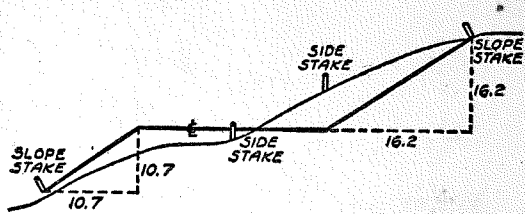


13

13

HARGO  
FIELD BOOK



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING  
SLOPE 1 TO 1. ROADWAY OF ANY WIDTH

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0
1	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	1
2	2.00	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.80	2.90	2
3	3.00	3.10	3.20	3.30	3.40	3.50	3.60	3.70	3.80	3.90	3
4	4.00	4.10	4.20	4.30	4.40	4.50	4.60	4.70	4.80	4.90	4
5	5.00	5.10	5.20	5.30	5.40	5.50	5.60	5.70	5.80	5.90	5
6	6.00	6.10	6.20	6.30	6.40	6.50	6.60	6.70	6.80	6.90	6
7	7.00	7.10	7.20	7.30	7.40	7.50	7.60	7.70	7.80	7.90	7
8	8.00	8.10	8.20	8.30	8.40	8.50	8.60	8.70	8.80	8.90	8
9	9.00	9.10	9.20	9.30	9.40	9.50	9.60	9.70	9.80	9.90	9
10	10.00	10.10	10.20	10.30	10.40	10.50	10.60	10.70	10.80	10.90	10
11	11.00	11.10	11.20	11.30	11.40	11.50	11.60	11.70	11.80	11.90	11
12	12.00	12.10	12.20	12.30	12.40	12.50	12.60	12.70	12.80	12.90	12
13	13.00	13.10	13.20	13.30	13.40	13.50	13.60	13.70	13.80	13.90	13
14	14.00	14.10	14.20	14.30	14.40	14.50	14.60	14.70	14.80	14.90	14
15	15.00	15.10	15.20	15.30	15.40	15.50	15.60	15.70	15.80	15.90	15
16	16.00	16.10	16.20	16.30	16.40	16.50	16.60	16.70	16.80	16.90	16
17	17.00	17.10	17.20	17.30	17.40	17.50	17.60	17.70	17.80	17.90	17
18	18.00	18.10	18.20	18.30	18.40	18.50	18.60	18.70	18.80	18.90	18
19	19.00	19.10	19.20	19.30	19.40	19.50	19.60	19.70	19.80	19.90	19
20	20.00	20.10	20.20	20.30	20.40	20.50	20.60	20.70	20.80	20.90	20
21	21.00	21.10	21.20	21.30	21.40	21.50	21.60	21.70	21.80	21.90	21
22	22.00	22.10	22.20	22.30	22.40	22.50	22.60	22.70	22.80	22.90	22
23	23.00	23.10	23.20	23.30	23.40	23.50	23.60	23.70	23.80	23.90	23
24	24.00	24.10	24.20	24.30	24.40	24.50	24.60	24.70	24.80	24.90	24
25	25.00	25.10	25.20	25.30	25.40	25.50	25.60	25.70	25.80	25.90	25
26	26.00	26.10	26.20	26.30	26.40	26.50	26.60	26.70	26.80	26.90	26
27	27.00	27.10	27.20	27.30	27.40	27.50	27.60	27.70	27.80	27.90	27
28	28.00	28.10	28.20	28.30	28.40	28.50	28.60	28.70	28.80	28.90	28
29	29.00	29.10	29.20	29.30	29.40	29.50	29.60	29.70	29.80	29.90	29
30	30.00	30.10	30.20	30.30	30.40	30.50	30.60	30.70	30.80	30.90	30
31	31.00	31.10	31.20	31.30	31.40	31.50	31.60	31.70	31.80	31.90	31
32	32.00	32.10	32.20	32.30	32.40	32.50	32.60	32.70	32.80	32.90	32
33	33.00	33.10	33.20	33.30	33.40	33.50	33.60	33.70	33.80	33.90	33
34	34.00	34.10	34.20	34.30	34.40	34.50	34.60	34.70	34.80	34.90	34
35	35.00	35.10	35.20	35.30	35.40	35.50	35.60	35.70	35.80	35.90	35
36	36.00	36.10	36.20	36.30	36.40	36.50	36.60	36.70	36.80	36.90	36
37	37.00	37.10	37.20	37.30	37.40	37.50	37.60	37.70	37.80	37.90	37
38	38.00	38.10	38.20	38.30	38.40	38.50	38.60	38.70	38.80	38.90	38
39	39.00	39.10	39.20	39.30	39.40	39.50	39.60	39.70	39.80	39.90	39
40	40.00	40.10	40.20	40.30	40.40	40.50	40.60	40.70	40.80	40.90	40
41	41.00	41.10	41.20	41.30	41.40	41.50	41.60	41.70	41.80	41.90	41
42	42.00	42.10	42.20	42.30	42.40	42.50	42.60	42.70	42.80	42.90	42
43	43.00	43.10	43.20	43.30	43.40	43.50	43.60	43.70	43.80	43.90	43
44	44.00	44.10	44.20	44.30	44.40	44.50	44.60	44.70	44.80	44.90	44
45	45.00	45.10	45.20	45.30	45.40	45.50	45.60	45.70	45.80	45.90	45
46	46.00	46.10	46.20	46.30	46.40	46.50	46.60	46.70	46.80	46.90	46
47	47.00	47.10	47.20	47.30	47.40	47.50	47.60	47.70	47.80	47.90	47
48	48.00	48.10	48.20	48.30	48.40	48.50	48.60	48.70	48.80	48.90	48
49	49.00	49.10	49.20	49.30	49.40	49.50	49.60	49.70	49.80	49.90	49
50	50.00	50.10	50.20	50.30	50.40	50.50	50.60	50.70	50.80	50.90	50

Distance of slope stake from side or shoulder stake for any width roadway, slope 1 to 1. If ground is nearly level, the cut or fill at side stake is located by the double entry method in left column and top row. The number in body of table in same row and column gives distance from side stake to slope stake. If ground is not level estimate the difference in elevation between the side stake and slope stake, lower target by this amount if cut, elevate if fill. Add this amount to cut or fill and find distance in table. Set up rod at this point, and line of sight should cut target. If it does not make the slight adjustment necessary.

Book 1.  
Blind Lake Twp.  
Wapedo Twp.





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T 139-140 N. R. 28.

West bet.	36 - 1	Page 1-2
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" "	33 - 4	" 7-8

T 139 N. R 28 W.

" "	12 - 13	" 13-14
" "	11 - 14	" 15-16
East "	10 - 15	" 17-18
West "	9 - 16	" 19-20
" "	8 - 17	" 21-22
" "	7 - 18	" 23 24
" "	24 - 25	" 25-26

T. 139 R. 28

Blind Lake

T. 139 N.

R. 28 W.

			8	7	6	5	4	3	2	1
6	5	4	3	2	1					
7	6	5	4	3	2					
24	23	22	21	20	19	18	17	16	15	14
18	17	16	15	14	13					
19	20	21	22	23	24					
36	35	34	33	32	31	30	29	28	27	26
20	21	22	23	24	25					
31	32	33	34	35	36					
47	48	49	50	51	52	53	54	55	56	57

45 46 47 50



26-40. Set approx.  $\frac{1}{4}$  stake. 4' look. etc.

140-28  
5' look

13+20 Found 3" Aspen squared. No evidence of original.  
Set approx.  $\frac{1}{16}$  stake.

2+35 Intersection of road.

0+00 started west from  $\frac{116}{121} \frac{36}{191}$  139-28  
 $\frac{116}{121}$

Oct. 26-1935

Woods - M  
Schwarz -  
Chupka -  
Estensen -

Look for:

Found:

No evidence of original.

