of secs. 32 and 33, marked on brass cap 1914 on S. rim;
SCT37NRLW in N. half;
S32 in NW. and
S33 in NE. quadrant; from which
A jack pine, 12 ins. diam., bears N. 45° 20' E., 289 lks. dist., marked T37NRLWS33BT.
A yellow pine, 30 ins. diam., bears N. 85° 30' W., 124 lks. dist., marked T37NRLWS32BT.

Land, mountainous and hilly.
Soil, light gravel and stony; subsoil, red clay.
Timber, scattering yellow and jack pine, cedars, and pinion.
Undergrowth of dense scrub oak, thorn, and buck brush.

S. 89° 59' W., on the secant, through sec. 32.
Over mountainous land, covered with scattering timber and dense undergrowth.

3.50 Ridge, bears N. 5 chs., thence S. 55° W. and S.

11.20 Head of draw, drains SW., 75 ft. below top of ridge.

21.00 Bend in same ridge, bears NE. and N. 60° W., 80 ft. above draw.
Descend SW. slope.
Difference between measurements of 40.00 chs. by two sets of chainmen is 4 lks.; position of middle point
By 1st set, 40.02 chs.,
By 2d set, 39.98 chs., the mean of which is

40.00 S. 1 lk. from the secant.
Set an iron post, 3 ft. long, 1 in. diam., 18 ins. in the ground, to bedrock, surrounded by a mound of earth and stone, for standard $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim; and
SCT32 in N. half; from which
A cedar, 10 ins. diam., bears N. 20° W., 163 lks. dist., marked $\frac{1}{4}$ S32BT.
Sky overcast. Unable to observe Polaris.
May 29, 1914.

May 30, 1914.

58.00 Pine hollow, 100 ft. below $\frac{1}{4}$ sec. cor. Continue along S. edge of same.

79.40 Pine hollow, course S. 80° W.
Difference between measurements of 80.00 chs. by two sets of chainmen is 1 lk.; position of middle point
By 1st set, 80.00 $\frac{1}{2}$ chs.,

26. Ninth Standard Parallel North, through R. 1 W.

Chains	By 2d set, 79.99 $\frac{1}{2}$ chs., the mean of which is
80.00	Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the standard cor. of secs. 31 and 32, marked on brass cap 1914 on S. rim; SCT37NR1W in N. half; S31 in NW. and S32 in NE. quadrant; from which A cedar, 6 ins. diam., bears N. 62° E., 96 lks. dist., marked T37NR1WS32BT. A cedar, 7 ins. diam., bears N. 74° 45' W., 19 lks. dist., marked T37NR1WS31BT. Land, mountainous. Soil, light gravel and stony; subsoil, clay and coarse gravel. Timber, scattering cedar, pinion, and yellow pine, with dense undergrowth of scrub oak, buck, service, and short sage brush. Land drains into Pine hollow.

	S. 89° 59' W., on the secant south of sec. 31. Over mountainous land, covered with scattering timber and dense undergrowth.
1.50	Point of ridge, projects S., 15 ft. above cor.
8.50	Pine hollow, course N. 60° W., 30 ft. below point of ridge.
25.00	Point of ridge, projects N., 80 ft. above hollow.
35.00	Draw, drains N., 125 ft. below point of ridge; asc. Difference between measurements of 40.00 chs. by two sets of chainmen is 1 lk.; position of middle point By 1st set, 39.99 $\frac{1}{2}$ chs., By 2d set, 40.00 $\frac{1}{2}$ chs., the mean of which is
40.00	N. 2 lks. from the secant. Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim; and SC $\frac{1}{4}$ S31 in N. half; from which A cedar, 10 ins. diam., bears N. 50° W., 39 lks. dist., marked $\frac{1}{4}$ S31BT. This cor. is 25 ft. above draw. Sky overcast. Unable to observe Polaris. May 30, 1914.
	May 31, 1914. Rained all day. June 1, 1914. Intermittent rain all day.
55.00	Spur, projects N., 30 ft. above $\frac{1}{4}$ sec. cor.
62.00	Draw, drains N.; 40 ft. below spur. Difference between measurements of 80.00 chs. by two sets of chainmen is 1 lk.; position of middle point By 1st set, 79.99 $\frac{1}{2}$ chs., By 2d set, 80.00 $\frac{1}{2}$ chs., the mean of which is
80.00	N. 4 lks. from the secant. Set an iron post, 3 ft. long, 3 ins. diam., 6 ins. in the ground to bedrock, surrounded by a mound of earth and stone, for the standard corner of T. 37 N., Rs. 1 and 2 W., marked on brass cap 1914 on S. rim; SCT37N in N. half; R2WS36 in NW. and R1WS31 in NE. quadrant; from which A cedar, 10 ins. diam., bears N. 79° E., 70 lks. dist., marked T37NR1WS31BT. A cedar, 8 ins. diam., bears N. 52° 45' W., 132 lks. dist., marked T37NR2WS36BT. This cor. is 75 ft. above draw. Land, mountainous. Soil, light gravel and stone; subsoil, rocky and clay. Timber, cedar and pinion. Undergrowth, dense scrub oak, service, buck, and short sage brush. Sky overcast. Unable to observe Polaris. June 1, 1914.

Ninth Standard Parallel North, through R. 2 W.

Chains June 2, 1914.
 At the last point on the secant, which is 6 miles from the starting point and 4 lks. S. of the standard cor. of T. 37 N., Rs. 1 and 2 W., I deflect an angle of 3' 50" to the north and run N. 89° 58' W., on the secant south of sec. 36. Over mountainous land, covered with dense timber and undergrowth. Ascending over NE. slope.

13.00 Spur, projects N., 25 ft. above standard township cor.; desc.

26.00 Draw, drains N. 20° W., 100 ft. below spur; ascend.

35.50 Spur, projects N., 60 ft. above draw.
 Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks.; position of middle point
 By 1st set, 39.98½ chs.,
 By 2d set, 40.01½ chs., the mean of which is

40.00 N. 2 lks. from the secant.
 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard ¼ sec. cor., marked on brass cap 1914 on S. rim;
 SCT36 in N. half; from which
 A pinion, 8 ins. diam., bears N. 13° 30' E., 72 lks. dist., marked ¼S36BT.

This cor. is set 20 ft. below top of spur.

49.00 Draw, drains NW.; 70 ft. below ¼ sec. cor.

52.00 Low spur, projects N.; 30 ft. above draw.

59.75 Draw, drains N., 30 ft. below spur.
 Difference between measurements of 80.00 chs., by two sets of chainmen is 2 lks.; position of middle point
 By 1st set, 79.99 chs.,
 By 2d set, 80.01 chs., the mean of which is

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the standard cor. of secs. 35 and 36, marked on brass cap 1914 on S. rim;
 SCT37NR2W in N. half;
 S35 in NW. and
 S36 in NE. quadrant; from which
 A cedar, 20 ins. diam., bears N. 85° 40' E., 203 lks. dist., marked T37NR2WS36BT.
 A pinion, 6 ins. diam., bears N. 82° 10' W., 67 lks. dist., marked T37NR2WS35BT.

Land, mountainous and drains N. into Pine hollow, which drains W.
 Soil, light gravel and rocky on subsoil of clay and rock. Timber, scattering scrub cedar and pinion, with dense undergrowth of oak, buck, service, and short sage brush. Sky overcast. Unable to observe Polaris.

June 2, 1914.

June 3, 1914.
 N. 89° 59' W., on the secant through sec. 35. Over mountainous land, covered with scattering timber and oak, service, and buck brush.

16.00 Draw, course N., into Pine hollow, 170 ft. below cor. Continue along broken S. slope of Pine hollow.

30.00 Spur, projects N., 25 ft. above draw.
 Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks.; position of middle point
 By 1st set, 40.01½ chs.,
 By 2d set, 39.98½ chs., the mean of which is

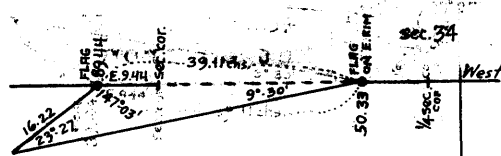
40.00 S. 1 lk. from the secant.
 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard ¼ sec. cor., marked on brass cap 1914 on S. rim;
 SCT35 in N. half; from which
 A cedar, 14 ins. diam., bears N. 74° 30' W., 75 lks. dist., marked ¼S35BT.

This cor. is set 100 ft. below spur.
 Continue gradual descent along S. slope of Pine hollow.

28. Ninth Standard Parallel North, through R. 2 W.

Chains	
46.25	Draw, drains N., 45 ft. below $\frac{1}{4}$ sec. cor.
55.00	Spur, projects N., 100 ft. above draw.
61.25	Draw, course N. 100° W., 120 ft. below spur.
64.00	Spur, projects N., 50 ft. above draw.
	Difference between measurements of 80.00 chs. by two sets of chainmen is 4 lks.; position of middle point
	By 1st set, 79.98 chs.,
	By 2d set, 80.02 chs., the mean of which is
80.00	S. 2 lks. from the secant.
	Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the standard cor. of secs. 34 and 35, marked on brass cap
	1914 on S. rim;
	SCT37NR2W in N. half;
	S34 in NW. and
	S35 in NE. quadrant.
	Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, N. of cor. Pits impracticable. No bearing trees available.
	Land, mountainous.
	Soil, light gravel and rocky, on subsoil of clay.
	Timber, scattering scrub cedar and pinion, with dense undergrowth of buck, service, and sage brush. Good grazing.

	N. $89^{\circ} 59'$ W., on the secant through section 34. Over mountainous land, along S. slope of Pine hollow, through scattering timber and undergrowth.
1.30	Small draw, drains N., 20 ft. below cor.
10.25	Spur, projects N., 100 ft. above draw.
19.50	Draw, course N., 170 ft. below spur.
36.50	Point of spur, projects N., 130 ft. above draw.
	Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks.; position of middle point,
	By 1st set, 39.98 $\frac{1}{2}$ chs.,
	By 2d set, 40.01 $\frac{1}{2}$ chs., the mean of which is
40.00	S. 3 lks. from the secant.
	Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard $\frac{1}{4}$ sec. cor., marked on brass cap
	1914 on S. rim;
	SC $\frac{1}{4}$ S34 in N. half; from which
	A pinion, 8 ins. diam., bears N. 45° W., 60 lks. dist., marked $\frac{1}{4}$ S34BT.
	This cor. is set 50 ft. below point of spur.
41.75	Draw, drains N., 60 ft. below cor.
50.00	Point of main ridge, projects N. 30° W., 100 ft. above draw; descend abruptly into Pine hollow, 1000 ft. below.
50.33	From this point, I triangulate across Pine hollow as follows: Send flagman to opposite rim and place a flag on line, leaving a flag at this point. From a point on line on the W. rim, I lay off a base; with telescope on flag on E. rim, I deflect an angle to the right $147^{\circ} 03'$, and chain on this course 16.22 chs. The angle between flag at the initial point of the base line and the flag on the E. rim of the hollow, from the 16.22-ch. station, is $23^{\circ} 27'$. On my way to camp, I check the angle on the E. rim of Pine hollow and find it to be $9^{\circ} 30'$.
	I compute the distance as follows:
	Colog. sin. $9^{\circ} 30' = 0.7823908$
	Log. sin. $23^{\circ} 27' = 9.5998270$
	Log. 16.22 chs. = 1.2100508
	Log. 39.11 chs. = 1.5922686
	50.33 chs., plus 39.11 chs. = 89.44 chs.
	I therefore chain E. 9.44 chs. and place cor. of secs. 33 and 34 in ledges on W. breaks of Pine hollow.
80.00	S. 3 lks. from the secant.
	Set an iron post, 3 ft. long, 3 ins. diam., 6 ins. in the



Ninth Standard Parallel North, through R. 2 W.

Chains

ground to bed rock, surrounded by a mound of stone 30 ins. high, for the standard cor. of secs. 33 and 34, marked on brass cap
 1914 on S. rim;
 SCT37NR2W in N. half;
 S33 in NW. and
 S34 in NE. quadrant.
 Raise a mound of stone, 2 ft. base, 1½ ft. high, N. of cor. Pits impracticable. No bearing trees available.

Land, mountainous and broken.
 Soil, light gravel and rocky, on subsoil of clay on first half mile. Solid rock on second half mile.
 Timber, scrub cedar and pinion.
 Undergrowth, buck, service, and sage brush.
 Cloudy. Unable to observe Polaris.

June 3, 1914.

June 5, 1914.

West, on the secant through sec. 33.
 Over W. rim of Pine hollow, through scattering timber and sage brush undergrowth.

2.75 Base of ledges, bears NE. and SW., 60 ft. high, 170 ft. above cor.

9.44 Triangulation point.

9.50 N. rim of Pine Hollow, bears N. 35° E. and S. 35° W.; enter dense cedar and pinion timber and buck brush undergrowth. Descend gradually.

Difference between measurements of 40.00 chs. by two sets of chainmen is 2 lks.; position of middle point
 By 1st set, 39.99 chs.,
 By 2d set, 40.01 chs., the mean of which is

40.00 S. 3 lks. from the secant.

Set an iron post, 3 ft. long, 1 in. diam., 6 ins. in the ground, surrounded by a mound of earth and stone, 24 ins. high (post set to bedrock), for standard ¼ sec. cor., marked on brass cap

1914 on S. rim;
 S33 in N. half; from which

A pinion, 6 ins. diam., bears N. 28° E., 35 lks. dist., marked ¼S33BT.

This cor. is set 50 ft. below top of rim.

52.00 Brush drift fence, bears N. and S.

67.40 Draw, course N., 70 ft. below ¼ sec. cor.

Difference between measurements of 80.00 chs. by two sets of chainmen is 4 lks.; position of middle point
 By 1st set, 79.98 chs.,
 By 2d set, 80.02 chs., the mean of which is

80.00 S. 2 lks. from the secant.

Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the standard cor. of secs. 32 and 33, marked on brass cap

1914 on S. rim;
 SCT37NR2W in N. half;
 S32 in NW. and
 S33 in NE. quadrant; from which

A pine, 14 ins. diam., bears N. 63° 15' E., 415 lks. dist., marked T37NR2WS33BT.

A pinion, 8 ins. diam., bears N. 14° 40' W., 391 lks. dist., marked T37NR2WS32BT.

About 8 chs. S. of this cor. is the rim of Pine Hollow Canyon, which bears N. 80° W. and S. 80° E.

Land, mountainous and broken.
 Soil, coarse gravel and stony, on bed rock in east half mile; light sandy loam, with gravel subsoil in west half mile.

Timber, scrub cedar and pinion, with sage and buck brush.
 Land, drains to the NW.

30. Ninth Standard Parallel North, through R. 2 W.

Chains	S. 89° 59' W., on the secant, through section 32. Over rolling land, covered with dense timber and undergrowth.
10.00	Spur, projects N. 35° W., 30 ft. above cor. Leave dense cedar and pinion timber; enter scattering timber.
26.50	Draw, course N. 35° W.; 100 ft. below spur.
35.00	Spur, projects NW., 40 ft. above draw. Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.
40.00	S. 1 lk. from the secant. Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim; SC $\frac{1}{4}$ S32 in N. half; from which A cedar, 6 ins. diam., bears N. 71° W., 21 lks. dist., marked $\frac{1}{4}$ S32BT. This cor. is set 25 ft. below spur.
43.00	Draw, course N. 35° W., 20 ft. below cor.
50.00	Spur, projects N. 35° W., 25 ft. above draw; descend gradually, over a series of small spurs and draws.
74.25	Mouth of draw, draining S. 60° E., and large draw, draining S. 70° W.; asc.
77.25	Top of ascent, 30 ft. above draw.
79.70	Small draw, course S. 65° W., 30 ft. below top of ascent. Difference between measurements of 80.00 chs. by two sets of chainmen is 2 lks.; position of middle point By 1st set, 79.99 chs., By 2d set, 80.01 chs., the mean of which is
80.00	Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the standard cor. of secs. 31 and 32, marked on brass cap 1914 on S. rim; SCT37NR2W in N. half; S31 in NW. and S32 in NE. quadrant; from which A pinion, 8 ins. diam., bears N. 39° E., 45 lks. dist., marked T37NR2WS32BT. A pinion, 10 ins. diam., bears N. 62° 15' W., 58 lks. dist., marked T37NR2WS31BT. This cor. is established near the head of small draw and at foot of low ledge which bears S. 65° W. and N. 65° E. Land, rolling and broken. Soil, light, sandy loam; subsoil, gravelly and rocky. Timber, scrub cedar and pinion. Undergrowth, buck and sage brush.

	S. 89° 59' W., on the secant, south of sec. 31. Over mountainous land, covered with scattering timber and sage brush undergrowth.
9.00	Ridge, bears NW. and SE., 90 ft. above cor.; desc. over NW. slope.
13.00	Gulch, drains S. 30° W., 140 ft. below ridge.
22.00	Point of ledge rims, bears NW. and NE., projecting S., 110 ft. above gulch.
30.00	Head of gulch, drains S., 125 ft. below point.
33.50	Base of ledges, 15 ft. high, 175 ft. above gulch.
38.25	Point of ledge rims and spur projecting S. Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks.; position of middle point, By 1st set, 39.98 $\frac{1}{2}$ chs. By 2d set, 40.01 $\frac{1}{2}$ chs., the mean of which is
40.00	N. 2 lks. from the secant. Set an iron post, 3 ft. long, 1 in. diam., 6 ins. in the ground to bedrock, surrounded by a mound of stone, for standard $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim; SC $\frac{1}{4}$ S31 in N. half Raise a mound of stone, 2 ft. base, 1 $\frac{1}{2}$ ft. high, N. of cor. Pits impracticable. No bearing trees available. This cor. is established 20 ft. below top of point.

Ninth Standard Parallel North, through Range 2 West.. 31.

Chains Descend abruptly over broken sandstone boulders.
 56.75 Wash in canyon, 15 lks. wide; drains S., 450 ft. below top. Ascend abruptly.
 75.00 Top of abrupt ascent, bears N. and S., 420 ft. above wash; asc. gradually.
 Difference between measurements of 80.00 chs. by two sets of chainmen is 2 lks.; position of middle point
 By 1st set, 79.99 chs.,
 By 2d set, 80.01 chs., the mean of which is
 80.00 N. 4 lks. from the secant.
 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the standard cor. of T. 37 N., Rs. 2 and 3 W., marked on brass cap
 1914 on S. rim;
 SCT37N in N., half;
 R3WS36 in NW. and
 R2WS31 in NE. quadrant; from which
 A cedar, 12 ins. diam., bears N. 59° 30' E., 237 lks. dist., marked T37NR2WS31BT.
 A cedar, 24 ins. diam., bears N. 72° 30' W., 167 lks. dist., marked T37NR3WS36BT.
 This cor. is located on a ridge, bearing N. and S. Land, mountainous and broken; drains SW.
 Soil, rocky, gravelly, and sandy loam, with rocky subsoil. Timber, scattering scrub cedar and pinion, with sage brush undergrowth.
 Cloudy; unable to observe Polaris.

June 5, 1914.

----- Range 3 West. -----

June 6, 1914.

At the last point on the secant, which is 6 miles from the starting point and 4 lks. S. of the standard cor. of T. 37 N., Rs. 2 and 3 W., I deflect an angle of 3' 50" to the north and run

N. 89° 58' W., on the secant, south of sec. 36.
 Over mountainous land, covered with scattering scrub cedar and pinion timber and sage brush undergrowth.

0.34 Cattle trail, bears N. and S.
 3.56 Triangulation point.
 12.50 Ledge, 15 ft. high, 100 ft. below cor., bears N. and SW.; descend.