Aspen

Aspen

Saplings

S. 83 1/2° W.

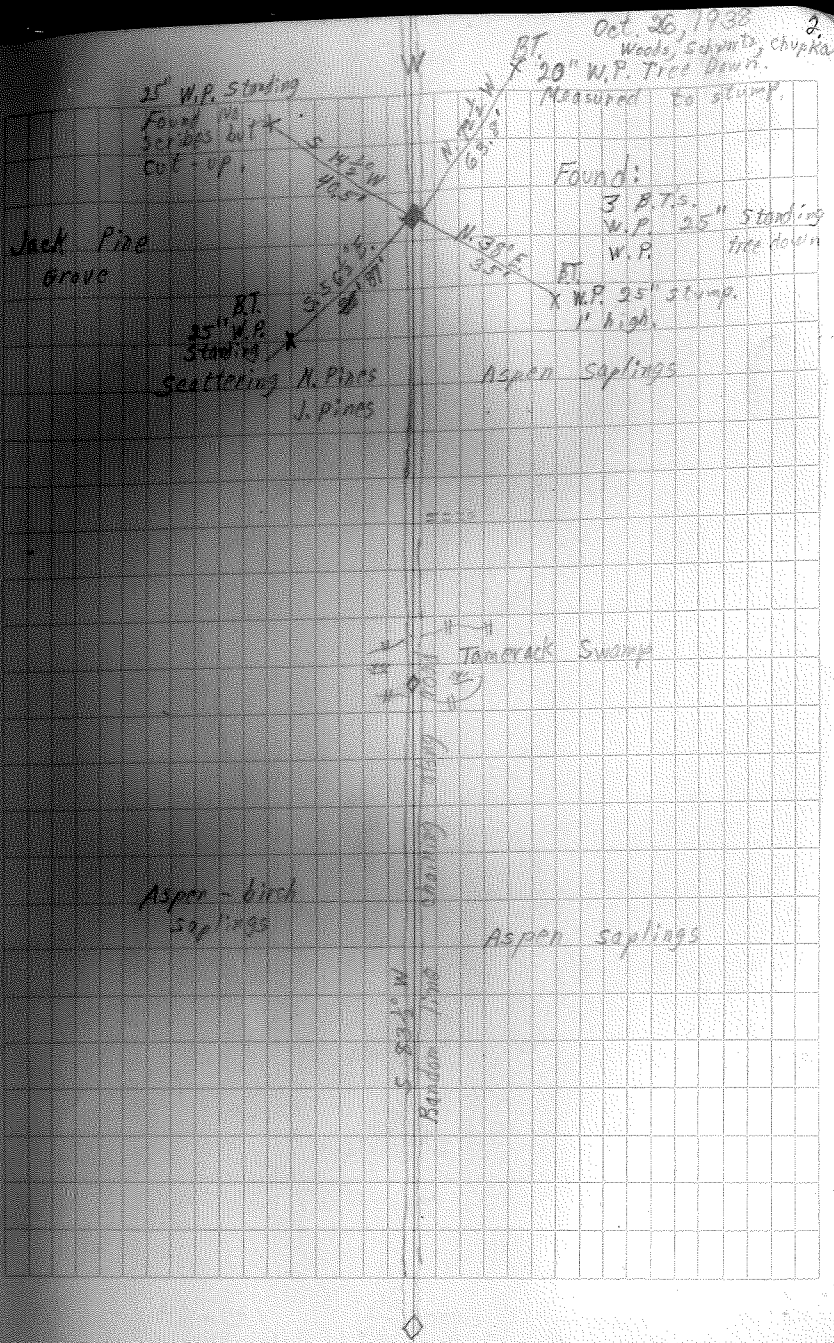
Random line - crossing along road

Iron pipe in center of road

49+50 Found ori. Sec. corner  
 3 B.T.s.  
 1 B.T. W.P. Standing - 25"  
 1 B.T. W.P. Stump - 25"  
 1 B.T. W.P. Log - 20"  
 1 Tree - W.P. 25" standing - appears to be a B.T. but too rotten to locate scribbing. Is cut and staked like a B.T.  
 Set compass up on compass line and at 49+50 & sighted on B.T.

39+60 Set approx. W-16

26+40 Continued west from Approx. 1/2 26-28  
 139





26+40 Set approx.  $\frac{1}{4}$  offset compass line 35' N.

17+50 Entered spr. + tan swamp

13+20 Set approx. E.  $\frac{1}{16}$

10+75 Side road to B. Mayer's place.

7+15 Hit creek

0+00 started west from  $\frac{35}{2} | \frac{36}{1}$  139-28

Oct. 26, 1938

Howe

Pahl

Stegle

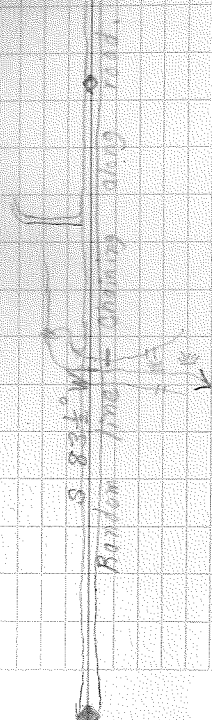
Holbert

3.

Look For:

Found:

No Evidence of Orig. U.S.



53+00 Found 2 B.T.s, & a round pest 7" in pile of  
rocks but this didn't check with B.T.s.  
Was too far east.

49+00 Entered Spr- Tan Swamp

46+50 Foot  
Trail going South

44+45 Side road

39+00 Set spray. W. 36  
37+00 Left Swamp

36+00  
35+50 Swamp

27+00 Left Swamp

26+40 Continued West

Oct. 26, 1933 4

Left for:

BT.  $S 16^{\circ} E$  39.1'  $S 37^{\circ} E$  32.2'  $S 16^{\circ} E$  32.2'  $S 37^{\circ} E$  32.2'  
Found: 2 B.T.s.  
Tam. 6"  $S 16^{\circ} E$  32.1'  
Tam. 6"  $S 37^{\circ} E$  32.1'  
Pile rocks, N  $37^{\circ} E$  32.2'

Jack Pine  
Pole Timber

Jack Pine  
Pole Timber

$S. 83^{\circ} W.$

Random line

Chain along road

road



41+30 Road Junction Set Approx sec Corner  
6" Tama Squared on 3 Sides

42+30 Road Junction

42+30 Drive in for Graveyard.

4290 Side road to Diamond Crest Lodge, Waived Lake  
4285 Truck Trail

40+30 ~~the~~ left Tamarack Swamp  
38+60 set Approx with Stake 3" Tam

36+25 Tam Swamp Creek running North Flashed  
35+45 Foot Path or to south of road

26+40 cont west from approx  $\frac{34}{3}$  139-28

Oct 27-38  
Dah  
Stegelyk  
Newbert

6

~~Jack Pine~~  
Poles

Jack Pine Poles

Jack Pine  
saplings

Aspen  
saplings

Aspen saplings

Aspen

26+40 set Approx  $\frac{1}{4}$  Cor 3' Birch  
BT. N84 $\frac{1}{2}$ °W - 87' scribed  $\frac{1}{4}$  S33 BT

20+00 Type change

16+20 Type change

14+26 Road to house

13+24 Fence runs North set Approx  $\frac{1}{4}$  Co  
Found 1 BT

12+00 Type Change

9+90 Trails to houses N+S.

5+62 Trail running SW

3+00 ~~800~~ Type Change

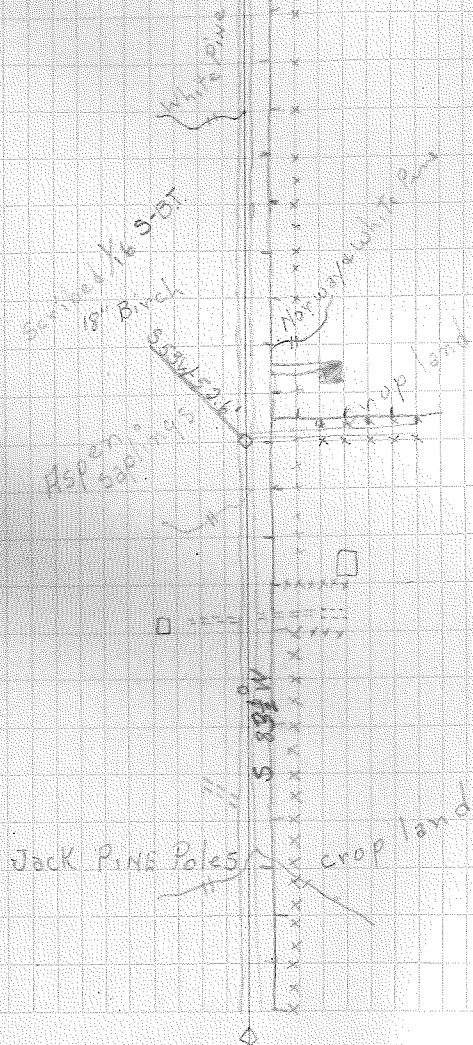
0+00 started West from  $\diamond$   $\frac{33}{4} \frac{33}{3}$  139-20

Oct. 27-38

Dah  
Stegelvik  
Herbert

Found

20' Norway Pine  
scribed 4533 BT





53+41 Found I.P. SW B.T.S.  
 52+30 Hit Meadow  
 47+30 Hit Sparrow and Tam.

32/33  
 5/9 139-28

42+90 Hit Swamp Willow

40+00 Tamarack  
 38+60 Set App. to Corn  
 38+60 Hit Mixed Hardwoods

36+60 Hit Swamp Alder

35+50 Hit Tail  
 cont. W. from 3400  
 34+00 Road to WS North quit for day

29+42 Road to hay field Change in type

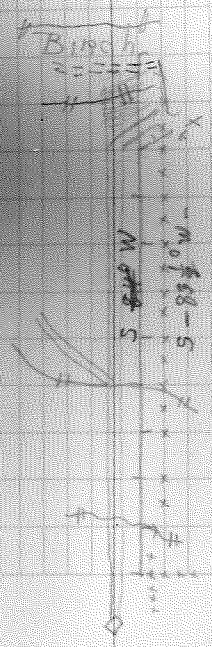
27+65 Entered Tamarack Swamp

26+79 Fence runs North

26+40 Cont West from 32 139-28

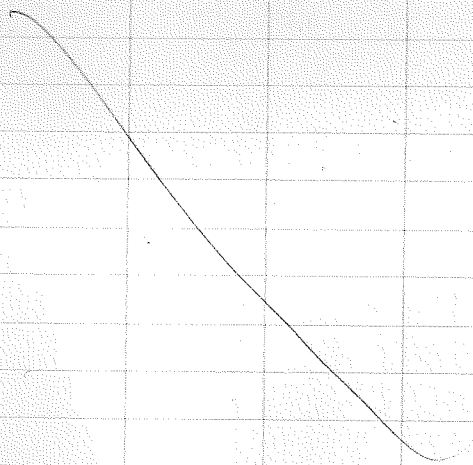
Oct 27-38 Dec 19-38  
 Meadow → mod Dahl Estensen  
 Tam and Sparrow → Herbent Michaelson  
 Found Gravel

wilow	↓	wilow	↓
Swamp Willow	↓	Swamp Willow	↓
↓ Tam	↓	↓ Tam	↓
↓ Mixed Hardwoods	↓	↓	↓
Swamp Alder	↓	Swamp Alder	↓



4 5 139 28

See Book  
#2



3 4 138 26

9

Look for:

Tom. 20" N 26 $\frac{1}{2}$ W 45115

Spr. 8" S 31 $\frac{1}{2}$ W 10115

$\frac{1}{2}$  Mile is 40 chs.

WLP

Var. G. 3°



6/5 1972

6/5

See book  
#2.

10

Look for:  
Tam. 6", N15°E, 621K5  
Tam 6', N43°W, 661K5.

6/5

63°

26+40 Set APP.  $\frac{7}{6}$  COR  $\frac{1}{6}$  Wagon Trail

13+20 Set APP.  $\frac{7}{6}$  - Wagon Trail

11+50

9+00 - Change to Marsh grass

See Book #2

0+00 STARTED E FROM

$\frac{1}{6}$   
 $\frac{7}{6}$

131-26

NS S.

Look for.

Linn. 7" S37E 191K.

W. Maple 5" N35W 121K.

FOUND:

Epidendrum

Seliger

RUNS NE

Aspen

Bm

Change along road

Aspen

Mixed brush

scattered  
Pipe in  
small clump

6.3°

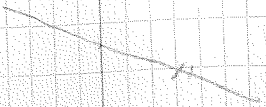
Topo line



To 139-28

49+50 Type change to Lake Shore

look for:



40+80 Road turns NE  
40+67 Settlers Road S



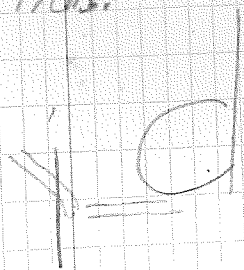
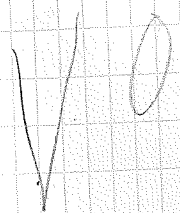
3  
36+50 Settlers Road S  
35+50 Type change to Basswood

see book #2

26+40 CONTINUED

mile is short - 77 chs.

77  
66  
462  
462  
5082



6.8°

26+40 Set App  $\frac{1}{4}$  Corner, 2" Birch  $\frac{12}{13}$  137-25

22+80 Stream running NW-SE.

13+20 Set App  $\frac{1}{16}$  Cor. 2" Aspen

1+12 Hit center of road

0+00 started west from  $\frac{12}{13}$  137-23

December 10, 1938

13

Howe  
Estenson  
Michaelson  
Faurre

Look for:

W. Pine 7" S. 20 E 81Ks.

W. Pine 5" N. 30 W. 91Ks.

Found:

No evidence orig.

Magnetic Bearing S. 33 E 9 W  
Random Line

Mixed Brush

Mixed Brush

Var. 6.2°



December 14, 1938

14

50+63 Offset 40ft. S. to I.P. Marked  $\frac{1112}{1413}$

39+60 Set App.  $\frac{1}{16}$  Cor. 2" Aspen

29+67 Hit trail running W x S.

26+40 Continued West from  $\frac{1}{4}$  Cor. 139-25

Look for:

W. Birch 10" N50E 51Ks.

Elm 12" N50W 81Ks.

B. Oak 6" S45E 37Ks.

B. Oak 9" S70W 28Ks.

Found:

2" Iron pipe

Howe  
Estenson  
Michaelson  
Faurre

Magnetic Bearing S. 53.8° W.  
Random line

Mixed Brush

26+40 Set App. K4 Cor.  $\frac{11}{14}$  139-28

24+85 Hit Stream N.W. and S.E.

13+20 Set App.  $\frac{16}{19}$  Cor.  $\frac{11}{14}$   
12+48 Hit mixed brush

5+25 Type change - Leather leaf

3+00 Hit Swamp Willow

0+00 Started West from  $\frac{11}{12}$   $\frac{14}{13}$  139-28

Dec. 12, 1938

15.

Look for:

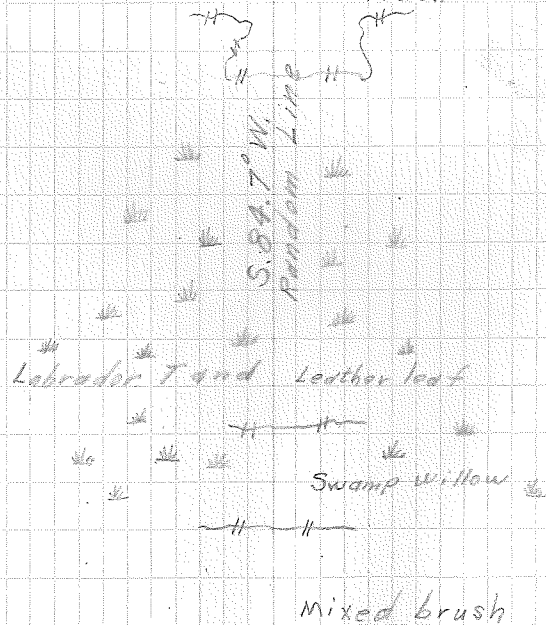
Tom. 5" S48E 90 Yds.

Spr. 7" N60E. 90 Yds.

Howe  
Kouka  
Estensen  
Greylich  
MicholisonFound: No evidence  
of orig.

Mixed brush

mixed brush



Var. 53° 5'



Dec. 20-38

10/11  
15/14  
139-28

Found 2E 63' No. 2 in. D  
offset 63' No.

~~41472 Hit mixed brush~~ Void-RE

46430 Hit mixed brush

~~44100 Hit mixed brush~~ to S 216 Ft to other Re. L  
Void RE.

33+90 Hit Aspen type

26+40 Continued West from 11/14 139-28

Look for:

Aspen 10" N58°E, 691ks.

Tam. 6" N9°W, 58 1ks.

W. Pine 10" S70°E, 751ks

Tam. 9" S40°W, 24 1ks. Found: IP

Mixed Brush

White Pine  
windfall  
burnt & rotten  
likely BT, C, as BI

Aspen S 84° 90° W  
Random Line

Mixed Brush

Mixed Brush

26 + 40

Set APP.  $\frac{10}{15}$  139-28

22 + 28 Hit Swamp Willow and Mixed Brush

16 + 25 Hit Marsh

15 + 45 Hit old Road

10 + 20 Set App to Cor.

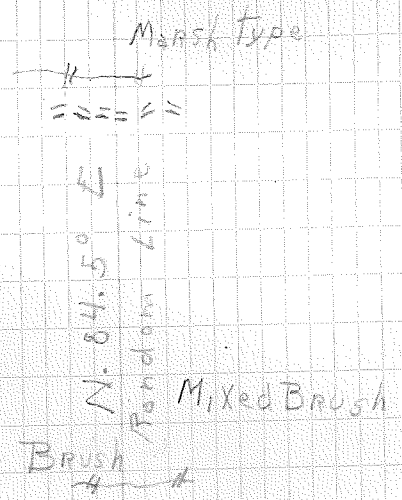
7 + 90 Hit Mixed BRUSH

1 + 85

0700 started East from  $\frac{9}{10}$  137-28  
 $\frac{16}{15}$

Dec. 16, 1937  
Estensen  
Michaelson  
Fournier

Look for: ~~W~~ Found: Gravelish  
T.M. 5" ~~W~~ Mixed Brush ~~W~~ ~~Nathana~~  
J.K. 8" ~~W~~ 123/145 ~~W~~ No evidence of  
Cedar 8" N50W 3145. cor.  
Cedar 8" 545° E 6145.



BIRCH  
Mixed BRUSH





26+40

EST. APPR.  $\frac{1}{4}$  COR. AT 26+40

$\frac{9}{16}$

139-29

24+68 Road

23+00 - open marsh to mixed brush

13+20 SET APPR.  $\frac{1}{16}$

0+00

Started West from

$\frac{7}{16}$   
 $\frac{15}{15}$

139-28

140 R. 28

Dec. 21 1938

19

Estensen

Michadson

Foure

Gretlich

Brush mixed

Look for:

Birch 6" NW. 14K.

Aspen 6" SW. 41K.

Found:

No evidence of  
COR.

OPEN  
Meadow

Aspen

Random Line

Magnetic Bearing S. 88° W.

Bm

Aspen

140-67



FOUND concrete cor. 52+78  
52+78

$\frac{8}{17} \frac{9}{16}$  139-21

49+60 ~~9+50~~ - set  $\frac{1}{16}$  Post

46+60 ~~11+11~~ Change of type

45+60 ~~11+11~~ Trail N.  $40^{\circ}$  E.

27+00 Marsh Type

26+40 Continued West from  $\frac{9}{16}$  139-21

140 R. 28

Date: Dec. 21, 1938

Estensen  
Michaelson  
Fourey  
Grevitch

Mixed brush

Look for:

Found:

W. Birch 7" N55E 29K, Re-estab. cor. - a

W. Birch 7" N45W 24K concrete post.

W. Birch 7" S45E 27K - Mixed brush

Aspen 8" S60W 33K

Aspen

Marsh

Magnetic declination  $S 85.5^{\circ} W$

Aspen

Mixed brush

26+40 set App.  $\frac{1}{4}$  corner  $\frac{3}{17}$  139-28

13+20 set App. E.  $\frac{1}{4}$  corner

0+00 started west from  $\frac{8}{17/16}$  139-28

21

Jan 19, 1939

Olsen - ch.

Chupka - Ch.

Look for:

Aspen 9" N15W, 2016s.