Difference between measurements of 34.00 chs. by two sets of chainmen is 10 lks.; position of middle point
 By 1st set, 33.95 chs.,
 By 2d set, 34.05 chs., the mean of which is

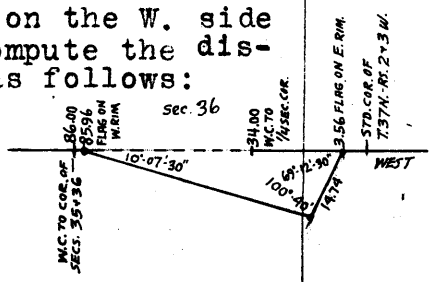
34.00 N. 1 1/2 lks. from the secant.
 Set an iron post, 3 ft. long, 1 in. diam., over a cross (X) on ledge, surrounded by a mound of stone, for witness cor. to standard 1/4 sec. cor., marked on brass cap
 1914 on S. rim;
 SC 1/4 S 36 in N. and
 WC in W. half.

Raise a mound of stone, 2 ft. base, 1 1/2 ft. high, N. of cor.

40.00 True point for 1/4 sec. cor. falls in ledges on steep slope of Mumpup canyon, impracticable to set iron post.

To determine the distance across the canyon, I return to the 3.56-chain point on the secant and lay off an angle of 69° 12' 30" to the left and double chain a distance of 14.74 chs., which is the longest possible distance that could be had where the opposite side of the canyon would be in sight. I place a flag on line on the W. side of the canyon. From the S. end of the base, the angle between the flags on the E. and W. sides of the canyon is 100° 40'. I check the angle on the W. side and find it to read 100° 07' 30". To compute the distance across Jumpup canyon, I proceed as follows:

- Colog. sin. 100° 07' 30" = 0.7549903
- Log. sin. 100° 40' = 9.9924301
- Log. 14.74 chs. = 1.1684975
- Log. 82.40 chs. = 1.9159179
- 82.40 plus 3.56 = 85.96 chs.



32. Ninth Standard Parallel North, through R. 3 W.

Chains	True point for cor. falls in ledges on steep W. slope of Jumpup canyon, where it is impracticable to set it. I therefore set a witness corner at
86.00	4 lks. W. of Triangulation point. Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for witness cor. to standard cor. of secs. 35 and 36, marked on brass cap 1914 on S. rim; T37NR3W in N. and WC in W. half; S35 in NW. and S36 in NE. quadrant; from which A pinion, 8 ins. diam., bears N. 47° 30' W., 45 lks. dist., marked T37NR3WS35WCBT. No other tree available. Raise a mound of stone, 2 ft. base, 1½ ft. high, N. of cor. The bottom of Jumpup canyon is about 1400 ft. below the standard township cor. Wash in bottom is 20 lks. wide, course, S. Land, mountainous and broken. Soil, rocky, gravelly, and sandy loam, with rocky subsoil. Timber, scattering cedar and pinion. Undergrowth, sage brush. Rained in afternoon and evening. Unable to observe Polaris. June 6, 1914.

	June 7, 1914. From the true point for the standard cor. of secs. 35 and 36, N. 89° 59' W., on the secant through sec. 35. Over rolling land, through dense scrub cedar and pinion timber.
6.00	Witness cor. to the standard cor. of secs. 35 and 36, heretofore described.
15.00	Top of ascent along canyon rim, bears N. and S.; descend gradually.
25.00	Leave dense and enter scattering timber, bears NW. and SE.
36.00	Draw, course NW., 120 ft. below top of ascent. Difference between measurements of 40.00 chs. by two sets of chainmen is 1 lk.; position of middle point By 1st set, 39.99½ chs., By 2d set, 40.00½ chs., the mean of which is
40.00	S. 1 lk. from the secant. Set an iron post, 3 ft. long, 1 in. diam., 16 ins. in the ground, to bedrock, surrounded by a mound of earth and stone, 20 ins. high, for standard ¼ sec. cor., marked on brass cap 1914 on S. rim; SC½S35 in N. half; from which A cedar, 16 ins. diam., bears N. 4° 45' E., 127 lks. dist., marked ¼S35BT. This cor. is established on a spur, projecting N. 35° W., 50 ft. above draw.
46.00	Draw, course NW., 60 ft. below ¼ sec. cor.
60.00	Ridge, bears N. 60° W. and S., 50 ft. above draw; desc. gradually along N. slope of draw.
77.60	Draw, course N. 55° W., 125 ft. below ridge. Difference between measurements of 80.00 chs. by two sets of chainmen is 2 lks.; position of middle point By 1st set, 79.99 chs., By 2d set, 80.01 chs., the mean of which is
80.00	S. 2 lks. from the secant. Set an iron post, 3 ins. diam., 3 ft. long, 24 ins. in the ground, for the standard cor. of secs. 34 and 35, marked on brass cap 1914 on S. rim; SCT37NR3W in N. half; S34 in NW. and S35 in NE. quadrant; from which

Ninth Standard Parallel North, through R. 3 W.

Chains

A pinion, 12 ins. diam., bears N. 66° 15' E., 114 lks. dist., marked T37NR3WS35BT:
 A cedar, 6 ins. diam., bears N. 45° W., 105 lks. dist., marked T37NR3WS34BT.
 Land, rolling. Drains NW.
 Soil, coarse gravel and stony. Subsoil, rocky.
 Timber, scattering cedar and pinion.
 Undergrowth, sagebrush.
 Good grazing.
 Cloudy in evening.

June 7, 1914.

June 10, 1914.

At the standard cor. of secs. 34 and 35, T. 37 N., R. 3 W., I observe Polaris as follows:

Telescope Direct:	Horizontal Angle			Watch time		
	o	'	"	h.	m.	s.
Star,	89	44	00	8	00	20 p. m.
Flag,	00	00	00			
Star,	89	45	00	8	02	10
Flag,	00	00	00			
Telescope Reversed:						
Star,	89	47	00	8	05	50
Flag,	00	00	00			
Mean,	89	45	20	8	02	45 p. m.
Watch fast, l. m. t.,					29	15
L. m. t. of observation,				7	33	30 p. m.

U. C. of Polaris, June 10, 1914, = 8h 16.7m a. m.
 Red. to long. of station, 1.2
 U. C. of Polaris at station, 8h 15.5m a. m.

Hour angle of Polaris, . . . = 11h 18m

W. azimuth of Polaris = 14.8' = 0°14' 48"
 Angle W., Star to flag, 89 45 20
 Secant bears, S. 89 59 52 W.
 True bearing of secant, N. 89 59 18 W.
 Error, 00 00 50"

NOTE: A large portion of this error is probably in the observation, as it was quite dark at the time of observation, which made it difficult to read the verniers; hence the reason for only one pointing of the telescope in the reverse position.

June 10, 1914.

June 11, 1914.
 N. 89° 59' W., on the secant, through sec. 34.
 Over mountainous land, through scattering timber and sage brush undergrowth.

11.25
27.75
33.50

Spur, projects NW., 65 ft. above cor.
 Start abrupt descent, 90 ft. below spur.
 Draw, course N. 65° W., 70 ft. below abrupt descent.
 Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks.; position of middle point
 By 1st set, 39.98½ chs.,
 By 2d set, 40.01½ chs., the mean of which is

40.00

S. 3 lks. from the secant.
 Set an iron post, 3 ft. long, 1 in. diam., 18 ins. in the ground to bedrock, surrounded by a mound of stone, 18 ins. high, for standard ¼ sec. cor., marked on brass cap

1914 on S. rim;
 SC+S34 in N. half.

Raise a mound of stone, 2 ft. base, 1½ ft. high, N. of cor. Pits impracticable. No bearing trees available.

42.00
50.00
55.00

This cor. is set 50 ft. above draw. Descend.
 Draw, course N. 35° W., 35 ft. below ¼ sec. cor.
 Spur, projects N. 35° W., 70 ft. above draw.
 Draw, course N. 35° W., 70 ft. below spur.

Chains
66.00
75.50

Spur, projects N., 90 ft. above draw.
 Draw, course N., 140 ft. below spur.
 Difference between measurements of 80.00 chs. by two sets of chainmen is 6 lks.; position of middle point
 By 1st set, 79.97 chs.,
 By 2d set, 80.03 chs., the mean of which is

80.00 S. 3 lks. from the secant.
 Set an iron post, 3 ft. long, 3 ins. diam., over a cross (X) on ledge, surrounded by a mound of stone, for the standard cor. of secs. 33 and 34, marked on brass cap 1914 on S. rim;
 SCT37NR3W in N. half;
 S33 in NW. and
 S34 in NE. quadrant.
 Raise a mound of stone, 2 ft. base, 1½ ft. high, N. of cor. Trees too scrubby for bearing trees.
 This cor. is established 1.25 chs. S. of the E. rim of Kanab canyon.
 Land, rolling.
 Soil, rocky, with bedrock close to surface.
 Timber, scattering scrub cedar and pinion, with sagebrush undergrowth.
 Good grazing.

19.00
38.10

West, on the secant through section 33.
 Descending gradually along E. rim of Kanab canyon, over broken NW. slope, covered with sandstone boulders, through scattering scrub cedar and pinion timber, short sage and shad scale.

19.00 Intersect E. rim of Kanab canyon, bears N. 87° E. and N. 87° W.

38.10 Draw, course N., 75 ft. below cor.
 Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.

40.00

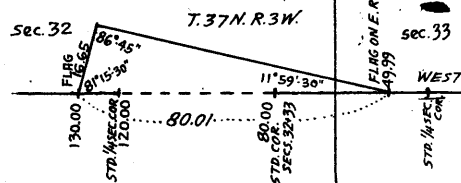
S. 3 lks. from the secant.
 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard ¼ sec. cor., marked on brass cap 1914 on S. rim;
 SC1S33 in N. half.
 Raise a mound of stone, 2 ft. base, 1½ ft. high, N. of cor. Trees too scrubby for bearing trees. Pits impracticable.
 This cor. is established 70 lks. S. of the E. rim of Kanab canyon.

June 11, 1914.

49.99

June 12, 1914.
 Triangulation point on E. rim of Kanab canyon.
 Set a flag ahead on line in bottom of canyon and triangulate in accordance with the following:
 At a point ahead on line, I deflect an angle to the N. of 81° 15' 30" and chain a base of 16.65 chs., which is the longest base possible on account of ledges and canyons. From the 16.65-ch. station on the base line, the angle between the flag on the E. rim of the canyon and the initial point on the base line is 86° 45'. The angle at the flag on E. rim of the canyon is computed to be 11° 59' 30". I compute the distance as follows:

Colog. sin. 11° 59' 30"	=	0.6824184
Log. sin. 86° 45'	=	9.9993009
Log. 16.65 chs.	=	1.2214142
Log. 80.01	=	1.9031335
49.99 plus 80.01	=	130.00 chs.



From the triangulation point at 49.99 chs. W. from the standard cor. of secs. 33 and 34, I continue to chain W., on the secant through section 33, in order to establish the cor. of secs. 32 and 33.

50.00

Saddle near point of E. rim of Kanab canyon, bears N. and S.

51.50

Series of perpendicular ledges, 75 ft. high, bears N. and S.

Chains
52.00
60.15
62.40
80.00

Base of same ledges.
 Another series of ledges, same bearing.
 Base of same ledges.
 S. 2 lks. from the secant.
 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the standard cor. of secs. 32 and 33, marked on brass cap
 1914 on S. rim;
 SCT37NR3W in N. half;
 S32 in NW. and
 S33 in NE. quadrant.
 Raise a mound of stone, 2 ft. base, 1½ ft. high, N. of cor.
 This cor. is established on a red sandstone point, projecting NE.
 Land, rough and broken, with sandstone ledges and boulders.
 Timber, scattering cedar and pinion.
 Undergrowth, short sagebrush and shad scale.
 No grazing.

From the triangulation point on the bottom of Kanab canyon, which is 1500 ft. below the triangulation point on the E. rim, I chain N. 89° 59' E. on the secant, through sec. 32, 10.00 chs. This point is, therefore, 40 chs. from the standard cor. of secs. 32 and 33, heretofore described,

40.00

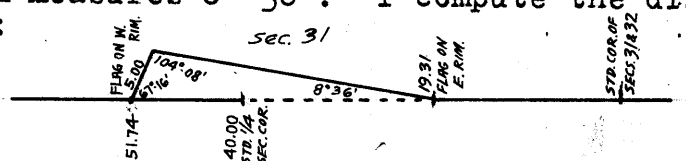
S. 89° 59' W., on the secant through sec. 32,
 1 lk. S. from the secant.
 Set an iron post, 3 ft. long, 1 in. diam., 6 ins. in the ground, to bedrock, surrounded by a mound of stone, for standard ¼ sec. cor., marked on brass cap
 1914 on S. rim;
 SCT S32 in N. half.
 Raise a mound of stone, 2 ft. base, 1½ ft. high, N. of cor. Pits impracticable. No suitable bearing trees available.

80.00

Over barren red sandstone.
 Set an iron post, 3 ft. long, 3 ins. diam., over a cross (X) on bedrock, surrounded by a mound of stone, for standard cor. of secs. 31 and 32, marked on brass cap
 1914 on S. rim;
 SCT37NR3W in N. half;
 S31 in NW., and
 S32 in NE. quadrant.
 Raise a mound of stone, 2 ft. base, 1½ ft. high, N. of cor. Pits impracticable. No suitable bearing trees available.
 Land, rough, broken, and rocky.
 No soil.
 No grazing.

19.31
20.40

S. 89° 59' W., on the secant S. of sec. 31.
 Over sandstone bedrock.
 Triangulation point.
 Top of perpendicular ledges, E. rim of Kanab creek.
 Set a flag ahead on line on W. rim of Kanab creek, and triangulate in accordance with the following:
 At a point ahead on line, I deflect an angle to the N. of 67° 16' and chain a base of 5.00 chs., which is the longest base possible on account of ledges and canyons. From the 5-ch. station on the base line, the angle between the flag on the E. rim of the creek and the initial point on the base line is 104° 08'. The angle at flag on E. rim measures 8° 36'. I compute the distance as follows:



36. Ninth Standard Parallel North, through Range 3 West..

Chains	<p>Colog. sin. $80^{\circ} 36'$ = 0.8252561 Log. sin. $104^{\circ} 08'$ = 9.9866509 Log. 5.00 chs. = 0.6989700 Log. 32.425 chs. = <u>1.5108770</u> 19.31 plus 32.43 = 51.74 chs.</p>
40.00	<p>From the 51.74-ch. point (triangulation point on W. rim of Kanab creek canyon) I chain N. $89^{\circ} 59'$ E., on the secant S. of sec. 31, 11.74 chs., and at N. 2 lks. from the secant</p> <p>Set an iron post, 3 ft. long, 1 in. diam., over a cross (X) on ledge, surrounded by a mound of stone, for the standard $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim; SC$\frac{1}{4}$S31 in N. half.</p> <p>Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, N. of cor. No trees near. Pits impracticable.</p> <p>Kanab creek in the bottom of this canyon is 15 lks. wide, about 16 ins. deep; water alkali; course, S. The bottom of this canyon is 1900 ft. below top of main canyon.</p>
43.00	Gulch, drains S.; ascend over barren sandstone.
51.74	<p>Triangulation point.</p> <p>Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.</p>
80.00	<p>N. 4 lks. from the secant.</p> <p>Set an iron post, 3 ft. long, 3 ins. diam., over a cross (X) on a sandstone ledge, projecting S. from a point dividing Hack's from Black Grama canyon, surrounded by a mound of stone, for the standard cor. of T. 37 N., Rs. 3 and 4 W., marked on brass cap 1914 on S. rim; SCT37N in N. half; R4WS36 in NW. and R3WS31 in NE. quadrant.</p> <p>Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, N. of cor. No trees near. Pits impracticable.</p> <p>Land, rough and broken, mostly sandstone bedrock. Practically no soil. No grazing. No vegetation. Cloudy at night.</p> <p style="text-align: right;">June 12, 1914.</p>
-----Range 4 West.-----	
	<p>June 20, 1914.</p> <p>At the last point on the secant, which is 6 miles from the starting point and 4 lks. S. of the standard cor. of T. 37 N., Rs. 3 and 4 W., I deflect an angle of $3' 50''$ to the N. and run N. $89^{\circ} 58'$ W., on the secant south of sec. 36.</p> <p>Over broken sandstone ledges, through greasewood and yucca.</p>
32.00	<p>Head of gulch, 50 ft. deep, $5\frac{1}{2}$ chs. wide; drains S.</p> <p>Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks.; position of middle point By 1st set, 39.98$\frac{1}{2}$ chs., By 2d set, 40.01$\frac{1}{2}$ chs., the mean of which is</p>
40.00	<p>N. 2 lks. from the secant.</p> <p>Set an iron post, 3 ft. long, 1 in. diam., over a cross (X) on bedrock, surrounded by a mound of stone, for standard $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim; SC$\frac{1}{4}$S36 in N. half.</p> <p>Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, N. of cor.</p> <p>This cor. is established 130 ft. below the standard township corner.</p>
58.20	Sandstone ledge, rim of Hack's wash, 50 ft. high, bears NW. and SE.
61.00	Bottom of Hack's canyon, bears NW. and SE.
65.50	Wash in bottom of Hack's canyon, 1 ch. wide, 10 ft. deep; drains S. 80° E.

Ninth Standard Parallel North, through R. 4 W. 37.

Chains
69.50 Same wash, course N. 60° E.
72.50 Same wash, course SE.
76.50 Same wash, course NE.
78.50 Same wash, course S. 70° E.
Difference between measurements of 80.00 chs. by two sets of chainmen is 4 lks.; position of middle point,
By 1st set, 79.98 chs.,
By 2d set, 80.02 chs., the mean of which is
80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the standard cor. of secs. 35 and 36, marked on brass cap
1914 on S. rim;
SCT37NR4W in N. half;
S35 in NW. and
S36 in NE. quadrant.
Raise a mound of stone, 2 ft. base, 1½ ft. high, N. of cor.
Land, broken and rough.
Soil, light sand on solid rock.
No timber or grazing.
Undergrowth, scattering greasewood and yucca.
Cloudy.

June 20, 1914.

June 21, 1914.
N. 89° 59' W., on the secant through sec. 35.
Over sandy bottom Hack's canyon.
2.00 Base of sandstone ledge rim on S. side Hack's canyon, bears N. 20° W. and SE., 60 ft. high.
3.30 Top of sandstone ledges, bears N. 20° W. and SE.
25.00 Leave sandstone ledges, bearing N. 70° W. and SE.; ascending over rocky surface broken with small draws and spurs, projecting N.
Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks., position of middle point
By 1st set, 39.98½ chs.,
By 2d set, 40.01½ chs., the mean of which is
40.00 S. 1 lks. from the secant.
Set an iron post, 3 ft. long, 1 in. diam., 6 ins. in the ground, to bedrock, surrounded by a mound of stone, for standard ¼ sec. cor., marked on brass cap
1914 on S. Rim;
SCT37NR4W in N. half.
Raise a mound of stone, 2 ft. base, 1½ ft. high, N. of cor.
Continue ascent over rock slides on broken S. slope Hack's canyon.
Difference between measurements of 80.00 chs. by two sets of chainmen is 10 lks.; position of middle point
By 1st set, 79.95 chs.,
By 2d set, 80.05 chs., the mean of which is
80.00 S. 2 lks. from the secant.
Set an iron post, 3 ft. long, 3 ins. diam., 8 ins. in the ground, to bedrock, surrounded by a mound of stone, for the standard cor. of secs. 34 and 35, marked on brass cap
1914 on S. rim;
SCT37NR4W in N. half;
S34 in NW. and
S35 in NE. quadrant.
Raise a mound of stone, 2 ft. base, 1½ ft. high, N. of cor.
Land, broken canyon side.
Soil, sandy and rocky, with bedrock close to surface.
No timber.
Scant grazing.
Undergrowth, greasewood and yucca.