" 10" S5E, 3016s.

Found:

No evidence of original corner

Aspen

Aspen poles

Aspen

Aspen Poles

S 83° W  
Random line

at 6.30



54+22 0.55 set 268' N. to J.R. <sup>7/8</sup> 117 139-28  
scribed M.C. with cap

41+10 entered swamp Alder

39+60 set app W 1/4 corner

Continued West from  $\frac{8}{17}$  139-28

Leak for:

Tam. 6" N50E 101K

" 4" N60W 121K

" 7" S 30 E 16 1K

" 5" S 45 W 20 1K

Dist. 5247'

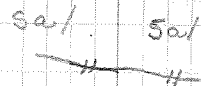
Found:

B.T. - Tam. 7" SE-36'

BT. - Tam. 5" SW-16'

2" I.P. scribed

M.C.



Aspen Poles

83 1/2° W  
Random Line

Hd

26+40 - set app. 1/4 cor.

7  
18 139-25

14+95 Entered ASPEN

12+20 set app. 1/4 cor  
13+10 - 13000

11+46 Entered swampy valley

9+00 Entered aspen

0+00 Start West from

7 8  
18 19 139-28

JAN - 1919 39

23

Olsen Ch.  
Chuyata Ch.

Look for:

Birch 7" NW 151Ks,  
" 6" SW 301Ks

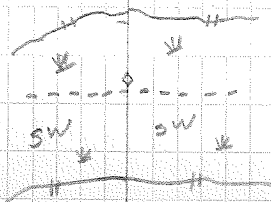
37.10 chains

2448.6 feet to 1/4

Found: No Evidence

of orig. Cor.

ASPEN ASPEN-Seedlings



W W

TAMARACK

TAMARACK



58+30 - CORNER IN LAKE

$\frac{7}{18}$  139-28

44+20 - Entered Hay LAKE

39+60 - Set App. W  $\frac{1}{2}$  cor.

34+55 - Logging Road

27+50 Entered Mixed Brush

Continued West from  $\frac{7}{18}$  139-28

Look for:

Aspen 12" N 32 E, 27 lbs

Tom. 10" S 69 E, 44 lbs

Willow 6" S 35 W, 39 lbs

Tom. 11" N 50 W, 32 lbs.

Found: corner to  
Ba IN LAKE.

HAY LAKE

77.10 chs.

4897.2'

Mixed  
Brush

Mixed  
Brush

46.16.4<sup>9</sup>

Ha

26+40 Set APP  $\frac{1}{4}$  Cor 3" ASP  $\frac{24}{25}$  139-28

13+26 Set APP  $\frac{1}{16}$  Cor 3" ASP

8+57 OLD RR. Grade running N. & Road W.  
8+15 Type change

5+91 Type change

4+62 Type change

0+00 started West from  $\frac{24}{25}$  139-28

NO. 28

JAN. 10, 1939 25  
Stegelyk K  
ESTERSON AVE  
ANDERSON CO.

Look for:

Aspen 8" N 38W 1916

" 6" S 20E 1815

No EVIDENCE  
ORIG. COR.

B.M.

Ogr.

B.M.

Mgr.

X

X

Random Line

Var 6°



52+80 Set APP sec cor 3" Birch  $\frac{23}{24}$   
52+50 B.T. 38' N 6" ~~ASP~~  $\frac{26}{25}$  139-28

49+40 Road to abandoned farm S.W.

39+60 Set APP W $\frac{1}{2}$  cor 8" ASP

37+50 Type change

33+30 Type change

Continued West from  $\frac{24}{25}$  139-28

28

32' 0

Jan. 10, 1939.

Steglevik T  
Estensen AKC  
Anderson ch.

Look for:

W. Pine 20" N68E 66/115

R. Oak 7" N51W 26/115

Aspen 8" S48E 18/115

W. Maple 4" S12W 20/115

Found:

6" Aspen in sec 10

7139 N R 28 W 526

377

Magr

S 80° W  
Abandoned  
line

26+46  
25+72  
25+60

Fence	Evil Ends	Runs N
Type change		

23  
26

139-28

21+00 Type change  
20+30 Fence N  
19+45 Fence N

17+10 Road N into farm fence N

14+60  
13+20  
13+00

Fence N	APPE 1/2	CDR 3" Birch
Type change		

12+45 Fence N & W along Road

9+00 Type change  
8+60 Road S. to abandoned farm

6+00 Type change

3+44 Type change

0+40  
0+00

Type change		
Started	West from	

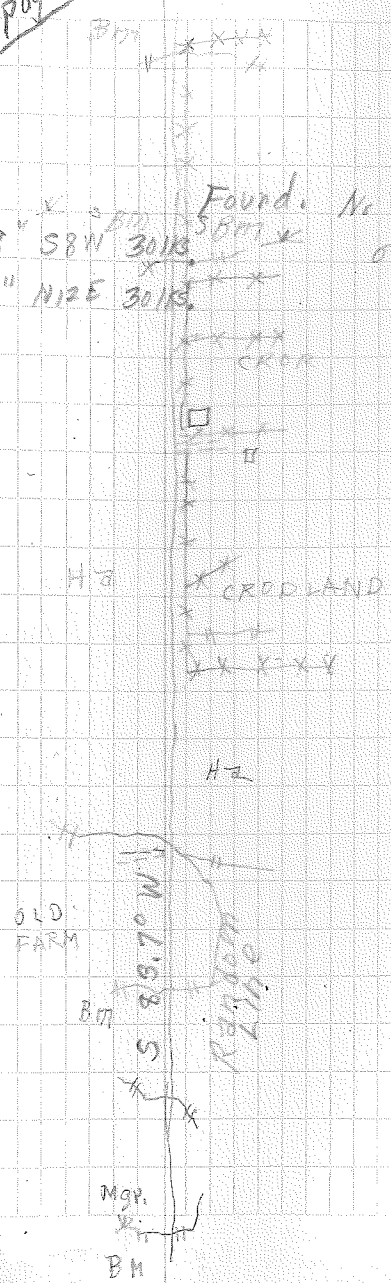
23 24  
26 25

139-28

Notice  
Pages stock  
field - continue  
line on page 30  
in this

look for:  
Aspen 8" S8W 3013  
" 10" N12E 3013

Found. No EVID of  
ORIG. COR



at 6.30



26+40 Set APP. 1/2 cor

~~22/28~~ 22  
~~26/27~~ 27  
Void Jan 16, 1939  
H.M.S

17468 Fence N

14920 Telephone LINE  
13486 Road INTERSECT  
13420 Set APP E 1/2 cor 3" Birch

10493 Fence N

1450 Road Hits sec Line RUNNING W.

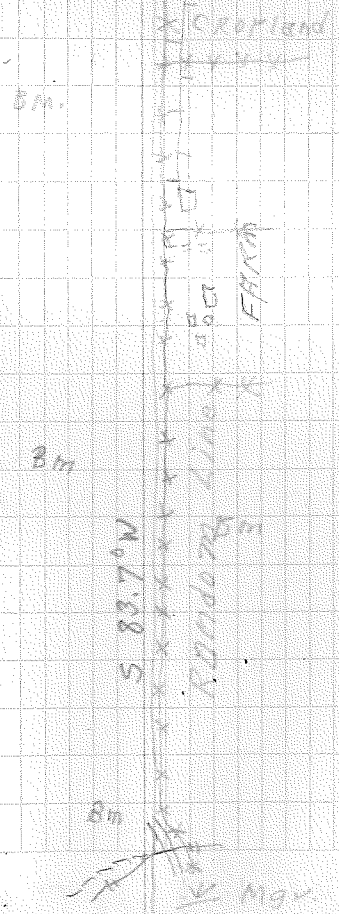
0496 TYPE change of Road S  
Continued West from ~~22/23~~ 139-28  
5/26

JAN. 10, 1939 28

Stegelvik T  
Anderson Ch.  
ESTENSON AVE

Look for:  
W. Pipe, 8" N32W, 139/134  
" 7" S70W, 180/175

Found No EVIDENCE  
of DRUG COR.



6.3°

52+80 Found No EVID. 21/22  
OF ORIGIN CO. 28/27 139-28  
Set APP.

48420 Type change

39460 set APP W/6 COR J' Birch

26+95 FENCE ENDS Started West from 22/23 21/22 28/27 139-28  
26+40

Look for: Bm Dsr  
in Found.  
W. Birch 7° S20W 101K. No evidence  
Y. Pine 9° N15E 391K.

Bm Bm

S 83.7° W 1 F  
Random line

Bm

Vol. 6.30



52+84 Found 2" I.P. with cap

~~11/22/25~~  
~~20/27/26~~ 139-28  
 Vol. JAN. 10, 1939  
 H.M.S.

48+70 Road Curves N.

47+30 Hit Hay Field

46+00 Fence N

45+60 Road To farm

45+10 Fence N

44+60 Type change

43+60 Type change

41+90 Fence N &amp; W

39+60 set APP W  $\frac{1}{2}$  COR. 3" Birch

35+10 Type change

35+00 Wood Road SE

34+60 Wood Road

32+95 Type change

32+60 Wood Road S.