38. Ninth Standard Parallel North, through R. 4 W.

Chains N. $89^{\circ} 59'$ W., on the secant through sec. 34.
 Ascending over broken S. slope of Hack's canyon.
 28.00 Point of spur from ledges, projects N.; 100 ft. above cor.
 39.40 Gulch, course N.; 100 ft. below point of spur.
 Difference between measurements of 40.00 chs. by two sets
 of chainmen is 2 lks.; position of middle point
 By 1st set, 39.99 chs.,
 By 2d set, 40.01 chs., the mean of which is
 40.00 S. 3 lks. from the secant.
 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the
 ground, for standard $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 SC $\frac{1}{4}$ S34 in N. half.
 Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, N. of
 cor. No trees. Pits impracticable.
 Cor. located on E. slope of gulch.
 June 21, 1914.
 June 22, 1914.
 Ascend abruptly.
 41.25 Top of ascent, bears N. and S.; 40 ft. above cor.
 60.00 Enter red clay, bears N. and S.,
 72.00 E. edge gulch, bears N. and S.
 73.75 Bottom of gulch, 60 lks. wide, 60 ft. deep; course N.
 75.70 W. edge of gulch, bears N. and S.
 Difference between measurements of 80.00 chs. by two sets
 of chainmen is 4 lks.; position of middle point
 By 1st set, 79.98 chs.,
 By 2d set, 80.02 chs., the mean of which is
 80.00 S. 3 lks. from the secant.
 Set an iron post, 3 ft. long, 3 ins. diam., 10 ins. in the
 ground, on bedrock, surrounded by a mound of stone,
 for the standard cor. of secs. 33 and 34., marked on
 brass cap
 1914 on S. rim;
 SCT37R4W in N. half;
 S33 in NW. and
 S34 in NE. quadrant.
 Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high N. of
 cor. No trees near. Pits impracticable.
 Land, steep and cut by slides.
 Soil, rocky and red clay.
 No timber or grazing.
 Undergrowth, shad scale and yucca.

 NOTE: The secant line strikes a high pinnacle on ledge
 ahead. In order to project my line, I offset 50 lks.
 to the north of the secant at this cor.
 West, on offset 50 lks. N. of the secant, through sec. 33.
 Over steep, rocky S. slope of Hack's canyon, cut by rock
 slides, through buck brush and shad scale undergrowth.
 22.50 E. edge of gulch, 75 ft. above cor.
 28.00 Bottom of gulch, 160 ft. deep, drains N.
 33.00 W. side gulch, bears N. and S.; continue ascending over
 rocky, disintegrated sandstone.
 Difference between measurements of 40.00 chs. by two sets
 of chainmen is 4 lks.; position of middle point
 By 1st set, 39.98 chs.,
 By 2d set, 40.02 chs., the mean of which is
 40.00 S. 53 lks. from the offset line to the secant.
 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the
 ground, for standard $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 SC $\frac{1}{4}$ S33 in N. half.
 Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, N.
 of cor.
 Cloudy in evening.
 June 23, 1914.

June 24, 1914.
 56.00 Base of series of ledges, 350 ft. high, bears N. 60° W.
 and SE.
 60.50 Top of ledges, bears N. 60° W. and SE.

Chains
63.75

Sandstone pinnacle, 50 lks. S. of offset line, 40 ft. high, 25x20 ft. base. N. about 5 chs. is a point of ledge rims.

67.50

Top of ledge rim, 380 ft. high, bears N. and S.

68.25

Base of ledges, bears N. and S. Continue abrupt descent.

80.00

S. 52 lks. from the offset to the secant line.

Set an iron post, 3 ft. long, 3 ins. diam., 12 ins. in the ground to bedrock, surrounded by a mound of stone, for the standard cor. of secs. 32 and 33, marked on brass cap

1914 on S. rim;
SCT37NR4W in N. half;
S32 in NW. and
S33 in NE. quadrant.

Raise a mound of stone, 2 ft. base, 1 1/2 ft. high, N. of cor.

Land, rough and broken.
Soil, red clay, covered with slide rock.
No timber.
No grazing.

At this cor., I offset S. 50 lks. to the secant line. S. 89° 59' W., on the secant, through sec. 32.

12.50

Descend over broken, rocky slope of Hack's canyon. Wash, 25 lks. wide, 10 ft. deep; course, N. Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.

40.00

S. 1 lk. from the secant. Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard 1/4 sec. cor., marked on brass cap.

1914 on S. rim;
SCT37NR4W in N. half.

Raise a mound of stone, 2 ft. base, 1 1/2 ft. high, N. of cor. No trees near. Pits impracticable.

60.00

Begin abrupt ascent, bears N. and S.

76.00

Top of abrupt ascent, bears N. and S.; 260 ft. above bottom.

Difference between measurements of 80.00 chs. by two sets of chainmen is 6 lks.; position of middle point,

By 1st set, 79.97 chs.,
By 2d set, 80.03 chs., the mean of which is

80.00

Set an iron post, 3 ft. long, 3 ins. diam., 12 ins. in the ground, to bedrock, surrounded by a mound of stone, for the standard cor. of secs. 31 and 32, marked on brass cap

1914 on S. rim;
SCT37NR4W in N. half;
S31 in NW. and
S32 in NE. quadrant.

Raise a mound of stone, 2 ft. base, 1 1/2 ft. high, N. of cor.

Land, steep, rocky, and broken.
Soil, red clay and rocky, and light sand.
No timber.
Scant grazing.
Undergrowth, shad scale.
Cloudy.

June 24, 1914.

June 25, 1914.
S. 89° 59' W., on the secant, south of sec. 31. Over broken slope of Hack's canyon.

15.00

Point of spur, projecting N., 300 ft. high.

28.00

Wash, 40 lks. wide; 7 ft. deep; course N. There is a spring about 3 miles S., along this wash, in canyon. Difference between measurements of 40.00 chains by two sets of chainmen is 2 lks.; position of middle point

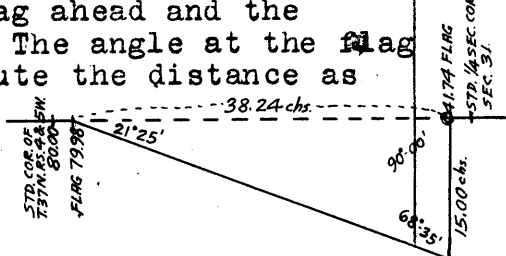
40. Ninth Standard Parallel North, through R. 4 W.

Chains

By 1st set, 39.99 chs.,
 By 2d set, 40.01 chs., the mean of which is
 40.00 N. 2 lks. from the secant.
 Set an iron post, 3 ft. long, 1 in. diam., 12 ins. in
 the ground, to bedrock, surrounded by a mound of stone,
 for standard $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 SCT31 in N. half.
 Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, N. of
 cor.

41.74 Triangulation point. I set a flag ahead on line and
 triangulate in accordance with the following:
 From this point, I deflect an angle of 90° to the left and
 chain a base of 15.00 chs. The angle at the 15-ch.
 point on the base, between the flag ahead and the
 triangulation point, is $68^\circ 35'$. The angle at the flag
 ahead on line is $21^\circ 25'$. I compute the distance as
 follows:

Colog. sin. $21^\circ 25'$	=	0.4375315
Log. sin. $68^\circ 35'$	=	9.9689262
Log. 15.00 chs.	=	1.1760913
Log. 38.24 chs.	=	1.5825490
41.74 plus 38.24	=	79.98 chs.



I continue S. $89^\circ 59'$ W., on the secant, 2 lks.
 80.00 N. 4 lks. from the secant.
 Set an iron post, 3 ft. long, 3 ins. diam., 12 ins. in
 the ground, to bedrock, surrounded by a mound of stone,
 for the standard cor. of T. 37 N., Rs. 4 and 5 W.,
 marked on brass cap
 1914 on S. rim;
 SCT37N in N. half;
 R5WS36 in NW. and
 R4WS31 in NE. quadrant.
 Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, N. of
 cor. No trees suitable for bearing trees available.
 Pits impracticable.
 This cor. is located on top of the rim on the S. side
 of Hack's canyon, about 1500 ft. above the bottom.
 Land, rough and broken,
 Soil, red clay and covered with broken slide rock.
 Timber, scattering scrub cedar and pinion on top of rim.
 Undergrowth, shad scale.
 Scant grazing.

June 25, 1914.

 1st Guide Meridian West, through T. 37 N., bet. Rs. 4 & 5
 West.

June 25, 1914.
 From a point 4 lks. S. of the standard cor. of T. 37 N.,
 Rs. 4 and 5 W., I backsight eastward along the secant
 to the Ninth Standard Parallel. From this line, I
 turn an angle of $89^\circ 58'$ to the N., and project this
 line as a transit line, using double back- and fore-
 sights.

Measurements were made from the standard township corner
 by two sets of chainmen, using five-chain Lallie steel
 tapes, with clinometer for determining slopes.
 North, on the First G. M. W., bet. secs. 31 and 36.
 Ascending gradually over top of rim of Hack's canyon,
 through dense scrub cedar and pinion timber.

9.50 Point from rim, projects NE.; leave cedar and pinion tim-
 ber, bears E. and W.; descend gradually.

10.00 Triangulation point on the S. rim of Hack's canyon. The
 line north from this point descends abruptly over a
 series of perpendicular ledge rims and rock slides.
 Set a flag ahead on line in bottom of canyon and trian-
 gulate in accordance with the following:
 At the flag ahead on line, I deflect an angle of $46^\circ 24'$
 $30''$ to the W. and chain a base of 14.60 chs. The

1st Guide Meridian West, through T. 37 N., bet. Rs. 4 and 5 W. 41.

Chains

angle at the 14.60-ch. point on the base line, between flag at initial point on base and triangulation point on S. rim of the canyon is $116^{\circ} 43'$, which makes the angle at the triangulation point $16^{\circ} 52' 30''$. I compute the distance as follows:

Colog. sin. $16^{\circ} 52' 30'' = 0.5371759$

Log: sin. $116^{\circ} 43' = 9.9509685$

Log. 14.60 chs. = 1.1643529

Log. 44.93 chs. = 1.6524973

10.00 plus 44.93 = 54.93 chs.

I chain S. along the G. M. 14.93 chs., which, measuring from the standard township cor., makes

40.00 Set an iron post, 3 ft. long, 1 in. diam., 6 ins. in the ground, to bedrock, surrounded by a mound of stone, for $\frac{1}{4}$ sec. cor., marked on brass cap

1914 on S. rim;

$\frac{1}{4}$ in N.;

S36 in W., and

S31 in E. half.

Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. No trees near.

Cloudy in the evening.

June 25, 1914.

June 26, 1914.

Difference between measurements of 40.00 chs. (from $\frac{1}{4}$ sec. cor.) by two sets of chainmen is 2 lks.; position of middle point (from standard township cor.)

By 1st set, 79.99 chs.,

By 2d set, 80.01 chs., the mean of which is

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 8 ins. in the ground, to bedrock, surrounded by a mound of stone, for the cor. of secs. 25, 30, 31 and 36, marked on brass cap

1914 on S. rim;

T37N in N.,

R4W in E., and

R5W in W. half;

S25 in NW.,

S30 in NE.,

S31 in SE., and

S36 in SW. quadrant.

Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. No trees near.

This cor. is established 1200 ft. below standard township cor.

Land, rough and broken.

Soil, red clay, sand, and rock.

Timber, dense cedar and pinion for 10.00 chs.

Undergrowth, greasewood, shad scale, and yucca.

North, bet. secs. 25 and 30.

Over broken canyon bottom.

0.15 Triangulation point.

Thence I chain N. to establish $\frac{1}{4}$ sec. cor:

0.70 Hack's Canyon wash, 1 ch. wide; 5 ft. deep, course, S. 70° E.; ascend over broken N. slope of canyon.

15.00 Draw, 20 lks. wide, 10 ft. deep; drains S. 20° E.

20.00 Draw, 20 lks. wide, 10 ft. deep; course; SW.

Difference between measurements of 40.00 chs. by two sets of chainmen is 4 lks.; position of middle point

By 1st set, 39.98 chs.,

By 2d set, 40.02 chs., the mean of which is

40.00 Set an iron post, 3 ft. long, 1 in. diam., 12 ins. in the ground, surrounded by a mound of stone, (post set to bedrock); for $\frac{1}{4}$ sec. cor., marked on brass cap

1914 on S. rim;

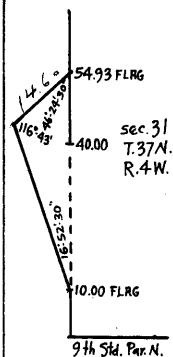
$\frac{1}{4}$ in N. half;

S25 in W. and

S30 in E. half;

Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, W. of cor.

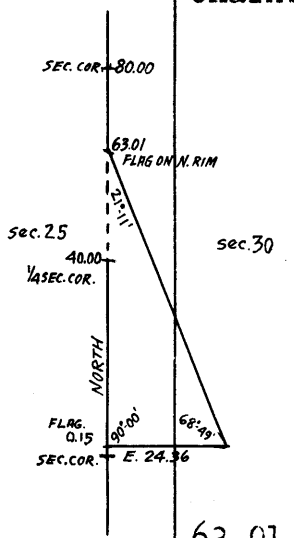
Sec. 36



42. 1st Guide Meridian West, through T. 37 N., bet. Rs. 4 and 5 W.

Chains

This cor. is set 150 ft. above the sec. cor. From this point, the line ascends abruptly over steep SE. slope.



I return to the triangulation point, 15 lks. N. of the sec. cor. Set a flag ahead on line on the N. rim of Hack's Canyon. From the triangulation point, I turn an angle of 90° to the east and chain a base of 24.36 chs., and triangulate as follows:

Angle at 24.36-ch. point on base line between initial point on base line and flag on N. rim of the canyon is 68° 49'. Angle at flag on N. rim of canyon measures 21° 11'. I compute the distance as follows:

Colog. sin. 21° 11' = 0.4420679
 Log. sin. 68° 49' = 9.9696158
 Log. 24.36 chs. = 1.3866773
 Log. 62.86 chs. = 1.7983610
 0.15 plus 62.86 = 63.01 chs.

- 63.01 Triangulation point and top of rim, 1050 ft. above sec. cor. Continue across nearly level bench.
- 68.00 Gulch, 30 ft. deep, drains SE. Continue up gulch.
- 73.00 Leave gulch; course, SE.
- 79.00 Top of abrupt ascent, bears E. and W., 250 ft. above bottom of gulch and top of upper rim of Hack's canyon. 1300 ft. above section cor. Enter scrub cedar and pinion timber, bears SE. and SW. Difference between measurements of 80.00 chs. by two sets of chainmen is 10 lks.; position of middle point
 By 1st set, 79.95, chs.,
 By 2d set, 80.05 chs., the mean of which is
- 80.00 Set an iron post, 3 ft. long, 3 ins. diam., 6 ins. in the ground, to bedrock, surrounded by a mound of stone, for the cor. of secs. 19, 24, 25, and 30, marked on brass cap

- 1914 on S. rim;
- T37 N in N.,
- R4W in E., and
- R5W in W. half;
- S24 in NW.,
- S19 in NE.,
- S30 in SE., and
- S25 in SW. quadrant.

Raise a mound of stone, 2 ft. base, 1 1/2 ft. high, W. of cor. Pits impracticable. No trees suitable for bearing trees available.

Land, rough and broken. Soil, dark clay and stony, with bedrock close to surface. Timber, scrub cedar and pinion, 1 ch. Undergrowth, shad scale and greasewood.

On June 26, 1914, at this cor., I observe Polaris as follows:

Telescope Direct:	Horizontal Angle			Watch time		
	°	'	"	h.	m.	s.
Star,	00	04	00	7	48	20 p. m.
Flag,	00	00	00			
Star,	00	03	00	7	51	30
Flag,	00	00	00			
Telescope Reversed:						
Star,	00	02	00	7	54	00
Flag,	00	00	00			
Star,	00	02	00	7	55	50
Flag,	00	00	00			
Mean,	00	02	45	7	52	25 p. m.
Watch fast, 1. m. t.,					30	30
L. M. T. of observation,				7	21	55 p. m.
U. C. Polaris, June 26, 1914, =				7h	14.0m	a. m.
Red. to longitude of station,					1.2	
U. C. of Polaris at station,				7h	12.8m	a. m.
Hour angle of Polaris = 11h 46.9m						
E. azimuth of Polaris = 0° 4' 00"						
Angle, E. flag to star, 0 2 45						
Flag bears, N. 0° 1' 15" E.						

June 26, 1914.

1st Guide Meridian West, through R. 37 N., bet. Rs. 4 and 5 W. 43.

Chains June 27, 1914.
 I correct this error in azimuth of the G. M. by moving the cors. W. as follows: $\frac{1}{4}$ sec. cor., bet. secs. 31 and 36, $1\frac{1}{2}$ lks.; cor. secs. 25, 30, 31, and 36, 3 lks.; $\frac{1}{4}$ sec. cor., bet. secs. 25 and 30, $4\frac{1}{2}$ lks.; cor. secs. 19, 24, 25, and 30, 6 lks. W.
 North, bet. secs. 19 and 24.
 Over broken point bet. Hack's and Black Grama canyons, locally known as "Sunshine Point," through scattering timber.

4.00 Start abrupt descent, bears E. and W.
 14.00 Draw, 110 ft. below abrupt descent, drains NW.
 24.00 Point of spur, projects W., 100 ft. above draw.
 30.00 Draw, 15 lks. wide, 10 ft. deep, drains W.; ascend steep slope.
 38.00 Top of ridge, bears E. and W.; 125 ft. above draw.
 Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks.; position of middle point
 By 1st set, 40.01 $\frac{1}{2}$ chs.
 By 2d set, 39.98 $\frac{1}{2}$ chs., the mean of which is
 40.00 Set an iron post, 3 ft. long, 1 in. diam., 20 ins. in the ground to bedrock, surrounded by a mound of stone, for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ in N.,
 S24 in W., and
 S19 in E. half.
 Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, W. of cor. Trees too scrubby for bearing trees. Pits impracticable.

47.50 Small draw, drains E., 20 ft. below cor.
 65.00 Point of ridge, bears NW. and E., 20 chs. 40 ft. above draw.
 78.00 Head of draw, course S. 60° E., 40 ft. below ridge.
 Difference between measurements of 80.00 chs. by two sets of chainmen is nothing.
 80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the cor. of secs. 13, 18, 19, and 24, marked on brass cap
 1914 on S. rim;
 T37N in N.,
 R4W in E., and
 R5W in W. half;
 S13 in NW.,
 S18 in NE.,
 S19 in SE., and
 S24 in SW. quadrant.
 Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. Trees too scrubby for bearing trees.
 Land, mountainous and broken.
 Soil, light sandy loam and gravel with sandstone rock close to surface.
 Timber, scattering scrub cedar.
 Undergrowth, yellowtop.
 Good grazing..
 Water, scarce.

North, bet. secs. 13 and 18.
 Over broken land on Sunshine point, through scattering timber.

4.00 Top of ascent, 40 ft. above head of draw, bears E. and W.
 Difference between measurements of 40.00 chs. by two sets of chainmen is 2 lks.; position of middle point
 By 1st set, 39.99 chs.,
 By 2d set, 40.01 chs., the mean of which is
 40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ in N.,
 S18 in E., and

44. 1st Guide Meridian West, through T. 37 N., bet. Rs. 4 and 5 W.

Chains S13 in W. half.
 Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, W. of cor.
 This cor. is established 170 ft. below top of ascent at 4-ch. point.
 57.00 Draw, with sandstone rim, 1 ch. wide, 50 ft. deep; course, NE.
 60.00 Spur, projecting NE.; descend.
 Difference between measurements of 80.00 chs. by two sets of chainmen is 4 lks.; position of middle point
 By 1st set, 79.98 chs.,
 By 2d set, 80.02 chs., the mean of which is
 80.00 Set an iron post, 3 ft. long, 3 ins. diam., 4 ins. in the ground, to bedrock, surrounded by a mound of stone, for the cor. of secs. 7, 12, 13, and 18, marked on brass cap
 1914 on S. rim;
 T37N in N.,
 R4W in E., and
 R5W in W. half;
 S12 in NW.,
 S7 in NE.,
 S18 in SE., and
 S13 in SW. quadrant.
 Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. No trees within limits.
 Land, mountainous and broken.
 Soil, coarse gravel and rocky. Bedrock close to surface.
 Timber, scattering scrub cedar.
 Undergrowth, yellowtop and grass.
 Good grazing.

 North, bet. secs. 7 and 12.
 Over mountainous and broken land, across Sunshine point, through scattering timber.
 4.75 Draw, 50 ft. below cor., 15 lks. wide, 5 ft. deep; course, NE.
 29.00 Low point, projecting N. 70° E., 150 ft. above draw.
 Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks.; position of middle point
 By 1st set, 39.98 $\frac{1}{2}$ chs.,
 By 2d set, 40.01 $\frac{1}{2}$ chs., the mean of which is
 40.00 Set an iron post, 3 ft. long, 1 in. diam., 16 ins. in the ground to bedrock, surrounded by a mound of earth and stone, for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ in N.,
 S12 in W., and
 S7 in E. half.
 Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. No trees within limits.
 Continue gradual descent over small ridges and draws, draining E.
 Difference between measurements of 80.00 chs. by two sets of chainmen is 2 lks.; position of middle point
 By 1st set, 79.99 chs.,
 By 2d set, 80.01 chs., the mean of which is
 80.00 Set an iron post, 3 ft. long, 3 ins. diam., 12 ins. in the ground to bedrock, surrounded by a mound of stone, for the cor. of secs. 1, 6, 7, and 12, marked on brass cap
 1914 on S. rim;
 T37N in N.,
 R4W in E., and
 R5W in W. half;
 S1 in NW.,
 S6 in NE.,
 S7 in SE., and
 S12 in SW. quadrant.
 Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. No trees within limits.

1st Guide Meridian West, through T. 37 N., bet. Rs. 4 and 5 W. 45.

Chains Land, mountainous and rough.
 Soil, light gravel and rocky. Subsoil, bedrock and coarse gravel.
 Timber, scattering scrub cedar.
 Undergrowth, yellowtop and greasewood.
 Good grazing.

 North, bet. secs. 1 and 6.
 Descending over rolling hilly land, through scrub cedar timber.

2.40 Draw, 20 lks. wide, 5 ft. deep, drains NE.; ascend gradually.
 20.60 Old dim road from Bull Rush spring to Sunshine ranch, bears E. and W.
 30.00 Point, projecting W. from ridge to the E.; desc.
 34.25 Bottom of descent, 60 ft. below top, bears NE. and W.; thence over small grassy valley.

Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.

40.00 Set an iron post, 3 ft. long, 1 in. diam., 18 ins. in the ground, to bedrock, surrounded by a mound of stone and earth, for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ in N.,
 S1 in W., and
 S6 in E. half.

Raise a mound of stone, 2 ft. base, 1 $\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. No trees near.

40.75 Corral bears E. about 20 chs.
 Draw, 10 lks. wide, 5 ft. deep, drains E. into old reservoir.
 Reservoir dam bears E. about 7 chs. and is 75 ft. long and about 12 ft. high. Bears N. and S.

51.70 Stake and rider fence, bears E. and W.
 56.50 Base of ridge and edge of grassy valley, bearing E. and W.
 70.00 Top of flat ridge, 70 ft. above valley. Bears E. and W.
 Difference between measurements of 80.00 chs. by two sets of chainmen is 1 lk.; position of middle point

By 1st set, 79.99 $\frac{1}{2}$ chs.,
 By 2d set, 80.00 $\frac{1}{2}$ chs., the mean of which is

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for cor. of Ts. 37 and 38 N., Rs. 4 and 5 W., marked on brass cap
 1914 on S. rim;
 T38N in N.,
 R4W in E.,
 T37N in S., and
 R5W in W. half;
 S36 in NW.,
 S31 in NE.,
 S6 in SE., and
 S1 in SW. quadrant.

Raise a mound of stone, 2 ft. base, 1 $\frac{1}{2}$ ft. high, S. of cor. Pits impracticable. No trees within limits.

Land, rolling.
 Soil, rocky, gravel, and light sandy loam, with bedrock close to surface.
 Timber, scattering scrub cedar.
 Undergrowth, yellowtop.
 Good grazing.

June 27, 1914, at noon, I observe the sun on the meridian for time.

	Watch time
Sun's W. limb, - - - - -	-12h 32m 00s
Sun's Center, - - - - -	-12 33 10
Sun's E. limb, - - - - -	-12 34 25
Mean, - - - - -	-12 33 10 ✓

Apparent noon, - - - - -	-12h 00m 00s ✓
Equation of time, June 27th, - - - - -	2 40
L. m. t. of apparent noon, - - - - -	-12 02 40 ✓
Watch time of apparent noon, - - - - -	-12 33 10 ✓
Watch fast, l. m. t., - - - - -	30m 30s ✓

46. 1st Guide Meridian West, through T. 38 N., bet. Rs. 4 and 5 W.

Chains June 27, 1914. I observe Polaris at the cor. of secs. 1, 6, 7, and 12, T. 37 N., Rs. 4 and 5 W.

		Horizontal		Watch time		
Telescope Direct:	o	Angle	"	h.	m.	s.
Star,	0	14	00	8	17	10 p.m.
Flag,	0	00	00			
Telescope Reversed:	o	Angle	"	h.	m.	s.
Star,	0	16	00	8	19	40
Flag,	0	00	00			
Mean,	0	15	00	8	18	25 p.m.
Watch fast, l. m. t.,					30	30
L. m. t. of observation,				7	47	55 p. m.
U. C. of Polaris, June 27, 1914, 7h 10.1m a. m.						
Red. to longitude of station,					1.2	
U. C. of Polaris at station,				7h	08.9m	a. m.
Hour angle of Polaris, 11h 17m						
E. azimuth of Polaris,				0°	15'	12"
Angle E., flag to star,				0	15	00
Flag bears,				N.	0° 00'	12" W.

June 27, 1914.

June 29, 1914.

North, bet. secs. 31 and 36.
Descending gradually over rolling land.

10.00 Base of ridge, 40 ft. below cor., bears W. and S. 60° E.
38.60 Old road, bears NE. and SW.

Difference between measurements of 40.00 chs. by two sets of chainmen is 1 lk.; position of middle point

By 1st set, 39.99½ chs.,
By 2d set, 40.00½ chs., the mean of which is

40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for ¼ sec. cor., marked on brass cap
1914 on S. rim;
¼ in N.,
S36 in W., and
S31 in E. half.

Raise a mound of stone, 2 ft. base, 1½ ft. high, W. of cor. Pits impracticable. No trees within limits.

46.00 Draw, at base of ridge, 5 lks. wide; course, E.
Difference between measurements of 80.00 chs. by two sets of chainmen is 2 lks.; position of middle point

By 1st set, 79.99 chs.,
By 2d set, 80.01 chs., the mean of which is

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for cor. of secs. 25, 30, 31, and 36, marked on brass cap

1914 on S. rim;
T38N in N.,
R4W in E., and
R5W in W. half;
S25 in NW.,
S30 in NE.,
S31 in SE., and
S36 in SW. quadrant.

Raise a mound of stone, 2 ft. base, 1½ ft. high, W. of cor. Pits impracticable. No trees within limits.

This cor. is established 60 ft. above wash.

Land, rolling.

Soil, light gravel and sandy loam of coarse texture. Subsoil, coarse gravel.

No timber.

Undergrowth, yellowtop and greasewood.

Good grazing.

North, bet. secs. 25 and 30.

Ascending gradually over rolling open land.

16.50 Low ridge, bears NE. and W., 15 ft. above cor.; desc. gradually.

30.00 Bottom of descent, 60 ft. below ridge; asc.

1st Guide Meridian West, through T. 38 N., bet. Rs. 4 and 5 W. 47.

Chains Difference between measurements of 40.00 chs. by two sets of chainmen is 1 lk.; position of middle point
 By 1st set, 39.99 $\frac{1}{2}$ chs.,
 By 2d set, 40.00 $\frac{1}{2}$ chs., the mean of which is

40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ in N.,
 S30 in E., and
 S25 in W. half.
 Raise a mound of stone, 2 ft. base, 1 $\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. No trees within limits.
 This cor. is established 10 ft. above bottom of descent.

60.00 Low ridge, bears E. and W.; descend gradually.
 Difference between measurements of 80.00 chs. by two sets of chainmen is 1 lk.; position of middle point
 By 1st set, 79.99 $\frac{1}{2}$ chs.,
 By 2d set, 80.00 $\frac{1}{2}$ chs., the mean of which is

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the cor. of secs. 19, 24, 25, and 30, marked on brass cap
 1914 on S. rim;
 T38N in N.,
 R4W in E., and
 R5W in W. half;
 S24 in NW.,
 S19 in NE.,
 S30 in SE., and
 S25 in SW. quadrant.
 Raise a mound of stone, 2 ft. base, 1 $\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. No trees within limits.
 Land, rolling.
 Soil, light gravel and light sandy loam. Subsoil, coarse gravel.
 No timber.
 Undergrowth, yellowtop and greasewood.
 Good grazing.

North, bet. secs. 19 and 24.
 Descend gradually over rolling land.
 Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.

40.00 Set an iron post, 3 ft. long, 1 in. diam., 12 ins. in the ground to bedrock, surrounded by a mound of earth and stone, for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ in N.,
 S24 in W., and
 S19 in E. half.
 Raise a mound of stone, 2 ft. base, 1 $\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. No trees within limits.
 Difference between measurements of 80.00 chs. by two of chainmen is 1 lk.; position of middle point
 By 1st set, 79.99 $\frac{1}{2}$ chs.,
 By 2d set, 80.00 $\frac{1}{2}$ chs., the mean of which is

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the cor. of secs. 13, 18, 19, and 24, marked on brass cap
 1914 on S. rim;
 T38N in N.,
 R4W in E., and
 R5W in W. half;
 S13 in NW.,
 S18 in NE.,
 S19 in SE., and
 S24 in SW. quadrant.
 Raise a mound of stone, 2 ft. base, 1 $\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. No trees within limits.
 Land, gently rolling.
 Soil, light sandy loam of medium texture. Subsoil, light coarse gravel.

48. 1st Guide Meridian West, through T. 38 N., bet. Rs. 4 and 5 W.

Chains	No timber. Undergrowth, yellowtop and greasewood. Good grazing.

	North, bet. secs. 13 and 18. Descending gradually over rolling land.
19.50	Low sandstone ledge outcrop, bears NW. and SE. Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.
40.00	Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim; $\frac{1}{4}$ in N., S13 in W., and S18 in E. half. Raise a mound of stone, 2 ft. base, 1 $\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. No trees within limits.
49.50	Draw, 10 lks. wide, 2 ft. deep, course NE.
49.75	Road, from BullRush spring to head of Hack's Canyon, bears NE. and SW.
60.00	Low, flat ridge, with sandstone ledges on N. and S. edges, bears E. and W.; desc. gradually.
66.00	Head of draw, course, E.; asc. gradually.
69.00	Small outcrop of sandstone ledge, bears NE. and SW.; desc. over NW. slope of same. Difference between measurements of 80.00 chs. by two sets of chainmen is nothing.
80.00	Set an iron post, 3 ft. long, 3 ins. diam., 18 ins. in the ground, to bedrock, surrounded by a mound of stone, for cor. of secs. 7, 12, 13, and 18, marked on brass cap 1914 on S. rim; T38N in N., R4W in E., and R5W in W. half; S12 in NW., S7 in NE., S18 in SE., and S13 in SW. quadrant. Raise a mound of stone, 2 ft. base, 1 $\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. No trees within limits.
	Land, rolling. Soil, sandy loam of medium texture and rocky. Subsoil, coarse gravel and stone. Undergrowth, yellowtop and greasewood. Good grazing.

	North, bet. secs. 7 and 12. Descend over rolling land.
	Difference between measurements of 40.00 chs. by two sets of chainmen is 2 lks.; position of middle point By 1st set, 39.99 chs., By 2d set, 40.01 chs., the mean of which is
40.00	Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim; $\frac{1}{4}$ in N., S12 in W., and S7 in E. half. Raise a mound of stone, 2 ft. base, 1 $\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. No trees within limits.
59.00	Bottom of descent, bears NE. and SW.; asc. gradually. Difference between measurements of 80.00 chs. by two sets of chainmen is 2 lks.; position of middle point By 1st set, 79.99 chs., By 2d set, 80.01 chs., the mean of which is
80.00	Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the cor. of secs. 1, 6, 7, and 12, marked on brass cap 1914 on S. rim;

1st Guide Meridian West, through T. 38 N., bet. Rs. 4 and 5 W. 49.

Chains

T38N in N.,
R4W in E., and
R5W in W. half;
S1 in NW.,
S6 in NE.,
S7 in SE., and
S12 in SW. quadrant.

Raise a mound of stone, 2 ft. base, 1 1/2 ft. high, W. of cor. Pits impracticable. No trees within limits.
Land, rolling.
Soil, stony and covered with broken rock. Bedrock close to the surface.
No timber.
Undergrowth, yellowtop and greasewood.
Fair grazing.

North, bet. secs. 1 and 6.

20.00 Ascending gradually over rolling land.
Low ridge, bears NE. and SW.; desc. gradually.
Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.

40.00 Set an iron post, 3 ft. long, 1 in. diam., 6 ins. in the ground, to bedrock, surrounded by a mound of earth and stone, for 1/4 sec. cor., marked on brass cap
1914 on S. rim;
1/4 in N.,
S1 in W., and
S6 in E. half.

Raise a mound of stone, 2 ft. base, 1 1/2 ft. high, W. of cor. Pits impracticable. No trees within limits.
Continue gradual descent.

Difference between measurements of 80.00 chs. by two sets of chainmen is 2 lks.; position of middle point
By 1st set, 79.99 chs.,
By 2d set, 80.01 chs., the mean of which is

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for cor. of Ts. 38 and 39 N., Rs. 4 and 5 W.; marked on brass cap
1914 on S. rim;
T39N in N.,
R4W in E.,
T38N in S., and
R5W in W. half;
S36 in NW.,
S31 in NE.,
S6 in SE.; and
S1 in SW. quadrant.

Raise a mound of stone, 2 ft. base, 1 1/2 ft. high, S. of cor. Pits impracticable. No trees within limits.
Land, gently rolling.
Soil, light sandy loam of medium texture, with coarse gravel subsoil. Bedrock close to the surface.
Undergrowth, yellowtop and greasewood.
Good grazing.

June 29, 1914.

1st Guide Meridian West, through T. 39 N., bet. Rs. 4 and 5 W.

June 30, 1914.

North, bet. secs. 31 and 36.
Descending gradually over rolling, open land.
Difference between measurements of 40.00 chs. by two sets of chainmen is 2 lks.; position of middle point
By 1st set, 39.99 chs.,
By 2d set, 40.01 chs., the mean of which is

40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for 1/4 sec. cor., marked on brass cap

50. 1st Guide Meridian West, through T. 39 N., bet. Rs. 4 and 5 W.

Chains	<p>1914 on S. rim; $\frac{1}{4}$ in N., S36 in W., and S31 in E. half.</p> <p>Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high. W. of cor. Pits impracticable. No trees within limits. Continue gradual descent.</p>
48.50	<p>Bull Rush wash, 30 lks. wide; 15 ft. deep; drains N. 70° E. This day the wash was running full of muddy water from recent rains.</p>
55.00	<p>Low ridge, bears N. 70° E. and SW.</p>
60.50	<p>Wash, 10 lks. wide, 3 ft. deep, course, NE.; asc. gradually. Difference between measurements of 80.00 chs. by two sets of chainmen is 1 lk.; position of middle point By 1st set, $79.99\frac{1}{2}$ chs., By 2d set, $80.00\frac{1}{2}$ chs., the mean of which is</p>
80.00	<p>Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the cor. of secs. 25, 30, 31, and 36, marked on brass cap 1914 on S. rim; T39N in N., R4W in E., and R5W in W. half; S25 in NW., S30 in NE., S31 in SE., and S36 in SW. quadrant.</p> <p>Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. No trees within limits.</p> <p>Land, rolling. Soil, light sandy loam of medium texture. Subsoil, gravel. Undergrowth, yellowtop and shad scale. Fair grazing.</p> <p>-----</p> <p>North, bet. secs. 25 and 30. Ascending gradually over gently rolling land.</p>
3.00	<p>Top of ascent, bears E. and W.; desc. gradually. Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.</p>
40.00	<p>Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim $\frac{1}{4}$ in N., S25 in W., and S30 in E. half; dig pits, $18 \times 18 \times 12$ ins., N. and S. of post, 3 ft. dist.; and raise a mound of earth, $3\frac{1}{2}$ ft. base, $1\frac{1}{2}$ ft. high, W. of cor.</p>
80.00	<p>Difference between measurements of 80.00 chs. by two sets of chainmen is nothing.</p> <p>Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for cor. of secs. 19, 24, 25, and 30, marked on brass cap 1914 on S. rim; T39N in N., R4W in E., and R5W in W. half; S24 in NW., S19 in NE., S30 in SE., and S25 in SW. quadrant; dig pits, $18 \times 18 \times 12$ ins., in each sec., $5\frac{1}{2}$ ft. dist.; and raise a mound of earth, 4 ft. base, 2 ft. high, W. of cor.</p> <p>Land, rolling. Soil, light sandy loam of medium texture. Subsoil, gravel. Undergrowth, yellowtop and shad scale. Fair grazing.</p> <p>-----</p>

1st Guide Meridian West, through T. 39 N., bet. Rs. 4 and 5 W. 51.

Chains North, bet. secs. 19 and 24.
 Descending gradually over rolling land.
 Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.

40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ in N.,
 S24 in W., and
 S19 in E. half;
 dig pits, 18x18x12 ins., N. and S. of post, 3 ft. dist.;
 and raise a mound of earth, $3\frac{1}{2}$ ft. base, $1\frac{1}{2}$ ft. high, W. of cor.

Difference between measurements of 80.00 chs. by two sets of chainmen is 1 lk.; position of middle point
 By 1st set, 79.99 $\frac{1}{2}$ chs.,
 By 2d set, 80.00 $\frac{1}{2}$ chs., the mean of which is

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the cor. of secs. 13, 18, 19, and 24, marked on brass cap
 1914 on S. rim;
 T39N in N.,
 R4W in E., and
 R5W in W. half;
 S13 in NW.,
 S18 in NE.,
 S19 in SE., and
 S24 in SW. quadrant;
 dig pits, 18x18x12 ins., in each sec., $5\frac{1}{2}$ ft. dist.;
 and raise a mound of earth, 4 ft. base, 2 ft. high, W. of cor.

Land, rolling.
 Soil, light sandy loam, of medium texture. Subsoil, gravel.
 Undergrowth, yellowtop and shad scale.
 Fair grazing.

June 30, 1914.

July 1, 1914.
 North, bet. secs. 13 and 18.
 Descending gradually over gently rolling land.

18.00 Draw, 10 lks. wide, 2 ft. deep; course, E.
 Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.

40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ in N.,
 S13 in W., and
 S18 in E. half;
 dig pits, 18x18x12 ins., N. and S. of post, 3 ft. dist.;
 and raise a mound of earth, $3\frac{1}{2}$ ft. base, $1\frac{1}{2}$ ft. high, W. of cor.

65.00 Draw, 15 lks. wide, 3 ft. deep; course, SE.
 Difference between measurements of 80.00 chs. by two sets of chainmen is nothing.

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 6 ins. in the ground, for cor. of secs. 7, 12, 13, and 18, marked on brass cap (cor. post set on bedrock in md. earth & stone)
 1914 on S. rim;
 T39N in N.,
 R4W in E., and
 R5W in W. half;
 S12 in NW.,
 S7 in NE.,
 S18 in SE., and
 S13 in SW. quadrant.
 Raise a mound of stone, 2 ft. base, $1\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. No trees within limits.