Continued West from  $\frac{28}{79}$  139-28

Hay Field

Look for:

B. Oak 6" N31E 40/115

" 12" N52W 37/115

Aspen 20" S12E 16/115

" 8" S45W 10/115

Mse

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

Found: 2" I.P. with cap  
 Scribed 22/23  
 24/27

H6  
 H2  
 S 83.5° W 1/2  
 Random  
 Line

Vol 6.3

26+48 Fence MSE  
26+45 Set App to COR 2 ASP.  
26+31 Creeks.  
21  
28 139-28

22+27 Road SE 50 ft bet 10's to Keegan road  
22+25

13+20 Fence S. Set App to COR 2 ASP  
12+27 Type

0+00 Started East from 20/21  
29/28 139-28

Stogelvik X  
Anderson of  
ESTABLISH APP

Look for:  
W. Birch 8" N 63E 50' 1/2"  
Aspen 10" S 30W 9' 1/2"  
Scattered P.S. poles  
Scattered P.S. poles  
No EVID. of ORIG. COR.

Hand Bm Bm  
Scattered P.S. poles

51237147  
Random line

Bm

W. KEVLAND

6.30



53+05 Hit Temporary  
HPICOR21/22  
22/27 139-2639+00 Set APP to cut 2' High  
39+40 Fence N Type change Fence East side  
38+20 Road to tarro

36+98 Fence N

34+56 Fence N

29+15 Road N to field  
27+11 Type change

26+48 continued west 21/27 139N23W

32

Look for:

P. Oak 6" N31E 40 KG

B. Oak 12" N52W 37 KG

Aspen 20" S12E 16 KG

" 8" S45W 10 KG

Bm

Bm

No Evidence  
of ORG. COE

Bm

P. Oak  
Crown  
Lohd

Bm

S. 83.70W

Bm

Bm

Crown  
LAND

Bm

Var. 6.3"

26+40 Set APP. 1/4 Cor 3" ASP. 25  
26+28 Fence N. Y. Road to Farm 29 139-28

21+70 Road SW  
21+20 Fence N. Type change.

18+00 Type change

16+00 Type change

13+70 Fence N.  
13+20 Set APP. with Cor 3" Bl. rod

12+37 Road to Farm

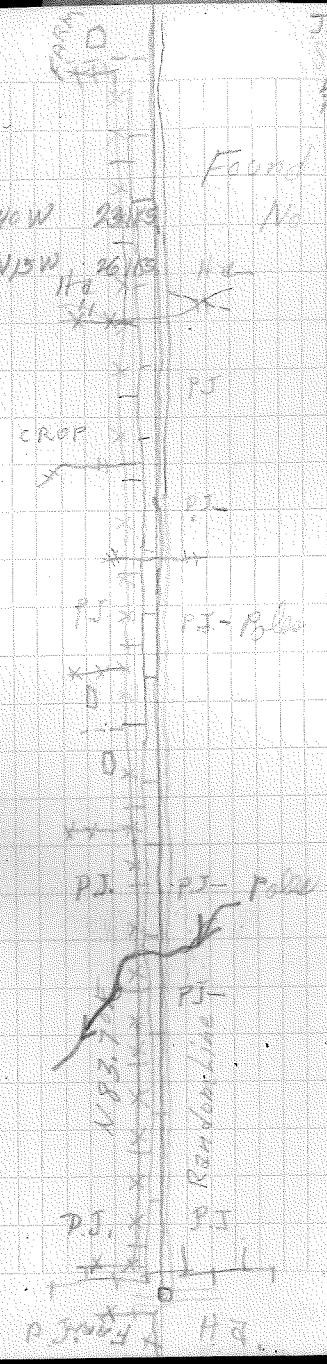
10+60 Fence N. Farm

7+85 Creek.

0+00 Started East from 17/20 139-28  
30/29

JAN. 11, 1939 33  
Mogelvik to  
ESTENSON AXE  
ANDERSON Ch.

Look for: Found:  
Aspen 6" S40W 23179 No evidence of  
W. Birch 4" N15W 26109 ORIG. COR.





52+63 Road N

20	21
29	28

139-28

51+74 ENTRANCE to School house

50+00 Fence N4E

49+10 Road S. To farm

48+15 Road to Farm

47+10 Fence E

46+48 Fence N

41+46 TRAIL SW

39+60 20' APP E 1/4 COR 3" ASP.

31+04 Fence ends runs N.

Continued East from

20	20
----	----

139-28

Look for:

Y. Pine 20" N45 E 30' 1/3

W. Birch 5" S24 E 25' 1/3

V. Pine 5" S68 W 17' 1/3

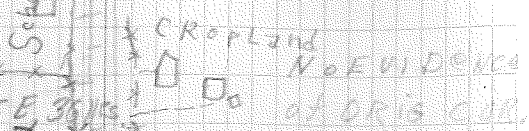
W. Pine 7" N21 W 20' 1/3

H2 H2

N. 83.21 E

H2 H2

□



~~24780~~ FENCE 1 1/2" dia. 1 1/2' tall

12+65 FENCE N. & S. OFF SET SOUTH 56'  
To E 1/16 corner, continued West  
along fence line

3+00 Open field

3+00 Fence North of line

1+00 House approx. 50' of line

0+00 started West from P.R. SEC. COR.  $\frac{19}{30}$

Jan. 13, 1939 35

Needs  
Burglar  
last  
& reulior

~~24780~~

~~24780~~

~~24780~~

Found:

1/2" Brass pipe

6" post squared  
on 4 sides

Jack pine

aspens

5000' W of  
Random line

Jack pine



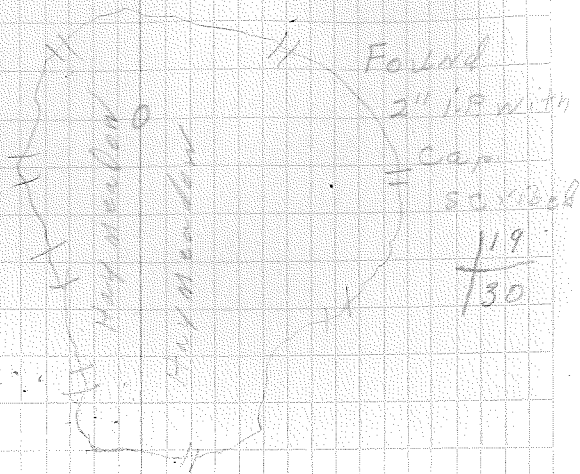
49430 Found 2" I.P. 1 1/2' tall

42421 Entered Hay meadow

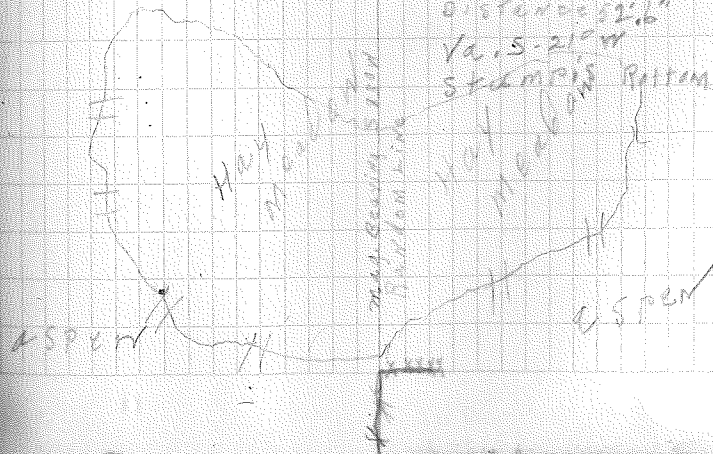
39413 Found west 1/4 corner

32430 Entered aspen

27448 Falco North.



Found  
 3 1/2" I.P. 3' tall  
 12' pine stump  
 scribed 1/5-30 P.E.  
 distance 22.6"  
 Va. S. 21" W  
 STAMPS RATTIN



26+70 Found 2" i.p. 3' tall <sup>36</sup> 139-28  
25+61 Left M.C.T. ~~40~~ 1/4 N OF Line

22+34 center of Macat.

15+13 Left M.G.S.

12+45 center of old RR grade  
~~11+45 center of old RR grade~~

9+22 edge of M.G.S.  
~~8+22 edge of M.G.S.~~

0+00 started West from <sup>36</sup> 139-28

Lost for: M.C.T. M.G.S. Found  
W. Birch 6" N 9W 3' tall 16' N.P.  
" 6" S 18W 3' tall. scribed 1/4-S-36  
Distance 34'  
Va. N 47 1/2 E  
The i.p. scribed  
on one side 1/4-S.  
The other 1/4  
B.M.

M.C.T. ~~11+45~~ M.G.S.

S 83.7° W 2' 0" L.S.  
B.M.

Jan. 5, 1938  
Woods T  
Oison ch.  
Herbert ch.  
Schwartz axe

Var. 6.3°



53+50 ~~From~~ OFF SET 87' <sup>35/36</sup> 137-28  
52+00 Left pond

49+30 edge of pond

44+90 LEFT M.R.E.

44+37 entered m.r.e.

26+70 Continued West from <sup>36</sup> 137-28

To 2' i.p. with cap. @

Jan 5 1939  
Woods X  
Olson Ch  
Herbert Ch  
Stewart eye

Look for: Found:

The point for  
sec. cor. is in  
pond. Therefore  
cor. was established

2" i.p. ~~35/36~~ <sup>35/36</sup>  
Offset 87' No.  
to i.p.

145 lvs. West or  
about 90.6 feet W. M.R.E.  
B.T. : M.R.E.

Y. Pine 16", N63W 64' X 5'  
No other tree  
convenient

5 29.7° W. in  
Random Line

0

26+97 Found 2" Iron Pipe <sup>35</sup> 139-26  
5 FT South of line

13+20 Set Apple Type bridge

14+25 type change

8+65 type change

7+00 Type change

2+00 Type change

~~0+70~~ Started West witness <sup>35</sup>/<sub>36</sub> 139-28  
05 pp. 35

Jan. 5 1939

BM

Look for:

Aspen 6" NYSE 71K  
W. Birch 5" SSW 21Ks.