Land, rolling.
 Soil, light sandy loam of medium texture. Subsoil, gravel.
 Undergrowth, yellowtop and shad scale. Fair grazing.

52. 1st Guide Meridian West, through T. 39 N., bet. Rs. 4 and 5 W.

Chains	North, bet. secs. 7 and 12. Ascending gradually over gently rolling land.
20.00	Low flat ridge, 15 chs. wide; bears E. and W. Difference between measurements of 40.00 chs. by two sets of chainmen is 2 lks.; Position of middle point By 1st set, 39.99 chs., By 2d set, 40.01 chs., the mean of which is
40.00	Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim; $\frac{1}{4}$ in N., S12 in W., and S7 in E. half; dig pits, 18x18x12 ins., N. and S. of post, 3 ft. dist.; and raise a mound of earth, 3 $\frac{1}{2}$ ft. base, 1 $\frac{1}{2}$ ft. high, W. of cor.
67.00	Draw, 10 lks. wide, 4 ft. deep; course, E. Difference between measurements of 80.00 chs. by two sets of chainmen is nothing.
80.00	Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the cor. of secs. 1, 6, 7, and 12, marked on brass cap 1914 on S. rim; T39N in N., R4W in E., and R5W in W. half; S1 in NW., S6 in NE., S7 in SE., and S12 in SW. quadrant; dig pits, 18x18x12 ins., in each sec., 5 $\frac{1}{2}$ ft. dist.; and raise a mound of earth, 4 ft. base, 2 ft. high, W. of cor.
	Land, rolling. Soil, light sandy loam of medium texture. Subsoil, gravel. Undergrowth, yellowtop and shad scale. Fair grazing.

	North, bet. secs. 1 and 6. Over gently rolling land.
26.00	Low ridge, bears E. and W.; desc. gradually.
34.00	Dry draw, 40 lks. wide, 8 ft. deep; course, S. 60° E.; asc. gradually. Difference between measurements of 40.00 chs. by two sets of chainmen is 1 lk.; position of middle point By 1st set, 39.99 $\frac{1}{2}$ chs., By 2d set, 40.00 $\frac{1}{2}$ chs., the mean of which is
40.00	Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim; $\frac{1}{4}$ in N., S1 in W., and S6 in E. half; dig pits, 18x18x12 ins., N. and S. of post, 3 ft. dist.; and raise a mound of earth, 3 $\frac{1}{2}$ ft. base, 1 $\frac{1}{2}$ ft. high, W. of cor.
48.00	Road from Pipe Springs to Trumbel mountain and head of Hack's canyon, bears NE. and SW. Difference between measurements of 80.00 chs. by two sets of chainmen is nothing.
80.00	Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground for the cor. of Ts. 39 and 40 N., Rs. 4 and 5 W., marked on brass cap 1914 on S. rim; T40N in N., R4W in E., T39N in S., and R5W in W. half; S36 in NW., S31 in NE., S6 in SE., and

1st Guide Meridian West, through Ts. 39 and 40 N., bet. Rs. 4 & 5 W. 53.

Chains S1 in SW. quadrant;
 dig pits, 24x24x12 ins., on each line, N., E., and W.,
 4 ft., and S. of post, 8 ft. dist.; and raise a mound
 of earth, 5 ft. base, 2½ ft. high, S. of cor.
 This cor. is established on a low point between two washes.
 Land, level.
 Soil, light sandy loam of medium texture. Subsoil, grav-
 el.
 Undergrowth, yellowtop and shad scale.
 Fair grazing. July 1, 1914.

1st Guide Meridian West, through T. 40 N., bet. Rs. 4 and 5 W.

July 2, 1914.
 North, bet. secs. 31 and 36.
 Descending gradually over gently rolling land.
 15.00 Draw, 10 lks. wide, 5 ft. deep, drains SE.; asc. gradually.
 Difference between measurements of 40.00 chs. by two sets
 of chainmen is nothing.
 40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the
 ground, for ¼ sec. cor., marked on brass cap
 1914 on S. rim;
 ¼ in N.,
 S36 in W., and
 S31 in E. half;
 dig pits, 18x18x12 ins., N. and S. of post, 3 ft. dist.
 and raise a mound of earth, 3½ ft. base, 1½ ft. high,
 W. of cor.
 Continue gradual ascent over numerous washes from 5 to 8
 lks. wide and 2 ft. deep, draining SE.
 Difference between measurements of 80.00 chs. by two sets
 of chainmen is nothing.
 80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the
 ground, for the cor. of secs. 25, 30, 31, and 36,
 marked on brass cap
 1914 on S. rim;
 T40N in N.,
 R4W in E., and
 R5W in W. half;
 S25 in NW.,
 S30 in NE.,
 S31 in SE., and
 S36 in SW. quadrant;
 dig pits, 18x18x12 ins., in each sec., 5½ ft. dist.;
 and raise a mound of earth, 4 ft. base, 2 ft. high,
 W. of cor.
 Land, rolling.
 Soil, light sandy loam of medium texture. Subsoil, grav-
 el.
 Undergrowth, yellowtop and shad scale.
 Fair grazing.

North, bet. secs. 25 and 30.
 Ascending over gently rolling land.
 Difference between measurements of 40.00 chs. by two sets
 of chainmen is 1 lk.; position of middle point
 By 1st set, 39.99½ chs.,
 By 2d set, 40.00½ chs., the mean of which is
 40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the
 ground, for ¼ sec. cor., marked on brass cap
 1914 on S. rim;
 ¼ in N.,
 S25 in W., and
 S30 in E. half;
 dig pits, 18x18x12 ins., N. and S. of post, 3 ft. dist.
 and raise a mound of earth, 3½ ft. base, 1½ ft. high,

54. 1st Guide Meridian West, through T. 40 N., bet. Rs. 4 and 5 W.

Chains W. of cor.
 Difference between measurements of 80.00 chs. by two sets of chainmen is nothing.

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the cor. of secs. 19, 24, 25, and 30, marked on brass cap
 1914 on S. rim;
 T40N in N.,
 R4W in E., and
 R5W in W. half;
 S24 in NW.,
 S19 in NE.,
 S30 in SE.; and
 S25 in SW. quadrant;
 dig pits, 18x18x12 ins., in each sec., 5½ ft. dist.; and raise a mound of earth, 4 ft. base, 2 ft. high,
 W. of cor.
 Land, rolling.
 Soil, light sandy loam of medium texture. Subsoil, gravel.
 Undergrowth, yellowtop and shad scale.
 Fair grazing.

North, bet. secs. 19 and 24.
 Over gently rolling land.

17.00 Draw, 35 lks. wide, 15 ft. deep; course, SE.
 Difference between measurements of 40.00 chs. by two sets of chainmen is 1 lk.; position of middle point
 By 1st set, 39.99½ chs.,
 By 2d set, 40.00½ chs., the mean of which is

40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for ¼ sec. cor., marked on brass cap
 1914 on S. rim;
 ¼ in N.,
 S24 in W., and
 S19 in E. half;
 dig pits, 18x18x12 ins., N. and S. of post, 3 ft. dist.; and raise a mound of earth, 3½ ft. base, 1½ ft. high,
 W. of cor.

71.50 Wagon road from Pipe Springs to St. George, bears N. 83° E. and S. 83° W.

74.20 Telephone and wire fence, bear N. 83° E. and S. 83° W.
 Difference between measurements of 80.00 chs. by two sets of chainmen is 1 lk.; position of middle point
 By 1st set, 79.99½ chs.,
 By 2d set, 80.00½ chs., the mean of which is

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for cor. of secs. 13, 18, 19, and 24, marked on brass cap
 1914 on S. rim;
 T40N in N.,
 R4W in E., and
 R5W in W. half;
 S13 in NW.,
 S18 in NE.,
 S19 in SE., and
 S24 in SW. quadrant;
 dig pits, 18x18x12 ins., in each sec., 5½ ft. dist.; and raise a mound of earth, 4 ft. base, 2 ft. high,
 W. of cor.
 Land, rolling.
 Soil, light sandy loam of medium texture. Subsoil, sandy loam.

July 2, 1914.

 July 3, 1914.

North, bet. secs. 13 and 18.

Over gently rolling land, descending.

Difference between measurements of 40.00 chs. by two sets

Chains of chainmen is 2 lks.; position of middle point
 By 1st set, 39.99 chs.,
 By 2d set, 40.01 chs., the mean of which is

40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ in N.,
 S13 in W. and
 S18 in E. half;
 dig pits, 18x18x12 ins., N. and S. of post, 3 ft. dist. and raise a mound of earth, 3 $\frac{1}{2}$ ft. base, 1 $\frac{1}{2}$ ft. high, W. of cor.

70.00 Bottom of gradual descent, bears NE. and SW.; asc. gradually.
 Difference between measurements of 80.00 chs. by two sets of chainmen is nothing.

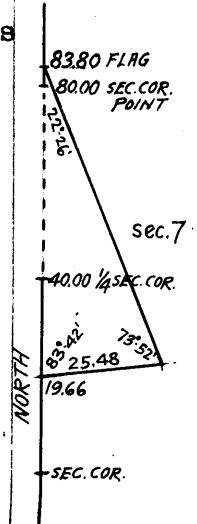
80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the cor. of secs. 7, 12, 13, and 18, marked on brass cap
 1914 on S. rim;
 T40N in N.,
 R4W in E., and
 R5W in W. half;
 S12 in NW.,
 S7 in NE.,
 S18 in SE., and
 S13 in SW. quadrant;
 dig pits, 18x18x12 ins., in each sec., 5 $\frac{1}{2}$ ft. dist.; and raise a mound of earth, 4 ft. base; 2 ft. high, W. of cor.
 Land, rolling.
 Soil, light sandy loam of medium texture. Subsoil, sandy loam.
 Undergrowth, yellowtop and shad scale.
 Fair grazing.

North, bet. secs. 7 and 12.
 Ascending gradually over rolling land.

19.50 Top of ascent, bears W. and SE.; enter dense scrub cedar and pinion timber, bears SW. and SE.

19.66 Triangulation point.
 Ascending over broken foothills of S. slope of ledges, over several small draws draining SE. into large wash about 15 chs. E. Large wash drains SE.
 Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.

40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ in N.,
 S12 in W., and
 S7 in E. half;
 raise a mound of stone, 2 ft. base, 1 $\frac{1}{2}$ ft. high, W. of cor. Pits impracticable. Trees too small for bearing trees.
 This cor. is established at the base of broken rock slopes and ledges, bearing E. and W.
 I return to the 19.66-ch. triangulation point and triangulate in accordance with the following:
 Set a flag ahead on line on top of ledges. From the triangulation point, I deflect an angle of 83° 42' to the east and measure a base of 25.48 chs. I measure the angle at the 25.48-ch. station on the base line, between the triangulation point and the flag on top of ledges, and find it to be 73° 52'. The angle at the flag on top of ledges measures 22° 26'. I compute the distance as follows:
 Colog. sin. 22° 26' = 0.4183823
 Log. sin. 73° 52' = 9.9825506
 Log. 25.48 chs. = 1.4061994
 Log. 64.14 chs. = 1.8071323



56. 1st Guide Meridian West, through T. 40 N., bet. Rs. 4 and 5 W.

Chains 19.66 plus 64.14 = 83.80 chs.
 From the flag on top of ledges, I measure S. 3.80 chs. to
 80.00 Point for true cor. of secs. 1, 6, 7, and 12, falls in
 head of canyon gulch, draining SW. Therefore, 80 lks.
 N. of the true cor. point, I establish a witness cor-
 ner as follows: Point falls on solid sandstone ledge.
 Mark the point with a cross (X) and WC, over which I
 set an iron post, 3 ft. long, 3 ins. diam., in a mound
 of stone, for witness cor. to secs. 1, 6, 7, and 12,
 marked on brass cap
 1914 on S. rim;
 WC S. of center;
 T40N in N.,
 R4W in E., and
 R5W in W. half;
 S1 in NW.,
 S6 in NE.,
 S7 in SE., and
 S12 in SW. quadrant.
 Raise a mound of stone, 2 ft. base, 1½ ft. high, W. of
 cor. Pits impracticable. No trees near. On perpen-
 dicular sandstone ledge, 8 lks. W. of cor., I mark a
 cross (X) and BO with S1 to the N. and S12 to the S.
 Land, rolling, 30 chs.; rough and broken, 50 chs.
 Soil, sandy loam of medium texture, subsoil of coarse
 gravel, in the S. half mile; adobe and rocky in N. half
 mile.
 Timber, scrub cedar and pinion, 60.00 chs.
 Undergrowth, yellowtop and shad scale, 20.00 chs.
 Land has southern exposure.

July 3, 1914.

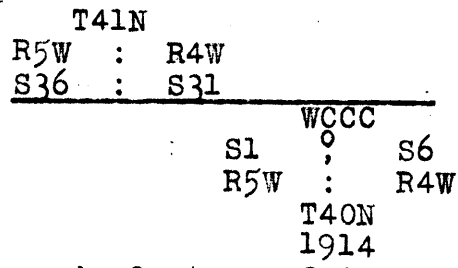
July 8, 1914.

North, bet. secs. 1 and 6, from true point for cor.
 Ascending abruptly over broken, mountainous land, covered
 with dense cedar and pinion timber.
 0.80 W. C. to cor. of secs. 1, 6, 7, and 12.
 1.50 W. 15 lks. from line is a sandstone pinnacle, 40 ft. high,
 20x20 ft. base.
 27.00 Top of abrupt ascent, bears E. and W., 300 ft. above sec.
 cor. and 1200 ft. above base of steep ascent. Leave
 sandstone ledges and ascend gradually through dense
 sage brush undergrowth.
 30.00 Top of high divide bet. Pipe Springs valley and Moccasin
 Spring canyon, bears E. and W.
 36.00 Descend abruptly over broken N. slope; enter sandstone
 ledges, bearing E. and W.
 Difference between measurements of 40.00 chs. by two sets
 of chainmen is 2 lks.; position of middle point
 By 1st set, 40.01 chs.,
 By 2d set, 39.99 chs., the mean of which is
 40.00 Point for cor. falls on steep side of a sandstone ledge.
 At this point, I mark a cross (X) and ¼ for exact cor.
 point and 15 lks. S. of true point, I set an iron post,
 3 ft. long, 1 in. diam., 26 ins. in the ground, for
 witness cor., to ¼ sec. cor., marked on brass cap
 1914 on S. rim;
 WC N. of center;
 ¼ in N.,
 S1 in W., and
 S6 in E. half.
 Raise a mound of stone, 2 ft. base, 1½ ft. high, W. of
 witness cor. Pits impracticable. Trees too small for
 bearing trees.
 This cor. is established 75 ft. below the top of the di-
 vide.
 65;25 Gulch, drains NW.; continue descent.
 66.75 Same gulch, course N. 30° E. into box canyon.
 73.70 Intersect the 10th Standard Parallel North, 8.62 chs. E.
 of the standard cor. of T. 41 N., Rs. 4 and 5 W., here-
 inafter described. Point for closing corner falls on

Chains

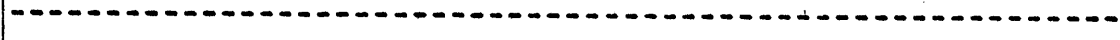
ledge near bottom of box canyon. At this point, I mark a cross (X) and CC on ledge and measure S. 2.11 chs., where I establish the witness corner to the closing corner, as follows:

Set an iron post, 3 ft. long, 3 ins. diam., on sandstone ledge, surrounded by a mound of stone, for witness cor. to closing cor. of T. 40 N., Rs. 4 and 5 W., marked on brass cap



Raise a mound of stone, 2 ft. base, 1½ ft. high, S. of cor. Pits impracticable. No trees within limits. Land, rough and broken, with northern exposure. Soil, light fine sand and rocky. Timber, scrub cedar and pinion. Undergrowth, buck and sage brush.

July 8, 1914.



58. 1st Guide Meridian West, through T. 41 N., bet. Rs. 4 and 5 W.

Chains Survey commenced July 6, 1914, and executed with Young & Sons' light mountain transit, No. 8535, described on page 1 of this book.

To test the Smith Solar attachment by comparing its indications resulting from observations made during a. m. and p. m. hours with a meridian determined by observations on Polaris, I proceed as follows:

At my camp at Moccasin Spring, located in sec. 31, T. 41 N., R. 4 W., in approximate lat. $36^{\circ}55'$ N., long. $112^{\circ}47'$ W., I set off $36^{\circ}55'$ N. on the lat. arc; $22^{\circ}44'$ N. on the decl. arc; and at 4h 34m, p. m., l. m. t., determine a meridian with the solar and mark a point thereof by a peg driven in the ground 7 chs. N. of my station.

July 6, 1914.

July 7, 1914: At 0h 34.2m a. m., l. m. t., I observe Polaris at eastern elongation and mark a point in the line thus determined by a tack driven in a peg set in the ground 7 chs. N. of my station. The angle between the stake set by solar observation during July 6th, p. m., and that set in line with Polaris is $1^{\circ}27'$, the solar stake being to the W.

At 7h 10m a. m., l. m. t., I set off $36^{\circ}55'$ N. on the lat arc; $22^{\circ}40'$ N. on the decl. arc; and determine a meridian with the solar. This coincides with the meridian determined by the p. m. solar observation of yesterday and with the meridian as determined by the observation of Polaris.

July 7, 1914.

July 14, 1914.

At the standard cor. of T. 41 N., Rs. 4 and 5 W., I set off $36^{\circ}54'$ N. on the lat. arc; $21^{\circ}47'$ N. on the decl. arc; and, at 7h 21m a. m., l. m. t., determine a meridian with the solar.

Thence I run North, bet. secs. 31 and 36. Descending abruptly over broken mountainous land, covered with dense timber.

4.70 Top of broken sandstone ledges, bears N. 35° E. and S. 20° W.

8.75 Foot of sandstone ledges, 280 ft. below top, bears N. 35° E. and S. 20° W.

18.40 Base of abrupt descent and S. side Moccasin Spring canyon, bears E. and S. 30° W.; leave dense timber, enter sagebrush; thence across nearly level sandy canyon bottom.

22.00 Wash, 25 lks. wide, 10 ft. deep; drains E.

23.85 Road, bears E. and W.; ascend gradually over broken land, covered with dense scrub cedar and pinion timber, bearing E. and W.

Difference between measurements of 40.00 chs. by two sets of chainmen is 4 lks.; position of middle point
 By 1st set, 39.98 chs.,
 By 2d set, 40.02 chs., the mean of which is

40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 $\frac{1}{4}$ in N.,
 S36 in W., and
 S31 in E. half; from which
 A cedar, 16 ins. diam., bears S. 51° E., 208 lks. dist. marked $\frac{1}{4}$ S31BT.
 A pinion, 10 ins. diam., bears N. $45^{\circ}45'$ W., 56 lks. dist., marked $\frac{1}{4}$ S36BT.

49.50 Base of sandstone ledges, bears SW. and SE.

51.50 Top of sandstone ledges, 50 ft. high, bears SW. and SE. Ascend over steep broken slope.

Difference between measurements of 80.00 chs. by two sets

1st Guide Meridian West, through T. 41 N., bet. Rs. 4 and 5 W. 59.

Chains of chainmen is 10 lks.; position of middle point
 By 1st set, 79.95 chs.,
 By 2d set, 80.05 chs., the mean of which is
 80.00 Set an iron post, 3 ft. long, 3 ins. diam., 6 ins. in the
 ground, to bedrock, surrounded by a mound of stone, for
 the cor. of secs. 25, 30, 31, and 36, marked on brass
 cap
 1914 on S. rim;
 T41N in N.,
 R4W in E., and
 R5W in W. half;
 S25 in NW.,
 S30 in NE.,
 S31 in SE., and
 S36 in SW. quadrant.
 Raise a mound of stone, 2 ft. base, 1½ ft. high, W. of
 cor. Pits impracticable. Trees too scrubby for bear-
 ing trees.
 Land, rough, broken, and mountainous.
 Soil, rocky and bedrock, 49.50 chs.; light drift sand with
 bedrock close to surface, 30.50 chs.
 Timber, scrub cedar and pinion.
 Undergrowth, service and sagebrush.

 Impracticable to observe for latitude at noon on account
 of climbing the N. side of canyon at that hour.

July 14, 1914: At the cor. of secs. 25, 30, 31, and 36,
 T. 41 N., Rs. 4 and 5 W., I set off 36° 55' N. on the
 lat. arc; 21° 44' N. on the decl. arc; and, at 2h 6m.
 p. m., 1. m. t., determine a meridian with the solar.

Thence I run
 North, bet. secs. 25 and 30.
 Descending over broken slope, through scrub cedar and pin-
 ion timber and service brush undergrowth.

4.50 Gulch, 10 ft. deep, drains S. 60° E.
 26.75 Spur of shifting sand, 80 ft. above gulch, projecting E.;
 desc.

35.50 Head of gulch, 50 ft. below spur, drains E.; ascend.
 40.00 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the
 ground, for ¼ sec. cor., marked on brass cap

1914 on S. rim;
 ¼ in N.,
 S25 in W., and
 S30 in E. half; from which

A yellow pine, 12 ins. diam., bears N. 64° E., 121 lks.
 dist., marked ¼S30BT.
 A pinion, 8 ins. diam., bears S. 33° 30' W., 10 lks.
 dist., marked ¼S25BT.

Land, mountainous.
 Soil, white drift sand, with bedrock close to surface.
 Timber, scrub cedar and pinion and scattering yellow pine.
 Undergrowth, service brush.
 I stop line at this cor.

July 14, 1914.

60. Tenth Standard Parallel North, through R. 4 W.

Chains	<p>July 7, 1914. From a point on the secant to the 10th Standard Parallel North, established on December 19, 1913, 10 miles, 57.86 chs. westerly from the standard corner of T. 41 N., Rs. 2 and 3 W., I run N. 89° 59' E. on the secant through sec. 32 for 17.86 chs., where I, at S. 1 lk. from the secant Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim; and SC$\frac{1}{4}$S32 in N. half; dig pits, 18x18x12 ins., E. and W. of post, 3 ft. dist. and raise a mound of earth, 3$\frac{1}{2}$ ft. base, 1$\frac{1}{2}$ ft. high, N. of cor. From this standard $\frac{1}{4}$ sec. cor., I run S. 89° 59' W., on the secant, through sec. 32. NOTE: Distances given to topography refer to the standard cor. of secs. 32 and 33. Ascending gradually over rolling Moccasin valley.</p>
57.86	<p>Point on secant line established December 19, 1913. An Indian grave yard on a small knoll bears S. 36° E., 6 chs. dist.</p>
59.80	<p>Road, Moccasin to Pipe springs, bears N. 20° W. and S. 20° E.</p>
77.50	<p>Hollow, drains N. 35° E.; asc. gradually.</p>
79.00	<p>W. edge of Moccasin valley, bears NE. and SW.; asc. abruptly.</p>
	<p>Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.</p>
80.00	<p>Set an iron post, 3 ft. long, 3 ins. diam., 12 ins. in the ground to bedrock, surrounded by a mound of stone, for the standard cor. of secs. 31 and 32, marked on brass cap 1914 on S. rim; SCT41NR4W in N. half; S31 in NW. and S32 in NE. quadrant. Raise a mound of stone, 2 ft. base, 1$\frac{1}{2}$ ft. high, N. of cor. Pits impracticable. No trees within limits. This cor. is established on a point projecting S. 30 ft. above edge of valley. Land, rolling, drains NE. Soil, light red sandy loam of fine texture. No timber. Undergrowth, sage. Good grazing.</p>
	<p>-----</p>
6.00	<p>S. 89° 58' W. on the secant south of sec. 31. Descend gradually 20 ft. over series of ledges on broken NE. slope, through scrub cedar, pinion, and buck brush. Head of draw, drains S.; asc. abruptly over NE. slope of sandstone ledges, 500 ft.</p>
32.00	<p>Spur, projects NE.; desc. 40 ft.</p>
36.00	<p>Head of gulch, drains N.; asc. Difference between measurements of 40.00 chs. by two sets of chainmen, nothing.</p>
40.00	<p>N. 2 lks. from the secant. True point for standard $\frac{1}{4}$ sec. cor., falls on steep side of ledge. I mark a cross (X) and $\frac{1}{4}$ at the exact cor. point and at</p>
41.03	<p>N. 2 lks. from the secant, Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for witness cor. to the standard $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim; SC$\frac{1}{4}$S31 in N. half; and WC E. of center. Raise a mound of stone, 2 ft. base, 1$\frac{1}{2}$ ft. high, N. of cor.</p>
42.37	<p>Flag on secant line established in December, 1913, on top of ledge 600 ft. above section cor. Descend over broken</p>

Chains S. slope of Moccasin canyon.
 59.35 Gulch, drains N., 300 ft. below top of ledge; asc.
 62.30 Spur, projects N., 50 ft. above gulch; desc. abruptly.
 70.60 Gulch, drains N., 200 ft. below spur; asc.
 75.50 Spur, projects N., 225 ft. above gulch; desc.
 Difference between measurements of 80.00 chs. by two sets
 of chainmen is 3 lks.; position of middle point
 By 1st set, 79.98½ chs.,
 By 2d set, 80.01½ chs., the mean of which is
 80.00 N. 4 lks. from the secant,
 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the
 ground, for the standard cor. of T. 41 N., Rs. 4 and 5
 W., marked on brass cap
 1914 on S. rim;
 SCT41N in N. half;
 R4WS31 in NE. and
 R5WS36 in NW. quadrant; from which
 A cedar, 12 ins. diam., bears N. 20° E., 45 lks. dist.,
 marked T41NR4WS31BT.
 A cedar, 12 ins. diam., bears N. 75° W., 24 lks. dist.,
 marked T41NR5WS36BT.
 Land, rough and broken.
 Soil, white sand.
 Timber, scrub cedar and pinion.
 Undergrowth, buck brush.

 From a point 1 lk. N. of the standard ¼ sec. cor. on the
 S. bdy. of sec. 32, T. 41 N., R. 4 W., I run
 N. 89° 59' E. on the secant through sec. 32.
 Descending gradually over rolling Moccasin valley, through
 sagebrush.
 Difference between measurements of 40.00 chs. by two sets
 of chainmen is nothing.
 40:00 S. 2 lks. from the secant,
 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the
 ground, for the standard cor. of secs. 32 and 33,
 marked on brass cap
 1914 on S. rim;
 SCT41NR4W in N. half;
 S32 in NW. and
 S33 in NE. quadrant;
 dig pits, 24x18x12 ins., crosswise on each line, E. and
 W., 3 ft., and N. of post, 7 ft. dist.; and raise a
 mound of earth, 4 ft. base, 2 ft. high, N. of cor.
 NOTE: For general description of this half mile, see pre-
 ceding page. July 7, 1914.

 July 11, 1914.
 N. 89° 59' E. on the secant through sec. 33.
 Over rolling Moccasin valley, through sage brush; desc.
 gradually.
 5.25 Two Mile Seep, drains SE.; asc. gradually.
 Difference between measurements of 40.00 chs. by two sets
 of chainmen is nothing.
 40.00 S. 3 lks. from the secant.
 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the
 ground, for standard ¼ sec. cor., marked on brass cap
 1914 on S. rim;
 SC½S33 in N. half;
 dig pits, 18x18x12 ins., E. and W. of post, 3 ft. dist.;
 and raise a mound of earth, 3½ ft. base, 1½ ft. high,
 N. of cor.
 43.70 Old road, bears N. 20° E. and S. 20° W.
 46.75 Wash, 40 lks. wide, 15 ft. deep; drains S.
 47.20 Telephone line, Pipe Springs to Kanab, bears N. and S.
 48.50 E. edge of Moccasin valley, bears N. and S.; asc. abruptly
 over broken W. slope of mesa.
 52.25 Ledge rim of mesa, 30 ft. high, 140 ft. above bottom,
 bears N. and S.; enter dense cedar and pinion timber.

62. Tenth Standard Parallel North, through R. 4 W.

Chains	
58.00	Ledge rim of mesa, 30 ft. high, bears NE. and S. Point extends 10 chs. S. Descend abruptly over broken E. slope.
58.75	Base of mesa rim, 60 ft. high, bears NE. and S.
62.00	Base of slope, bears NE. and S., 215 ft. below top. Leave cedar and pinion timber, continue over rolling valley, in cultivated land.
	Difference between measurements of 80.00 chs. by two sets of chainmen is 2 lks.; position of middle point By 1st set, 79.99 chs., By 2d set, 80.01 chs., the mean of which is
80.00	S. 3 lks. from the secant, Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for standard cor. of secs. 33 and 34, marked on brass cap 1914 on S. rim; SCT41NR4W in N. half; S33 in NW. and S34 in NE. quadrant. Raise a mound of stone, 2 ft. base, 1½ ft. high, N. of cor. Pits impracticable. No trees within limits. Land, rolling and broken. Soil, rocky and sandy. Timber, dense cedar and pinion on mesa and slopes. Undergrowth, sage and rabbit brush.

	East, on the secant through sec. 34. Over rolling land, through cultivated land.
3.00	Base of mesa and edge of cultivated land; asc. abruptly over W. slope of mesa.
7.80	Ledge, 20 ft. high, 150 ft. above bottom of mesa; asc. gradually, through dense cedar and pinion.
21.50	Top of ascent, bears N. and SW., 30 ft. above top of ledge desc. gradually.
25.70	Small ledge rim of mesa, bears NE. and SW.
30.00	Head of cove, drains S., 115 ft. below top of small ledge; asc. abruptly over rocky slope of mesa.
33.70	Top of small ledge rim of mesa, bears S. and NW., 120 ft. above head of cove; asc. gradually. Difference in measurements of 40.00 chs. by two sets of chainmen is 3 lks.; position of middle point By 1st set, 39.98½ chs., By 2d set, 40.01½ chs., the mean of which is
40.00	S. 3 lks. from the secant, Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard ¼ sec. cor., marked on brass cap 1914 on S. rim; SC½S34 in N. half; from which A cedar, 12 ins. diam., bears N. 57° 30' E., 73 lks. dist., marked SC½S34BT. No other tree suitable for a bearing tree within limits.
68.40	Rim of point of mesa, bears NE. and S.; desc. abruptly.
72.00	Head of cove, drains S., 75 ft. below rim; asc. abruptly over rocky slope.
75.40	Rim of mesa, 40 ft. high, 90 ft. above head of cove, bears N. and S.; asc. gradually. Difference between measurements of 80.00 chs. by two sets of chainmen is 1 lk.; position of middle point By 1st set, 80.00½ chs., By 2d set, 79.99½ chs., the mean of which is
80.00	S. 2 lks. from the secant, Set an iron post, 3 ft. long, 3 ins. diam., 18 ins. in the ground to bedrock, surrounded by a mound of earth, and stone, for the standard cor. of secs. 34 and 35, marked on brass cap 1914 on S. rim; SCT41NR4W in N. half; S34 in NW. and S35 in NE. quadrant; from which

Tenth Standard Parallel North, through R. 4 W.

Chains

A pinion, 5 ins. diam., bears N. 3° 30' E., 38 lks. dist., marked T41NR4WS35BT.
A cedar, 14 ins. diam., bears N. 43° W., 76 lks. dist., marked T41NR4WS34BT.

Land, broken and rolling.
Soil, rocky, sandy, and gravel.
Timber, dense cedar and pinion on mesa.
Undergrowth, sage.

July 11, 1914.

July 12, 1914.

S. 89° 59' E. on the secant through sec. 35.
Over rolling top of mesa; asc. gradually, through dense cedar and pinion.

- 23.00 Top of gradual ascent; over rolling mesa.
- 23.60 Small ledge rim of mesa, bears NE. and S. 30° W.
- 33.50 Wash, in canyon, 15 lks. wide, 80 ft. below top, drains S. 10° W.; asc. gradually.
- 38.50 Base of rim of mesa, bears NE. and S. 20° W.; asc. abruptly.
- 39.97 Mesa rim, 20 ft. high, 60 ft. above bottom; continue gradual ascent.

Difference between measurements of 40.00 chs. by two sets of chainmen is 1 lks.; position of middle point,
By 1st set, 40.00½ chs.,
By 2d set, 39.99½ chs., the mean of which is

- 40.00 S. 1 lk. from the secant,
Point for standard ¼ sec. cor. falls on broken ledge. I mark a cross (X) and ¼ for exact cor. point.
- 40.30 S. 1 lk. from secant,
Set an iron post, 3 ft. long, 1 in. diam., 12 ins. in the ground, to bedrock, surrounded by a mound of stone, for witness cor. to standard ¼ sec. cor., marked on brass cap

1914 on S. rim;
WC W. of center;
SC¼S35 in N. half.

Raise a mound of stone, 2 ft. base, 1½ ft. high, N. of cor. Pits impracticable. No trees suitable for bearing trees within limits.

Continue gradual ascent.

- 42.00 Top of mesa, point projecting N.; desc. gradually.
- 42.70 Mesa rim, 30 ft. high, bears N. and S.; descend abruptly.
- 46.50 Wash in canyon, 15 lks. wide, 75 ft. below top, drains N.; asc. gradually.
- 48.60 Base of mesa rim, 20 ft. above bottom of canyon, bears N. and S.; asc. abruptly.
- 49.30 Top of ledge, 20 ft. high, bears N. and S., 75 ft. above bottom of canyon; desc. gradually.
- 65.00 Mesa rim, 40 ft. high, bears N. 35° E. and S. 35° E.; desc. abruptly.

Difference between measurements of 80.00 chs. by two sets of chainmen is 2 lks.; position of middle point
By 1st set, 79.99 chs.,
By 2d set, 80.01 chs., the mean of which is

- 80.00 Set an iron post, 3 ft. long, 3 ins. diam., 18 ins. in the ground, to bedrock, surrounded by a mound of stone, for standard cor. of secs. 35 and 36, marked on brass cap
1914 on S. rim;
SCT41NR4W in N. half;
S35 in NW. and
S36 in NE. quadrant; from which

A cedar, 26 ins. diam., bears N. 89° E., 45 lks. dist.; marked T41NR4WS36BT.

A pinion, 10 ins. diam., bears N. 32° 30' W., 41 lks. dist., marked T41NR4WS35BT.

Land, rough and broken.
Soil, stony and gravel.
Timber, dense scrub cedar and pinion.
Undergrowth, sage.

64. Tenth Standard Parallel North, through Range 4 West..

Chains	S. 89° 58' E., on the secant S. of sec. 36. Over rocky broken land, through dense cedar and pinion timber.
2.30	Wash, in bottom of canyon, 15 lks. wide, 4 ft. deep, drains N.; asc. abruptly.
8.50	Base of mesa rim, 30 ft. high, bears N. and S.
13.00	Mesa point, projects N. about 15 chains, 140 ft. above bottom of canyon; desc. gradually.
16.25	Rim of mesa, 40 ft. high, bears N. and S.; desc. abruptly over large boulders.
19.50	Base of abrupt descent, 150 ft. below top; desc. gradually. Base of abrupt descent bears N. and S.
28.25	Wash, 25 ft. wide, 3 ft. deep, drains NE.; asc. gradually.
30.60	Point of spur of mesa, projects NE.; desc. gradually.
35.00	A prominent red knoll, 75 ft. high, encircled with rim of red sandstone, bears N. about 25 chs. Difference between measurements of 40.00 chs. by two sets of chainmen is 2 lks.; position of middle point By 1st set, 40.01 chs., By 2d set, 39.99 chs., the mean of which is
40.00	N. 2 lks. from the secant, Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim; SC $\frac{1}{4}$ S36 in N. half; dig pits, 18x18x12 ins., E. and W. of post, 3 ft. dist.; and raise a mound of earth, 3 $\frac{1}{2}$ ft. base, 1 $\frac{1}{2}$ ft. high, N. of cor. Leave scattering cedar and pinion timber, bears NE. and SW.; continue gradual descent.
67.75	Wash, 10 lks. wide, 5 ft. deep, drains NE.
75.50	Wire fence, bears NE. and SW. Difference between measurements of 80.00 chs. by two sets of chainmen is nothing.
80.00	N. 4 lks. from the secant, Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the standard cor. of T. 41 N., Rs. 3 and 4 W., marked on brass cap 1914 on S. rim; SCT41N in N., half; R4WS36 in NW. and R3WS31 in NE. quadrant; dig pits, 30x24x12 ins., crosswise on each line, E. and W., 4 ft., and N. of post, 8 ft. dist.; and raise a mound of earth, 5 ft. base, 2 $\frac{1}{2}$ ft. high, N. of cor. This cor. is identical with the temporary corner established in December, 1913. Land, rough and broken, drains NE. Soil, rocky and sandy. Timber, scrub cedar and pinion. Undergrowth, sage and yellowtop.

July 12, 1914.

-----Range 3 West:-----

September 4, 1914.

	From the point on the secant 4 lks. S. of the standard cor. of T. 41 N., Rs. 3 and 4 W., I deflect an angle of 3' 55" to the north and run N. 89° 58' E., on the secant S. of sec. 31. Over hilly land, draining S., through sage brush, shad scale, and greasewood:
1.70	W. bank of wash, 15 ft. high, bears NW. and SE.
4.00	E. bank of wash, 15 ft. high, bears NW. and SE.; wash drains SE.
6.93	The closing corner of T. 40 N., Rs. 3 and 4 W., 3 lks. N. of secant.
25.60	Wash, 15 lks. wide, 5 ft. deep, drains S. 35° W. Difference between measurements of 40.00 chs. by two sets of chainmen is 2 lks.; position of middle point By 1st set, 39.99 chs., By 2d set, 40.01 chs., the mean of which is
40.00	N. 2 lks. from the secant,

Tenth Standard Parallel North, through R. 3 W.

Chains Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim; SC $\frac{1}{4}$ S31 in N. half; dig pits, 18x18x12 ins., E. and W. of post, 3 ft. dist. and raise a mound of earth, $3\frac{1}{2}$ ft. base, $1\frac{1}{2}$ ft. high, N. of cor. Continue gradual ascent. Difference between measurements of 80.00 chs. by two sets of chainmen is 1 lk.; position of middle point By 1st set, 79.99 $\frac{1}{2}$ chs., By 2d set, 80.00 $\frac{1}{2}$ chs., the mean of which is

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for standard cor. of secs. 31 and 32, marked on brass cap 1914 on S. rim; SCT41NR3W in N. half; S31 in NW. and S32 in NE. quadrant; dig pits, 24x18x12 ins., crosswise on each line, E. and W., 3 ft., and N. of post, 7 ft. dist.; and raise a mound of earth, 4 ft. base, 2 ft. high, N. of cor. This cor. is located at the foot of steep SW. slope of point of mesa, 60 ft. above $\frac{1}{4}$ sec. cor. Land, rolling, drains S. Soil, light red sandy loam, gravel, and clay. Undergrowth, shad scale, greasewood, and sage brush. Fair grazing.

N. 89° 59' E., on the secant through sec. 32. Ascending abruptly over steep rocky SW. slope of mesa point.

9.00 Rim of point of mesa, 60 ft. high, 325 ft. above standard sec. cor., bears NW. and SE.; enter dense cedar and pinion timber; asc. gradually.

14.00 Top of ascent on top of mesa point, bears N. and S.; desc. gradually.

16.70 E. rim of point of mesa, 60 ft. high, bears NE. and SW.; desc. abruptly over broken SE. slope.

30.00 Base of steep descent, 330 ft. below top, bears NE. and SW.; descend gradually over broken land. Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.