Found:

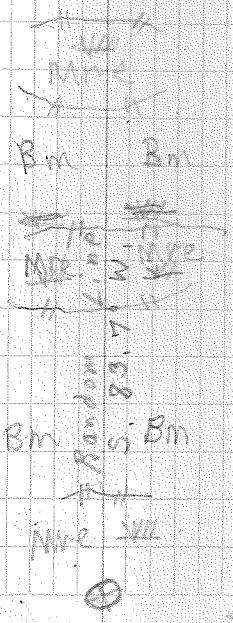
2" Iron Pipe  
5' S. of line

Woods. N  
0.150N ch.  
Herberton.  
Somerville

Bm

B.M.

BM



52+30 Found 2" IRON PIPE <sup>37/35</sup> ~~8/34~~ ~~2/38~~ 139-28  
 No other evidence

39+60 Set Approx w/1/2 cor <sup>35</sup> ~~34~~ 139-28

35+00 quit for day Jan 5, 1939

26+17 Continued West from <sup>35</sup> ~~34~~ ~~31~~ 139-28

Look for:

Soft Maple, 5" N57E 26 IKs.

Oak 5" S40W, 39 IKs.

W. Birch 6" S7W, 14 IKs.

Blk Oak, 15" N23W, 5 IKs.

Bm

Found:

2" Iron pipe

Capped ~~34/28~~

No other evidence

Jan 5, 1939

Woods T

Olson-Cr.

Herbert-Cr.

Schwartz-Cr.

Bm

S 83.7° W  
 Barber Line

Bm



$\frac{1}{4}$   $\frac{34}{35}$  139-28

See pages  
49 & 50

13+20

E  $\frac{1}{16}$  corner in LakeQuit for DAC  
Jan. 6, 1939

9+70

Lake

0+00

Started West from

$\frac{34}{35}$   
 $\frac{3}{2}$

139-28

January 6, 1939

X Stegelvik

Olson Ch

Herbert Ch

Look for:

W. Birch 8° N 67° E, 51Ks.

Aspen 6° S 35° E, 21Ks.

Found: Schwartz Base

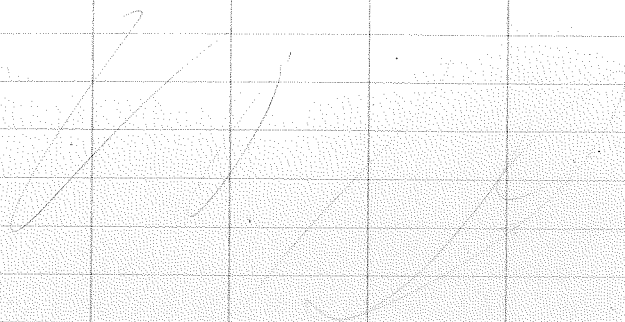
Lake

5 83.7° W  
Borden Line

000  
3

33/34

139-28



Continued West from 34 139-28

42

Look for: Found:

Aspen 12" N33E 531Ks.

" 10" S72E 111Ks.

" 10" S13W 81Ks.

" 11" N50W 101Ks.

S 83.7° W  
Random Line

26 Feb Wed 21/18

1/4 33

139-28

13+20 set App. W 1/16 corner

11+20 entered M.G.S.

0+00

started East from

32/32

139-28

Look for:

Y. Pine - 7" NW, 24 IKs.

W. Pine - 10" SW, 11 IKs.

M.G.S.

Aspen

Var. 6.30

Random Line

Jan 17 1937

1/3

Michelson X-axe

Harland axe

Goulich pickets

1/500

Weggs

CH

Sketch notes

Found:

2" i.P. 1/2 South of F

Line

12" Pine scarred pine

STAMP. scribed

533 ft. Distances 47'

M.G.R. in N 52° E

Aspen



53421 Reached Sect. Cor  
off Sect. 765 to Sect. Cor

33/34

139-28

Jan 17 1939

Same party

Look for:

Aspen, 12" N33E, 53 IKs  
 " 10" S72E, 11 IKs  
 " 10" S13W, 8 IKs  
 " 11" N50W, 10 IKs.

FOUND!

16" White Pine

bearing - 530° E

Distance - 46 ft.

34760 Set app E 1/4 corner

9 am Friday Jan 17, 1939

27700 ← Mixed Brush  
 Continued East from

33

139-28

Mixed brush

Mixed brush

26+01 Found 2" ip

25+08 ASPex

32

139-28

20+16 M.G.Y.

14+75 alder

12+43 M.G.Y.

11+00 alder

9+00 M.G.Y.

5+00 Entered alder

3+00 Entered M.G.Y.

0+00 started East from sec. box

4/32

2/31

Jan 17, 1939 45

Michelson - alder

Hayland - alder

Gynerch - alders

Gynerch - alders

Woods - alders

Look for:

W. Birch 6" N 9E 10 Ks.

Maple 5" SSE 2 Ks

Found

2" ip

M.G.Y.

9" W.B. scribbled

M.G.Y.

1/4 S-S-B.T.

M.G.Y.

Distance 75'

1/2 S 56° W

Alder

M.G.Y.

M.G.Y.

M.G.Y.

M.G.Y.

M.G.Y.

M.G.Y.

M.G.Y.

M.G.Y.

M.G.Y.

M.G.Y.

M.G.Y.

M.G.Y.

M.G.Y.

M.G.Y.

M.G.Y.

M.G.Y.

M.G.Y.

M.G.Y.

52+80

32 | 33

139-28

Jan 17, 1939

46

Same party

Look for:

Aspen 10" N72E, 17 lbs.

Blk. Oak 7" S20E, 19 lbs.

Aspen 7" S63W, 24 lbs.

Aspen 24" N8W, 8 lbs.

NO EVIDENCE

ASPEN

Aspen

Continued East from

32

139-28



25+00 TYPE change  
 24+23.4 S  $\frac{1}{4}$  CORNER Sect. 31 I.P.  
 23+10 TYPE change

19+97 Change of type

16+50 TYPE change

12+00 TYPE change  
 Fence runs North  
 11+29 Offset T'S to avoid fence

6+54 type change  
 5+20 Stream N50°W

1+79 Type change  
 0+00 STARTED FOS FROM APP 300' ~~31~~ 31

Jan 16 1939  
 ASPEN BRUSH Mixed  
 offset 5.4ft N to top  
 Marsh Brus  
 Woods  
 michelson  
 MASON  
 Schwartz  
 Kstrom  
 Broulich

ASPEN OPEN  
 Marsh Grass

Mixed brush

Mixed brush

Jack pine

Jack pine

open  
pasture

Mixed brush

ASPEN

open field

50+16 Offset 11.7' N to sec. cor ~~3132~~

47+20 Wagon trail 35' N

38+00 Type change

33+23 Type change

29+00 Type change

24+23.4 CONTINUED FROM PAGE 47

Jan 12 1939 Y8

Woods X  
MICHOLSON  
MATSON  
SCHWARTZ  
ESTRELL  
GROULICH

Look for:

Fir N. 40° E, 21 IKs

Y. Pine S 60° E, 21 IKs

Y. Pine S 57° W, 19 IKs

Y. Pine N 53° W, 16 IKs

FOUND:

Bearing tree - PINE

stump fire-scarred

8.0' D start from I.P.

Bearing - Ya. N 7 1/2° E

2" I.P. with cap

scrubbed  $\frac{3132}{615}$ 

upland brush

marsh brush

aspens

Marsh brush

N. 83.7° E

M.P. bearing 6.34

Random line

Var. 6.3°

3106



26+40 SET FOR  $\frac{1}{4}$  COR. 3913+20 SET APP.  $\frac{1}{8}$  OF SET 82 FT3+30 SET APP.  $\frac{1}{8}$ 

1100 STARTED EAST FROM 33 39 130 28

Jan. 18 1939 49

Party  
Michaelson  
Plyson  
Jost  
Greulich  
HarlandMixed  
Brush

N 83.5° E

S to Random Line.

Mixed  
Brush

Magnetic Bearing

Random Line



52+52 FOUND SECTION 600

32 31  
3 2

44+00 High water mark of Lake

42+00 Water level of Lake

39+60 set APPR E  $\frac{1}{16}$ ~~36+30~~

35+00 water level of Lake

31+70 High water mark of Lake

29+70 set APPR

25+40 CONTINUED EAST FROM 25+00

Jan. 8 1950 5.0

Same party

FOUND -

See page 40

BRUSH

mixed

Rushes

Lake

Magnetic Bear

Random Line

Rushes

Lake

Mixed

BRUSH

34

T. 140 R. 28

The image shows an open notebook with two blank, grid-lined pages. The pages are white with a light gray grid pattern. The notebook has rounded corners and a dark cover visible around the edges. The grid consists of small squares, with a slightly larger margin at the top of each page. The pages are completely blank, with no writing or markings.

T. 140 R. 28

~~Wabigoon~~ Trip.

T. 140-28

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36



Look for:

Ash 4" N27E 181Ks

Aspen 12" S43W 381Ks

next page  
copy this

~~7 cks 991Ks edge of lake~~

~~9 cks sp. strip~~

~~11 cks aspen strip~~

~~25 cks. Set App. Sec. cor.~~

page 16 FROM 32+30

To 52+70 apply to above

distance in chains.