40.00 S. 1 lk. from the secant, Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard $\frac{1}{4}$ sec. cor., marked on brass cap 1914 on S. rim; SC $\frac{1}{4}$ S32 in N. half; dig pits, 18x18x12 ins., E. and W. of post, 3 ft. dist.; and raise a mound of earth, $3\frac{1}{2}$ ft. base, $1\frac{1}{2}$ ft. high, N. of cor.

55.00 Leave broken land, enter rolling land, bears NE. and SW. Difference between measurements of 80.00 chs. by two sets of chainmen is 2 lks.; position of middle point By 1st set, 80.01 chs., By 2d set, 79.99 chs., the mean of which is

80.00 S. 2 lks. from the secant, Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for standard cor. of secs. 32 and 33, marked on brass cap 1914 on S. rim; SCT41NR3W in N. half; S32 in NW. and S33 in NE. quadrant; dig pits, 24x18x12 ins., crosswise on each line, E. and W., 3 ft., and N. of post, 7 ft. dist.; and raise a mound of earth, 4 ft. base, 2 ft. high, N. of cor. Land, rolling and broken, drains SE. Soil, clay and adobe. Timber, cedar and pinion on top of mesa. Undergrowth, greasewood and shad scale. Poor grazing.

66.

Tenth Standard Parallel North, through R. 3 W.

Chains N. 89° 59' E., on the secant through sec. 33.
 Descend gradually over rolling land, through shad scale, yellowtop, and greasewood.
 Difference between measurements of 40.00 chs. by two sets of chainmen is nothing.

40.00 S. 3 lks. from the secant,
 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 SC $\frac{1}{4}$ S33 in N. half;
 dig pits, 18x18x12 ins., E. and W. of post, 3 ft. dist. and raise a mound of earth, 3 $\frac{1}{2}$ ft. base, 1 $\frac{1}{2}$ ft. high, N. of cor.

80.00 Continue gradual descent.
 Difference between measurements of 80.00 chs. by two sets of chainmen is nothing.
 S. 3 lks. from the secant.
 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the standard cor. of secs. 33 and 34, marked on brass cap
 1914 on S. rim;
 SCT41NR3W in N. half;
 S33 in NW. and
 S34 in NE. quadrant;
 dig pits, 24x18x12 ins., crosswise on each line, E. and W., 3 ft., and N. of post, 7 ft. dist.; and raise a mound of earth, 4 ft. base, 2 ft. high, N. of cor.

Land, rolling, drains SE.
 Soil, light red sandy loam, clay, and gravel.
 Undergrowth, shad scale, yellowtop and greasewood.
 Good grazing.

East, on the secant through sec. 34.
 Descend gradually over rolling land, through shad scale, greasewood, and yellowtop.

26.75 Wash, 75 lks. wide, 8 ft. deep, drains S.; asc. gradually.
 30.20 Old dim road, bears N. and SE.
 Difference between measurements of 40.00 chs. by two sets of chainmen is 3 lks.; position of middle point
 By 1st set, 40.01 $\frac{1}{2}$ chs.,
 By 2d set, 39.98 $\frac{1}{2}$ chs., the mean of which is

40.00 S. 3 lks. from the secant,
 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the ground, for standard $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 SC $\frac{1}{4}$ S34 in N. half;
 dig pits, 18x18x12 ins., E. and W. of post, 3 ft. dist. and raise a mound of earth, 3 $\frac{1}{2}$ ft. base, 1 $\frac{1}{2}$ ft. high, N. of cor.

54.00 Continue gradual ascent.
 Leave rolling land, enter broken bad lands, draining SW. and bearing S. and NW.
 Difference between measurements of 80.00 chs. by two sets of chainmen is 4 lks.; position of middle point
 By 1st set, 80.02 chs.,
 By 2d set, 79.98 chs., the mean of which is

80.00 S. 2 lks. from the secant,
 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the ground, for the standard cor. of secs. 34 and 35, marked on brass cap
 1914 on S. rim;
 SCT41NR3W in N. half;
 S34 in NW. and
 S35 in NE. quadrant;
 dig pits, 24x18x12 ins., crosswise on each line, E. and W., 3 ft., and N. of post, 7 ft. dist.; and raise a mound of earth, 4 ft. base, 2 ft. high, N. of cor.

Land, rolling and broken, drains SE. and SW.
 Soil, light red sandy loam and adobe.
 Undergrowth, shad scale, yellowtop, and greasewood.
 Good grazing.

Chains S. 89° 59' E., on the secant through sec. 35.
 Descending gradually over rolling land and broken surface,
 through shad scale and yellowtop.

10.00 Leave broken bad lands, bearing NE. and SW.; desc. gradu-
 ally over gently rolling land.

22.75 Road, Fredonia to Pipe Springs, bears NE. and SW.
 Difference between measurements of 40.00 chs. by two sets
 of chainmen is nothing.

40.00 S. 1 lk. from the secant,
 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the
 ground, for standard $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 SC1S35 in N. half;
 dig pits, 18x18x12 ins., E. and W. of post, 3 ft. dist.;
 and raise a mound of earth, $3\frac{1}{2}$ ft. base, $1\frac{1}{2}$ ft. high,
 N. of cor.

60.00 Leave yellowtop, bears N. and S.; enter dense greasewood.
 Difference between measurements of 80.00 chs. by two sets
 of chainmen is nothing.

80.00 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the
 ground, for standard cor. of secs. 35 and 36, marked
 on brass cap
 1914 on S. rim;
 SCT41NR3W in N. half;
 S35 in NW. and
 S36 in NE. quadrant;
 dig pits, 24x18x12 ins., crosswise on each line, E.
 and W., 3 ft., and N. of post 7 ft. dist.; and raise a
 mound of earth, 4 ft. base, 2 ft. high, N. of cor.
 Land, gently rolling, 70 chs.; broken bad lands, 10 chs.
 Drains SE.
 Soil, light red clay and gravel.
 Undergrowth, shad scale, yellowtop, and greasewood.
 Poor grazing.

 S. 89° 58' E., on the secant S. of sec. 36.
 Descend gradually over gently rolling land, through grease-
 wood.

25.00 Wash, 15 lks. wide, 4 ft. deep, drains SE.

26.50 Wash, 20 lks. wide, 5 ft. deep, drains SE.
 Difference between measurements of 40.00 chs. by two sets
 of chainmen is nothing.

40.00 N. 2 lks. from the secant.
 Set an iron post, 3 ft. long, 1 in. diam., 26 ins. in the
 ground, for standard $\frac{1}{4}$ sec. cor., marked on brass cap
 1914 on S. rim;
 SC1S36 in N. half;
 dig pits, 18x18x12 ins., E. and W. of post, 3 ft. dist.;
 and raise a mound of stone, $3\frac{1}{2}$ ft. base, $1\frac{1}{2}$ ft. high,
 N. of cor.

59.80 West bank of Cottonwood wash, 35 ft. high, bears N. and SW.

60.60 Main wash, drains S. 35° W.

61.40 East bank of Cottonwood wash, 35 ft. high, bears N. and SW.

70.40 Wash, 60 lks. wide, 30 ft. deep, drains SW.

71.60 W. bank of Kanab Creek, 35 ft. high.
 Difference between measurements of 80.00 chs. by two sets
 of chainmen is nothing.

80.00 N. 4 lks. from the secant,
 True point for cor. falls in main stream of Kanab creek,
 water 20 lks. wide, 8 ins. deep, course SW.

80.50 N. 4 lks. from the secant
 Witness cor. to standard township cor., on edge of E. bank
 of Kanab creek, as described by the Surveyor-General.
 This cor. is set within 1 ft. of 35-ft. bank. I, there-
 fore, destroy this cor. and re-establish it 150 lks.
 farther east at

82.00 N. 4 lks. from the secant,
 Set an iron post, 3 ft. long, 3 ins. diam., 24 ins. in the
 ground, for witness cor. to standard cor. of T. 41 N.,
 Rs. 2 and 3 W., marked on brass cap

68.

Tenth Standard Parallel North, through R 3 W.

Chains

1914 on S. rim;
 WC W. of center;
 SCT41N in N. half;
 R3WS36 in NW. and
 R2WS31 in NE. quadrant;
 dig pits, 30x24x12 ins., crosswise on each line, E. and
 W., 4 ft., and N. of post, 8 ft. dist.; and raise a
 mound of earth, 5 ft. base, 2½ ft. high, N. of cor.
 Land, rolling and cut by large washed, draining SW.
 Soil, adobe and light red sandy loam.
 Undergrowth, shad scale and greasewood.
 Poor grazing.

September 4, 1914.



Tenth Standard Parallel North, through Range 5 West. 69

Chains.

Survey commenced December 24, 1913, and executed with a Young & Sons' light mountain transit No.8535, the horizontal limb having two double verniers placed opposite to each other, and reading to single minutes of arc.

The instrument was examined and approved by the Assistant Supervisor of Surveys at Salt Lake City, Utah.

Measurements were made by two sets of chainmen, using five chain Lallie steel tapes, with clinometer for determining slope angles.

The temp. point for the standard cor. of T.41 N., Rs.4 and 5 W. was established on Dec. 24, 1913, on a secant 960 chains westerly from the true point for the standard cor. of T.41 N., Rs. 2 and 3 W., based on the following observations:

December 11, 1913: At a point 4 lks. south of the witness corner to the standard cor. of T.41 N., Rs.2 and 3 W., which is a 3" iron post, firmly set, marked and witnessed as described by the Surveyer General, in approximate latitude 36°54'N., long.112° 34'W., I make a noon observation for time as follows:

	Watch time.
	h. m. s.
Sun's W. limb	12 21 10
Sun's E. limb	12 23 30
	<hr/>
	12 22 20
	h. m. s.
Apparent noon	12 00 00
Equation of time Dec.11,1913.	- 06 49
L.M.t.of apparent noon.	11 53 11
Watch time of apparent noon	12 22 20
Watch fast l.m.t.	29 09

December 11, 1913. At same station, I observe Polaris as follows: I select a prominent tree on top of ridge about 4 miles north of my station, and proceed:

Telescope Direct.	Horizontal Angle.	Watch time.
	° ' "	h. m. s.
Star	1 09 00	5 13 30 p.m.
Tree	0 00 00	
Star	1 09 00	5 15 10
Tree	0 00 00	
Telescope Reversed.		
Star	1 06 00	5 17 30
Tree	0 00 00	
Star	1 00 00	5 19 30
Tree	0 00 00	
Mean	1 07 30	5 16 25
Watch fast l.m.t.		29 09
L. m. t. of observation		4 47 16p.m.
U.C.Polaris, Dec.11,1913,		8h. 09.2m.p.m.
Red.for long.		1.2
U. C. Polaris at station.		8 08.0
Time interval to next U.C.		3h.20.7m.

E. azimuth of Polaris = 67' = 1° 07' 00"
Angle E. tree to star, 1° 07' 30"
Tree bears, N. 0 00 30 W.

Dec. 11, 1913.

I turn an angle to the west of 89° 58' from the meridian and run N.89° 58' W. on the secant through Rs.3 and 4 W. deflecting an angle of 0° 03' 55" to the north at 480.00 chs. from the initial point of secant.

The following work was executed on Dec. 26, 27, and 28, 1913. It being impossible to chain farther on account of the several box canyons to the west, I triangulate

70 Tenth Standard Parallel North, through Range 5 West.
Chains.

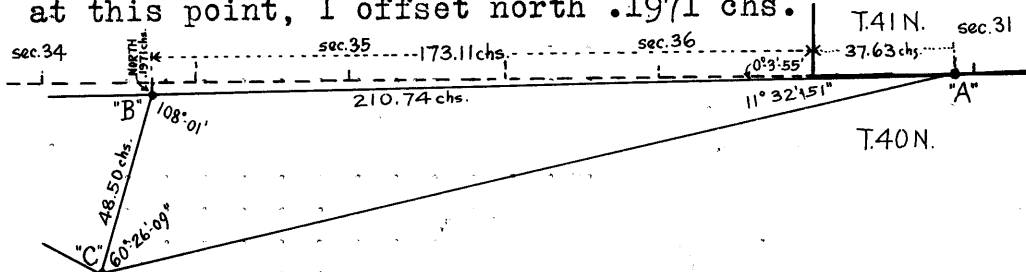
as follows:

At a point on the secant 37.63 chs. easterly of the temp. point for the standard cor. of T.41 N., Rs.4 and 5 W., which point I designate "A" (see accompanying diagram) and project this secant line westerly and set a flag ahead on line, which point I designate "B" with transit at "B" and the telescope pointed at "A," I lay off an angle of $108^{\circ} 01'$ to the right, and measure a base of 48.50 chs., which point I designate "C." By a repetition of angles I find the angle at "C," between "A" and "B" to be $60^{\circ} 26' 09''$. The angle at "A," between "B" and "C" is computed to be $11^{\circ} 32' 51''$. I compute the dist. "A-B" as follows:

$$\begin{array}{r} \text{Colog sin } 11^{\circ} 32' 51'' = 0.6985788 \\ \text{Log sin } 60^{\circ} 26' 09'' = 9.9394212 \\ \text{Log } 48.50 \text{ chs.} = 1.6857417 \\ \text{Log } 210.74 \text{ chs.} = 2.3257417 \end{array}$$

$210.74 \text{ chs.} - 37.63 \text{ chs.} = 173.11 \text{ chs.}$ Thus point B of the preceding triangle is 173.11 chs. westerly of the temp. point for the standard cor. of T.41 N., Rs.4 and 5 W.

In order to obtain the position of the true secant line at this point, I offset north .1971 chs.



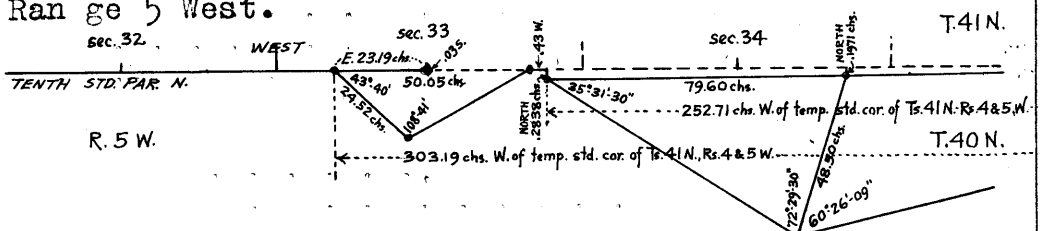
It being impossible to chain farther west on account of a deep box canyon, I project the original line west, and set a flag ahead on line, and triangulate, using the same base as used in the previous triangle, viz., 48.50 chs.

By a repetition of angles the angle at the south end of the base is found to be $72^{\circ} 29' 30''$; the angle at the flag ahead on line is $35^{\circ} 31' 30''$. To compute the distance, I proceed as follows:

$$\begin{array}{r} \text{Colog sin } 35^{\circ} 31' 30'' = 0.2357804 \\ \text{Log sin } 72^{\circ} 29' 30'' = 9.9793996 \\ \text{Log } 48.50 \text{ chs.} = 1.6857417 \\ \text{Log } 79.60 = 1.9009217 \end{array}$$

$173.11 \text{ chs.} + 79.60 \text{ chs.} = 252.71 \text{ chs.}$ Thus the flag ahead on line is 252.71 chs. westerly of the temp. point for the standard cor. of Ts.41 N., Rs.4 and 5 W.

In order to obtain the position of the true secant line at this point, I offset north .2838 chs., and project this line westerly as the true secant through Range 5 West.



I measure west 43 lks., it being impossible to chain farther on account of a perpendicular ledge. I project the line west, and set a flag ahead on line, and triangulate as follows:

At the flag ahead on line, with the telescope pointing east, I turn an angle to the right of $43^{\circ} 40'$ and measure a base of 24.52 chs. The angle at the south end of the base is found to be $108^{\circ} 41'$ and the third angle of the triangle is computed to be $27^{\circ} 39'$. To compute the triangle I proceed as follows:

$$\begin{array}{r} \text{Colog sin } 27^{\circ} 39' = 0.3334172 \\ \text{Log sin } 108^{\circ} 41' = 9.9764891 \\ \text{Log } 24.52 \text{ chs.} = 1.3895205 \\ \text{Log } 50.05 = 1.6994268 \end{array}$$

71 Tenth Standard Parallel North, through Range 5 West. 71

Chains.

252.71 chs. + 43 lks. + 50.05 chs. = 303.19 chs. = 3M. 63.19 chs.

In order to establish the 1/4 sec.cor. for sec.33, I measure along the secant, 23.19 chs. east, and 3 lks. south, and

Set an iron post 3 ft.long, 1 in. in diam., 26 ins. in the ground for the standard 1/4 sec.cor., marked on brass cap,

1913 in S.rim; and
S C 1/4 S 33 in N. half;

and raise a mound of stone 2 ft.base, 1 1/2 ft. high, N.of cor. Pits impracticable.

No trees suitable for bearing trees within limits. S.89°59'W. on secant, through west half of sec.33, measuring from true point for standard cor.of secs. 33 and 34.

Descend gradually over rolling land, through greasewood and sage brush.

65.00 Wash, 10 lks.wide, 2 ft.deep, course N.Ascend over broken N.slope of point projecting north, through dense cedar and pines.

Difference between measurements of 80.00 chs. by two sets of chainmen is 2 lks., position of middle point,

By 1st set, 79.99 chs.,
By 2nd set, 80.01 chs., the mean of which is

80.00 S.2 lks.from the secant,

Set an iron post 3 ft.long, 3 ins. in diam., 18 ins. in the ground to bedrock, surrounded by a mound of stone for standard cor.of secs. 32 and 33, marked on brass cap,

1913 in S.rim;
S C T 41 N R 5 W in N.half;
S 32 in NW, and
S 33 in NE. quadrant; from which,

A pinon, 10 ins. in diam., brs.N.45°E., 68 lks. dist. marked T 41 N R 5 W S 33 B T.

A pinon, 8 ins. in diam., brs.N.10°W., 74 lks. dist., marked T 41 N R 5 W S 32 B T.

Land, mountainous and broken, with numerous canyons and high ledges.

Soil, fine light sand, 1 to 5 ft.deep in bottoms and on top of ridges; rock and adobe on slopes. The ledges are light red and yellow soft sandstone.

Undergrowth, sage brush and greasewood. No grazing.

Timber, scattering scrub cedar and pinon. Northern exposure.

Dec. 28, 1913.

Dec. 29, 1913.

S.89° 59'W. on secant, through sec.32.

Ascend gradually over rough mountainous land, drains N., over point projecting N., through dense cedar and pinon timber and undergrowth of service and sage brush.

3.00 Top of steep ascent, brs.N.and S.; descend gradually over NW. slope of point.

13.10 Hollow, drains N., 70 ft.below sec.cor.; ascend gradually.

19.00 Top of gradual ascent and base of steep ascent, N.and S. Ascend abruptly over series of broken ledges on east side of ridge.

28.10 Top of ridge, brs.N.and S., 150 ft. above hollow. Descend gradually over nearly level top of ridge.

32.30 West edge of ridge, brs.N.and S.; descend abruptly over ledge, 200 ftlhigh.

35.00 Base of ledge, brs. N.and S.; continue gradual descent, over west slope of ridge.

Difference between measurements of 40.00 chs. by two sets of chainmen is 4 lks., position of middle point,

72 Tenth Standard Parallel North through Range 5 West.

Chains

40.00 By 1st set, 40.02 chs.,
By 2nd set, 39.98 chs., the mean of which is
S. 1 link from the secant,
Set an iron post 3 ft. long, 1 in. in diam., 6 ins. in
the ground, supported by a mound of stone for standard
sec. cor., marked on brass cap,
1913 in S. rim; and
S C $\frac{1}{4}$ S 32 in N. half; from which,
A pinon, 7 ins. in diam., brs. N. 29° W., 38 lks.
dist., marked S C $\frac{1}{4}$ S 32 B T.
No other trees available. Pits impracticable. Raise a
mound of stone 2 ft. base, 1½ ft. high, N. of cor.
Corner falls on west slope of ridge, 300 ft. below top.
Descend gradually over nearly level land.
Difference between measurements of 80.00 chs. by two sets
of chainmen is 6 lks., position of middle point,
By 1st set, 80.03 chs.
By 2nd set, 79.97 chs., the mean of which is
80.00 Set an iron post 3 ft. long, 3 ins. in diam., 24 ins. in
the ground for standard cor. of secs. 31 and 32, marked
on brass cap,
1913 in S. rim;
S C T 41 N R 5 W in N. half;
S 31 in NW., and
S 32 in NE. quadrants;
raise a mound of stone 2 ft. base, 1½ ft. high, N. of cor.
Pits impracticable. No trees within limits.
Corner falls on open bench, brs. N. and S.
Land, rough and broken. East half drains N. West half
drains S.
Soil, sandy, with decayed vegetation; rocky subsoil.
Undergrowth, shadscale. Good grazing in west half.
Dec. 29, 1913.