1  
26+00 Set Appri 1/4 corner. \$360 140-28

23+40 Left S.H.M. entered ~~S Balsum Swp.~~ Aspen  
Jan 26 1939  
M. R. W.

18+50 crossed stream NW-SE.

12+16 Left Balsum Swamp.

10+92 entered Balsum

0+00 started North Field sec 401 24 140-R-28.

Jan 26 1939

Woods. Ketas

Estrem Ch.

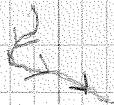
Harland Ch.

Aspen

Aspen

HHH

No Evidence  
of 1/4 corner.



S.H.M.

S.H.M.

Balsum  
Swamp

11350

Random wire

Mag. Bearing N 63° 50' W

S.H.M.

S.H.M.

54700 entered tam, swp.  
found I.P.

49480 center of old R.R. grade  
48470 crossed fence entered Alder

38486 center of old Road passable by  
car in summertime

35465 entered Jack pine

29400 entered swp. Alder

27432 entered Spruce center swp.

25

36

140

139-28

Jan 26 1939

Woods Notes

Estrem ch.

Hayland ch.

Look for:

Tam. 6" N17E 221Ks

J. Pine 6" S27E 221Ks ~~221Ks~~

Tam 5" S79W 81Ks

J. Pine 6" N23W 221Ks.

FOUND.

1 1/2" I.P. 3" sq. Stake

12" Tam. App. 70' tall

Distance 25' Var. S 35° E

Nail in bottom of tree

12" Tam. App. 60' tall

N 70° E Distance 18.6'

it is impossible to

read scribbles on trees

Jack  
pine

RANDOM LINE

Mag. Bearing N 60.35° W



<sup>3</sup>  
2 6140 1/4 corner in lake.

21400 edge of Lake

18456 entered Sp. swp.

12440 entered Mixed BRUSH

11428 entered Alder SWP.

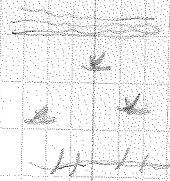
5465 Left fam. SWP.

0400 started North from sec. cor <sup>25</sup>/<sub>36</sub> T140R28

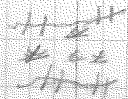
Jan 26 1939  
Woods Hole  
Estym City  
Harland City

Look for:  
1/4 cor. in pond  
Lake

Lake



Mixed BRUSH



N 6.75° W

Mixed BRUSH



Mag. bearing

○

53+41 FOUND 4" ASPEN Squared 3' tall  
6.7' West OF LINE.

34+89 off set 16' East to 2" i.p. Laying on ground  
34+63 entered ASPEN.  
33+50 ~~found~~ ASPEN FOUND 4" Sq. Stake  
32+90 entered spr. SW pr.

Jan. 26 1939  
Woods Notes  
Estym ch.  
Hayland ch.

Look for:

W. Birch 8" N56E 23 IKs  
BIX. OAK 7" S35E 22 IKs  
Y. Pine 20" S65W 26 IKs  
Aspen 10" N27W 25 IKs.

ASPEN

Look for: at 33833'

W. C. Aspen 7" N60W 29 IKs  
Twp. 5" N12E 28 IKs

8' East OF LINE.

Random line

lake

Mag. Bearing N 65.5° W

lake

5 26+40 entered jack pine 24/19/40-24  
 set a pp. 1/4 corner, 3" sq. jack pine.

13+82 entered ASPEN  
 13+20 set app. South 1/4 cor.

10+30 entered M.L.T.

0+00 started north from APP. COR. 501 T140-24.

Jan 28 1939

~~Woods~~

Woods notes

Est. M-CH

BUSICK-CH

look for:

Spr. 4" N 86 E 24/1/15

W. Birch 5" N 73 W 15/1/15

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\* \* \*

M.L.T.

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max. cavity above  
 1/4 corner line



$$\begin{array}{r} 13 \ 18 \\ 24 \ 19 \end{array}$$

42790 entered cedar spruce Swamp.  
quit for day Jan 20, 1939.

30400 entered Aspen  
27400 started North from 1/4 corner.

6

Jan 28 1939

Woods Notes  
Esty on Ch.  
Busick Ch.

Look for:

Cedar 10" N32E 61Ks

Tom 10" S48E 131Ks

Cedar 12" S37W 171Ks

Cedar 8" N37W 81Ks

~~11 11~~

MAG. BEARING N. 61° W  
RANDOM LINES

~~11 11~~

jack pine jack pine

T. 140 R. 28

78

T. 140 R. 28

9



T. 140 R. 28

940.

This is a blank ledger page with a grid of 10 columns and 25 rows. The columns are of varying widths, with the first column being the widest and the last column being the narrowest. The grid is used for recording data in a structured format.

This is a blank ledger page with a grid of 10 columns and 25 rows, identical in layout to the left page. The number "940." is handwritten in the top right corner of the page.

T. 140 R. 28

16

2640 Set App. 1/4 corner,

14700 entered ASPEN

7451 entered spruce Swamp.

1726 edge of Lake

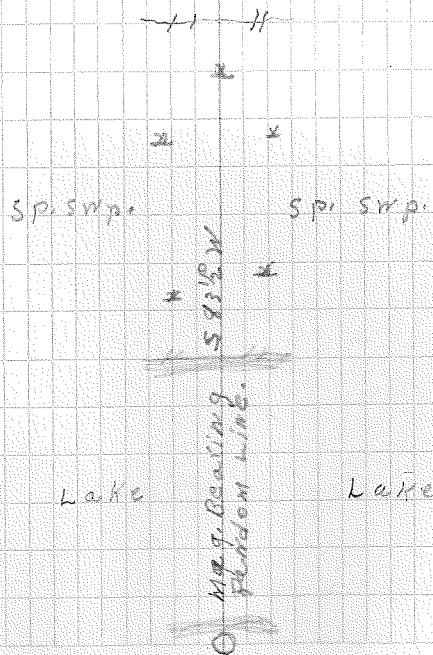
0700 started West from sec. cor.  $\frac{24}{35} \frac{25}{36}$  T140-28

Jan 28, 1939

Woods Notes

EStYan ch.

BUSION ch.





47118 off set 20' north to 2" i.p.

45433 entered Aspen.

34400 entered Mg. r.

32400 entered aspen

30451 center of Road N-S.

29439 entered Mg. r.

27400 continued west from NW corner.

0

H H

Mag. Bearing S 83<sup>1</sup>/<sub>2</sub>° W.  
 H H  
 aspen  
 H H  
 Random Line  
 H H

12  
 JAN 28, 1939  
 Woods Notes  
 ESTHER CH  
 BUSICK CH

26+40 Set Approx. 1/4 mile - 33/34 140-28  
 26+10 Bottom of hill

25+10 Top of hill.

22+00 Slight rise - hill

21+00 Leave Swamp - Enter Jack Pine & Bar.

1

15+00 Enter spr. swamp

13+43 former fence  
 13+27 found 1/6 cor post 18' west of line.

All Highland

7+90 Type change to Jack Pine & HB

8+91 stream

Swamp

0+00 started North from 33/34 140-28

Pal. Swamp

13

Feb. 7, 1939  
 Woods Proving  
 Herland " " "  
 Busch Chain  
 Estrem-Notes

Look for:

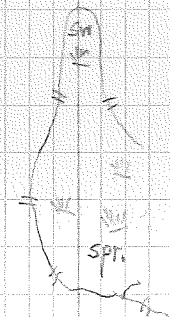
W. Pine 7" N 80W 37.1Ks.

" 10" N 60E 22.1Ks. ...

2640' dist.

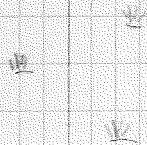
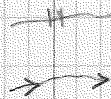
Found

No evidence of 1/4



Found:

1/6 Wood Post - scribed  
 4" pine post



Var. 6.35°

52+80

34+39 Bottom of Hill started lake-wake  
 33+00 top of Hill

30+80 Leave swamp - hit highland Hdw.

26+40 Continued North from 33/34 140-28

14

Feb. 7, 1939

Cor. is in Lake

Harland-Brook  
 Wards-Brook  
 Bushick-Ck  
 Estrem-Notes

Wakarusa

Lake

At 34+45.2 feet  
 Look for M.C. post  
 W. Birch 5" SWN, 18 lbs. Found  
 Elm 12" N 60 E 36 lbs. No evidence



26+27 top of Hill Birch 28 | 27 140-28

26+30 leave Alder swamp

21+40 enter Alder swamp  
leave lake - Wabedo

17+20 Enter lake - Wabedo

7+00 enter Aspen  
leave swamp

5+00 Enter swamp

4+00  
3+00 leave lake - Wabedo

0+00 Continued North from 25 | 27 140-28  
33 | 34

11/11/11  
Feb. 7, 1939  
Harland Crossing  
Woods, Brushing  
Busick Ca.  
Extreme notes  
Found no  
Evidence

Look for:  
Dry Pine 18" S88E, 120 lks.  
No other tree.

11/11/11  
11/11/11

Wabedo lake

11/11/11

Orig. Notes.

AE 422.4 feet left

Lake & look for

M.C. post

Elm 10" N55E 43 lks.

Oak 7" N30 W 40 lks.

Var. G.35°

11/11/11  
11/11/11

11/11/11

11/11/11

Found no  
Evidence

52+80 set app. sec cor,  
on edge of Lake.

21 22  
28 27 140-28

45+52 entered espen  
44+20 entered spruce swamp

39+60 set approx. N<sup>1</sup>/<sub>2</sub> corner.  
39+26 edge of Lake.