Dec. 30, 1913.

S. 89° 58' W., on secant, through sec. 31.

Descend gradually over rolling mountainous land, along
the foot of south slope of high ridge, through dense
undergrowth of cedar, pinon, service, sage brush and
shadscale.

Difference between measurements of 40.00 chs. by two
sets of chainmen is 4 lks., position of middle point

By 1st set, 40.02 chs.,

40.00 N. 2 lks. from the secant, set an iron post 3 ft. long, 1 in.
in diam., 26 ins. in the ground for standard sec. cor.,
marked on brass cap,

1913 in S. rim; and

S C $\frac{1}{4}$ S 31 in N. half; from which,

A cedar 4 ins. in diam., brs. N. 1° W., 7 lks.

dist., marked S C $\frac{1}{4}$ S 31 B T.

No other trees available. Dig pits 18x18x12 ins., E. and
W. of cor. 3 ft. dist., and raise a mound of earth N. of
cor.

Foot of S. slope of ridge.

Thence over nearly level land, across a series of unimpor-
tant small drains, course N.

71.80 Stake and rider fence, brs. N. and S.

Difference between measurements of 80.00 chs. by two sets
of chainmen is 4 lks., position of middle point,

By 1st set, 80.02 chs.,

By 2nd set, 79.98 chs. the mean of which is

80.00 N. 4 lks. from the secant, set an iron post 3 ft. long, 3 ins.
in diam., 24 ins. in the ground for standard cor. to Ts.
41 N., Rs. 5 and 6 W., marked on brass cap,

1913 in S. rim;

S C T 41 N. in N. half;

R6 W S 36 in NW., and

R5 W S 31 in NE. quadrant; from which,

Chains.

A cedar, 12 ins. in diam., brs. N. 3° W., 78
lks. dist., marked T 41 N R 6 W S 36 B E.

A cedar, 14 ins. in diam., brs. N. 72° E., 30
lks. dist., marked T 41 N R 5 W S 31 B T.

Land, rolling, drains south in E. half and north in W.
half.

Soil, light red sand and red clay.

Timber, scrub cedar and pinon.

Undergrowth, service, sage and shadscale.

Southern exposure.

Dec. 30, 1913.

J. C. Thomas
U. S. Surveyor.

CERTIFICATE OF ASSISTANTS.

We, the undersigned, hereby certify upon honor that we assisted, to the best of our skill and ability, Jos. C. Thoma, U. S. Surveyor, during the periods and in the capacities stated opposite our several signatures, in surveying all those parts or portions of the 10th Standard Parallel N., through Rgs. 3, 4 and 5 W.

of the Gila and Salt River Meridian, in the State of Arizona, which are represented in the foregoing field notes as having been executed by him, and under his direction; and that said survey has been, in all respects, to the best of our knowledge and belief, well and faithfully executed.

Table with columns: NAME, PERIOD OF SERVICE (BEGUN, ENDED), CAPACITY. Entry: Carl Ray, Dec. 2, 1913, Jan. 13, 1914, Chainman.

Subscribed and certified to before me on the dates of the final service as shown above.

Jos. C. Thoma, U. S. Surveyor.

BOOK 2875

CERTIFICATE OF ASSISTANTS.

We, the undersigned, hereby certify upon honor that we assisted, to the best of our skill and ability, Jos. C. Thoma, U. S. Surveyor, during the periods and in the capacities stated opposite our several signatures, in surveying all those parts or portions of Tenth Standard Parallel North, through Rgs. 3, 4 and 5 W.

of the Gila and Salt River Meridian, in the State of Arizona which are represented in the foregoing field notes as having been executed by him, and under his direction; and that said survey has been, in all respects, to the best of our knowledge and belief, well and faithfully executed.

Table with columns: NAME, PERIOD OF SERVICE (BEGUN, ENDED), CAPACITY. Entry for Paul Wiley, Dec. 7, 1913 to Jan. 13, 1914, Chainman.

Subscribed and certified to before me on the dates of the final service as shown above.

Handwritten signature of Jos. C. Thoma, U. S. Surveyor.

CERTIFICATE OF ASSISTANTS.

We, the undersigned, hereby certify upon honor that we assisted, to the best of our skill and ability, Jos. C. Thoma, U. S. Surveyor, during the periods and in the capacities stated opposite our several signatures, in surveying all those parts or portions of the 10th Standard Parallel N. through Rgs. 3, 4 and 5 W.

of the Gila and Salt River Meridian, in the State of Arizona, which are represented in the foregoing field notes as having been executed by him, and under his direction; and that said survey has been, in all respects, to the best of our knowledge and belief, well and faithfully executed.

Table with columns: NAME, PERIOD OF SERVICE (BEGUN, ENDED), CAPACITY. Entry: Earl Peterson, Dec. 2, 1913, Jan. 13, 1914, Flagman.

Subscribed and certified to before me on the dates of the final service as shown above.

Jos. C. Thoma U. S. Surveyor.

CERTIFICATE OF ASSISTANTS.

We, the undersigned, hereby certify upon honor that we assisted, to the best of our skill and ability, Jos. C. Thoma, U. S. Surveyor, during the periods and in the capacities stated opposite our several signatures, in surveying all those parts or portions of the 10th Standard Parallel N. through Rgs. 3, 4 and 5 W.

of the Gila and Salt River Meridian, in the State of Arizona which are represented in the foregoing field notes as having been executed by him, and under his direction; and that said survey has been, in all respects, to the best of our knowledge and belief, well and faithfully executed.

Table with columns: NAME, PERIOD OF SERVICE (BEGUN, ENDED), CAPACITY. Entry for Edward Nelson, Dec. 2, 1913 to Jan. 13, 1914, Chainman.

Subscribed and certified to before me on the dates of the final service as shown above.

Jos. C. Thoma U. S. Surveyor.

CERTIFICATE OF ASSISTANTS.

We, the undersigned, hereby certify upon honor that we assisted, to the best of our skill and ability, Jos. C. Thoma, U. S. Surveyor, during the periods and in the capacities stated opposite our several signatures, in surveying all those parts or portions of the 10th Standard Parallel N. through Rgs. 3, 4 and 5 W.

of the Gila and Salt River Meridian, in the State of Arizona which are represented in the foregoing field notes as having been executed by him, and under his direction; and that said survey has been, in all respects, to the best of our knowledge and belief, well and faithfully executed.

Table with columns: NAME, PERIOD OF SERVICE (BEGUN, ENDED), CAPACITY. Entry: Ralph Buttm, Dec. 15, 1913, Jan. 7, 1914, Chainman.

Subscribed and certified to before me on the dates of the final service as shown above.

Jos. C. Thoma U. S. Surveyor.

CERTIFICATE OF ASSISTANTS.

We, the undersigned, hereby certify upon honor that we assisted, to the best of our skill and ability, Jos. C. Thoma, U. S. Surveyor, during the periods and in the capacities stated opposite our several signatures, in surveying all those parts or portions of the Gila and Salt River Meridian through Tps. 37, 38, 39 and 40 N. The 9th Standard Parallel N., through Rgs. 1, 2, 3 and 4 W. The First Guide Meridian W. through Tps. 37, 38, 39 and 40 N. The 10th Standard Parallel N. through Rgs. 3 and 4 W. The exterior and subdivisional lines of Tps. 39, 40 and 41 N., R. 4 W., T. 40 N., R. 5 W. and the exterior lines of T. 39 N., R. 5 W.

of the Gila and Salt River Meridian, in the State of Arizona

which are represented in the foregoing field notes as having been executed by him, and under his direction; and that said survey has been, in all respects, to the best of our knowledge and belief, well and faithfully executed.

NAME.	PERIOD OF SERVICE.		CAPACITY.
	BEGUN.	ENDED.	
<i>H. Gavin</i>	April 20, 1914 July 15, 1914	July 14, 1914 Aug. 31, 1914	Chainman. Flagman.

Subscribed and certified to before me on the dates of the final service as shown above.

Jos. C. Thoma
 U. S. Surveyor.

CERTIFICATE OF ASSISTANTS.

We, the undersigned, hereby certify upon honor that we assisted, to the best of our skill and ability, Jos. C. Thoma, U. S. Surveyor, during the periods and in the capacities stated opposite our several signatures, in surveying all those parts or portions of the Gila and Salt River Meridian through Tps. 37, 38, 39 and 40 N. The 9th Standard Parallel N., through Rgs. 1, 2, 3 and 4 W. The First Guide Meridian W., through Tps. 37, 38, 39 and 40 N. The exterior lines of T. 39 N., R. 3 W. The exterior and subdivisional lines of Tps. 39 and 40 N., Rgs. 4 and 5 W. and T. 41 N., R. 5 W. and the 10th Standard Parallel N. through Rgs. 3 and 4 W. of the Gila and Salt River Meridian, in the State of Arizona, which are represented in the foregoing field notes as having been executed by him, and under his direction; and that said survey has been, in all respects, to the best of our knowledge and belief, well and faithfully executed.

NAME.	PERIOD OF SERVICE.		CAPACITY.
	BEGUN.	ENDED.	
<i>W. A. Bailey</i>	April 20, 1914	Oct. 14, 1914	Chainman.

Subscribed and certified to before me on the dates of the final service as shown above.

Jos. C. Thoma
U. S. Surveyor.

CERTIFICATE OF ASSISTANTS.

We, the undersigned, hereby certify upon honor that we assisted, to the best of our skill and ability, Jos. C. Thoma, U. S. Surveyor, during the periods and in the capacities stated opposite our several signatures, in surveying all those parts or portions of the Gila and Salt River Meridian through Tps. 37, 38, 39 and 40 N. The 9th Standard Parallel N. through Rgs. 1, 2, 3 and 4 W. The First Guide Meridian W., through Tps. 37, 38, 39 and 40 North

of the Gila and Salt River Base & Meridian, in the State of Arizona, which are represented in the foregoing field notes as having been executed by him, and under his direction; and that said survey has been, in all respects, to the best of our knowledge and belief, well and faithfully executed.

Table with 3 columns: NAME, PERIOD OF SERVICE (BEGUN, ENDED), and CAPACITY. Entry: Paul Louis Fay, May 1, 1914, July 5, 1914, Flagman.

Subscribed and certified to before me on the dates of the final service as shown above.

Jos. C. Thoma U. S. Surveyor.

CERTIFICATE OF ASSISTANTS.

We, the undersigned, hereby certify upon honor that we assisted, to the best of our skill and ability,
 Jos. C. Thoma, U. S. Surveyor, during the periods and in the capacities
 stated opposite our several signatures, in surveying all those parts or portions of Gila and
 Salt River Meridian through Tps. 37, 38, 39 and 40 N. The 9th
 Standard Parallel N. through Rgs. 1, 2, 3 and 4 W. The 1st Guide
 Meridian W., through Tps. 37, 38, 39 and 40 N. The 10th Standard
 Parallel N. through Rgs. 3, and 4 W. The exteriors and subdivisional
 lines in T. 39 N., R. 4 W. and the subdivisional lines in T. 41 N.,
 Rgs. 4 W.
 of the Gila and Salt River Meridian, in the State of Arizona
 which are represented in the foregoing field notes as having been executed by him, and under his direc-
 tion; and that said survey has been, in all respects, to the best of our knowledge and belief, well and
 faithfully executed.

NAME.	PERIOD OF SERVICE.		CAPACITY.
	BEGUN.	ENDED.	
<i>Ralph Button</i>	May 3, 1914 July 15, 1914	July 14, 1914 Aug. 2, 1914	Chainman. Asst. Teamster.
<i>Elin Pratt</i>	June 8, 1914	Aug. 2, 1914	Moundman.

Subscribed and certified to before me on the dates of the final service as shown above.

Jos. C. Thoma
 U. S. Surveyor.

CERTIFICATE OF ASSISTANTS.

We, the undersigned, hereby certify upon honor that we assisted, to the best of our skill and ability,
Jos. C. Thoma., U. S. Surveyor, during the periods and in the capacities
 stated opposite our several signatures, in surveying all those parts or portions of *the Gila 9th*
Salt River Prin Mer, through Tps. 37, 38, 39 & 40 N.; The 9th
Std. Par. N. through Rqs. 1, 2, 3 9th A W., the 1st
Guide Mer. W., through Tps. 37, 38, 39 & 40 N.

Gila 9th of the *Salt River Base 9th* Meridian, in the State of *Arizona*
 which are represented in the foregoing field notes as having been executed by him, and under his direc-
 tion; and that said survey has been, in all respects, to the best of our knowledge and belief, well and
 faithfully executed.

NAME.	PERIOD OF SERVICE.		CAPACITY.
	BEGUN.	ENDED.	
<i>H. M. Beumley</i>	<i>May 9, 1914</i>	<i>July 3, 1914</i>	<i>Axeman.</i>

Subscribed and certified to before me on the dates of the final service as shown above.

Jos. C. Thoma
 U. S. Surveyor.

95

CERTIFICATE OF ASSISTANTS.

We, the undersigned, hereby certify upon honor that we assisted, to the best of our skill and ability, Jos. C. Thoma, U. S. Surveyor, during the periods and in the capacities stated opposite our several signatures, in surveying all those parts or portions of the subdivision Tps. 39, 40 and 41 N., Rgs. 4 and 5 W. The exteriors of Tps. 39, 40, 41 and 42 N., Rgs. 4 and 5 W. and T. 39 N., R. 3 W.

of the Gila and Salt River Meridian, in the State of Arizona, which are represented in the foregoing field notes as having been executed by him, and under his direction; and that said survey has been, in all respects, to the best of our knowledge and belief, well and faithfully executed.

Table with columns: NAME, PERIOD OF SERVICE (BEGUN, ENDED), CAPACITY. Entry: Astor Wrigley, Aug. 1, 1914, Aug. 14, 1914, Moundman.

Subscribed and certified to before me on the dates of the final service as shown above.

Jos. C. Thoma U. S. Surveyor.

CERTIFICATE OF ASSISTANTS.

We, the undersigned, hereby certify upon honor that we assisted, to the best of our skill and ability, Jos. C. Thoma, U. S. Surveyor, during the periods and in the capacities stated opposite our several signatures, in surveying all those parts or portions of the subdivision of T. 39 N., R. 5 W. and the exterior lines of T. 39 N., R. 3 W.

of the Gila and Salt River Meridian, in the State of Arizona which are represented in the foregoing field notes as having been executed by him, and under his direction; and that said survey has been, in all respects, to the best of our knowledge and belief, well and faithfully executed.

Table with columns: NAME, PERIOD OF SERVICE (BEGUN, ENDED), CAPACITY. Entry: C. B. Jamison, Sept. 14, 1914, October 14, 1914, Moundman.

Subscribed and certified to before me on the dates of the final service as shown above.

Signature: Jos. C. Thoma, U. S. Surveyor.

CERTIFICATE OF ASSISTANTS.

We, the undersigned, hereby certify upon honor that we assisted, to the best of our skill and ability, Jos. C. Thoma, U. S. Surveyor, during the periods and in the capacities stated opposite our several signatures, in surveying all those parts or portions of the Gila and Salt River Meridian through Tps. 37, 38, 39 and 40 N. The 9th Standard Parallel N., through Rgs. 1, 2, 3 and 4 W. The First Guide Meridian W., through Tps. 37, 38, 39 and 40 N. The exterior lines of T. 39 N., R. 3 W. The exterior and subdivisional lines of Tps. 39 and 40 N., Rgs. 4 and 5 W. and Tps. 41 N., Rgs. 4 and 5 W. and the 10th Standard Parallel N. through Rgs. 3 and 4 W. of the Gila and Salt River Meridian, in the State of Arizona which are represented in the foregoing field notes as having been executed by him, and under his direction; and that said survey has been, in all respects, to the best of our knowledge and belief, well and faithfully executed.

NAME.	PERIOD OF SERVICE.		CAPACITY.
	BEGUN.	ENDED.	
<i>Fred M. Wright</i>	April 20, 1914	Sept. 14, 1914	Chainman.

Subscribed and certified to before me on the dates of the final service as shown above.

Jos. C. Thoma
 U. S. Surveyor.

FINAL OATH OF UNITED STATES SURVEYOR.

(Same applies to books B, C, D, E, F, G & H of this group)

I, Jos. C. Thoma, U. S. Surveyor, do solemnly swear that, in pursuance of special instructions received from the U. S. Surveyor General for Arizona for Group 29 bearing date of the 11th day of March, 1913, I have well, faithfully, and truly, in my own proper person, and in strict conformity with said instructions, the Manual of Surveying Instructions, and the laws of the United States, surveyed all those parts or portions of the Gila and Salt River Meridian through Ts. 37, 38, 39, and 40 N.; the 9th Standard Parallel N., through Rs. 1, 2, 3, and 4 W.; the First Guide Meridian W., through Ts. 37, 38, 39, 40, and 41 N.; the 10th Standard Parallel North, through Rs. 3, 4, and 5 W.; the N., S., and E. bdrs. of T. 39 N., Rs. 3 & 4 W.; the N., S. and W. bdrs. of T. 39 N., R. 5 W.; the E. bdy. of T. 40 N., R. 4 W.; the W. bdrs. of Ts. 40 and 41 N., R. 5 W.; the W. bdy. of frac. T. 42 N., R. 5 W.; and the Subdivision Lines of Ts. 39, 40, and 41 N., Rs. 4 and 5 W.

of the Gila and Salt River Base and Meridian, in the State of Arizona, which are represented in the foregoing field notes/as having been executed by me, and under my direction; and I do further solemnly swear that all the corners of said survey have been established and perpetuated in strict accordance with the Manual of Surveying Instructions, and the special written instructions of the U. S. Surveyor General for Arizona for Group 29 and in the specific manner described in the field notes, and that and notes in books B, C, D, E, F, G and H the foregoing/are the original field notes of such surveys.

Jos. C. Thoma
U. S. Surveyor.

Subscribed by said Jos. C. Thoma, and sworn to before me this 21st day of January, 1916

[Signature]
U. S. Surveyor General
for State



APPROVAL.

OFFICE OF THE UNITED STATES SURVEYOR GENERAL,

Phoenix, Arizona Feb. 15, 1916

The foregoing field notes of the survey of the Gila and Salt River Meridian, through Ts. 37, 38, 39, and 40 N.; the 9th Standard Parallel N., through Rs. 1, 2, 3, and 4 W.; the First Guide Meridian W., through Ts. 37, 38, 39, 40, and 41 N.; the 10th Standard Parallel North, through Rs. 3, 4, and 5 W.;

of the Gila and Salt River Base & Meridian, in the State of Arizona,

executed by Jos. C. Thoma, U. S. Surveyor, under his special instructions dated March 11, 1913 for Group 29, having been critically examined, and the necessary corrections and explanations made, the said field notes, and the surveys they describe, are hereby approved.

[Signature]
U. S. Surveyor General
of Arizona.

I certify that the foregoing transcript of the field notes of the above described surveys in has been correctly copied from the original notes on file in this office.