36+36 <sup>date for day Feb. 7, 1939</sup>  
center of road Kanning E-W

35+00 enter birch  
34+25 leave lake - Wabedo

28+00

26+00 <sup>Edge of Lake Wabedo</sup>  
Cent. North from <sup>28 27</sup>  
Bottom of Hill 140-28

Lake Lake

16

Feb. 7, 1939

Look for:

Tom. 16" N60E, 48 lks.

Tom. 8" S25E, 43 lks.

Tom. 19" S10W, 22 lks.

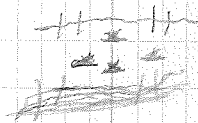
W. Pine 20" N39W, 43 lks.

SHM. Harland Brushing  
Woods Brushing  
Busick ch  
Extrem Notes

Feb. 7, 1939

Woods Notes - ch.

Busick - ch.



lake lake

Ori. Notes -

Left lake at 3564'

Look for: M.C. post

Oak 6" S83W, 55 lks.

Oak 17" N70E, 39 lks.

Ori. Notes.

At 2812.2' intersect

lake Wabedo

Same Lake -

Look for: M.C. post

Cedar 7" N50E, 24 lks.

Elm 4" S48W, 30 lks.

21/22

140-28

Look for:

W. Pine 6" S70W, 31 lbs.

Dry Birch 5" N40E, 2 lbs.

9:00

Started North from

21/22  
25/21

140-28

Vel. 6.35<sup>0</sup>



16	15
21	22

140-28

Look for:

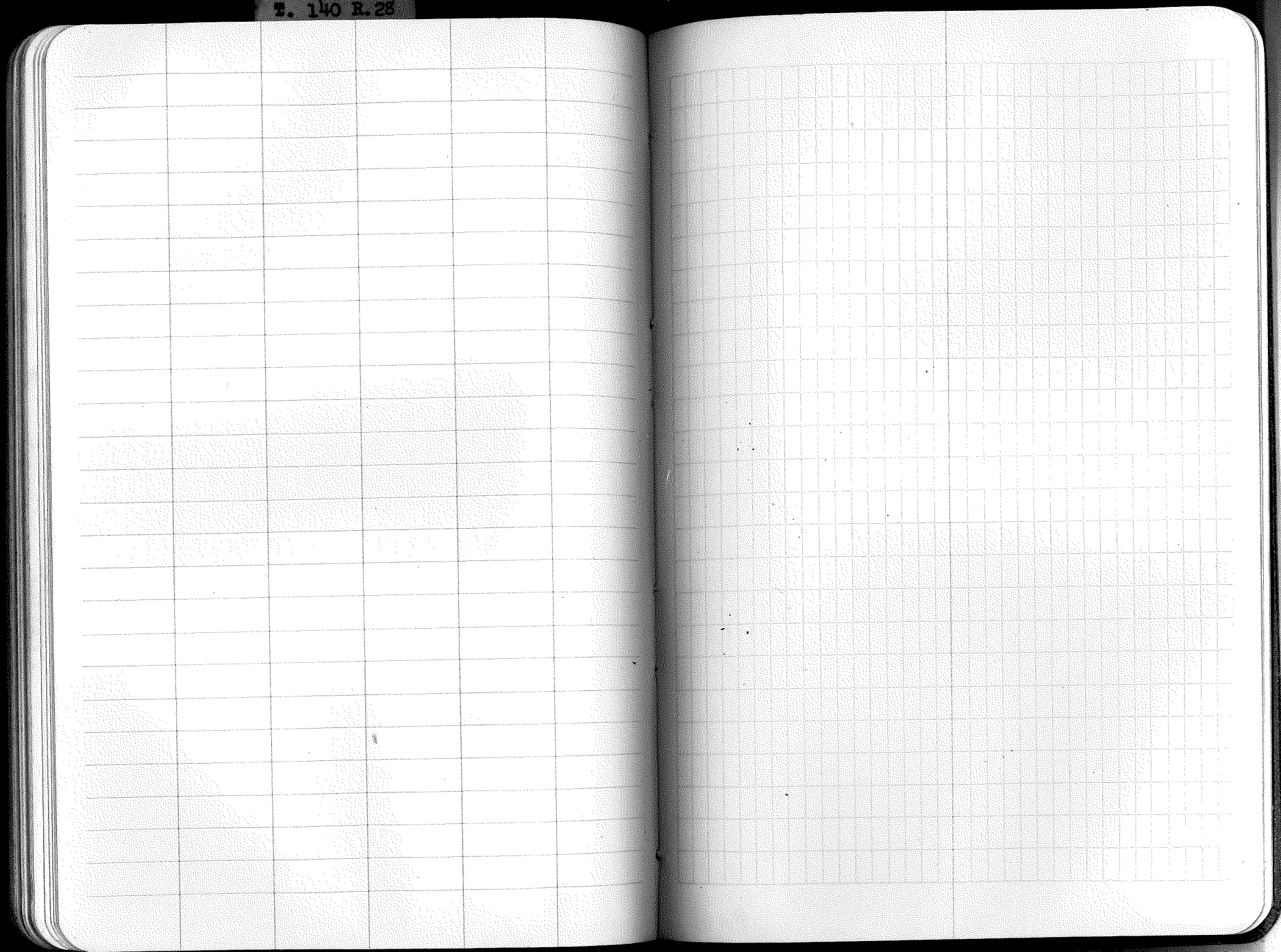
W. Birch 6" S 57 W, 80 lbs.

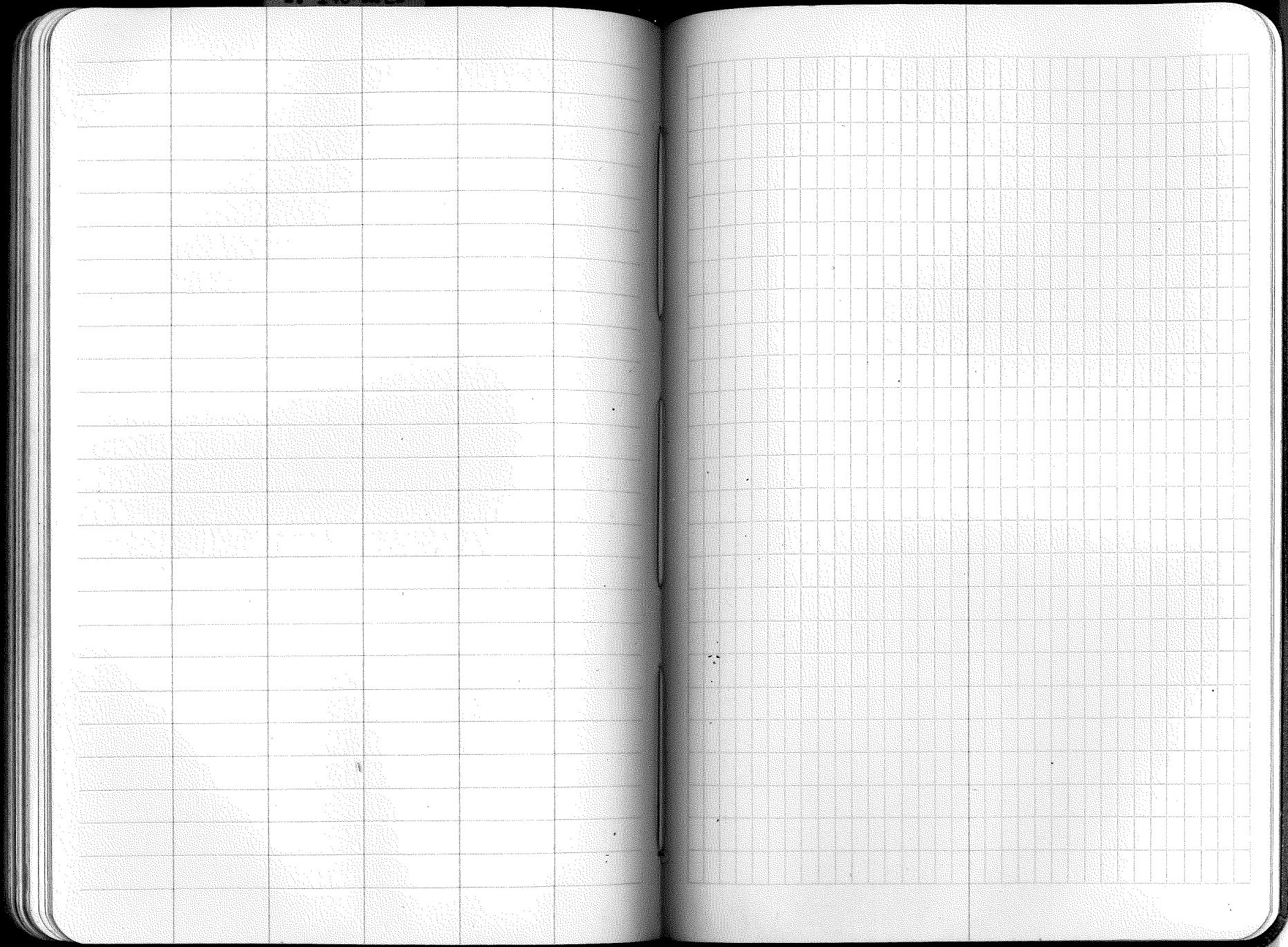
" 7" N 55 E, 40 lbs.

W. Pine 9" N 42 W, 50 lbs.

Maple 4" S 43 E, 30 lbs.

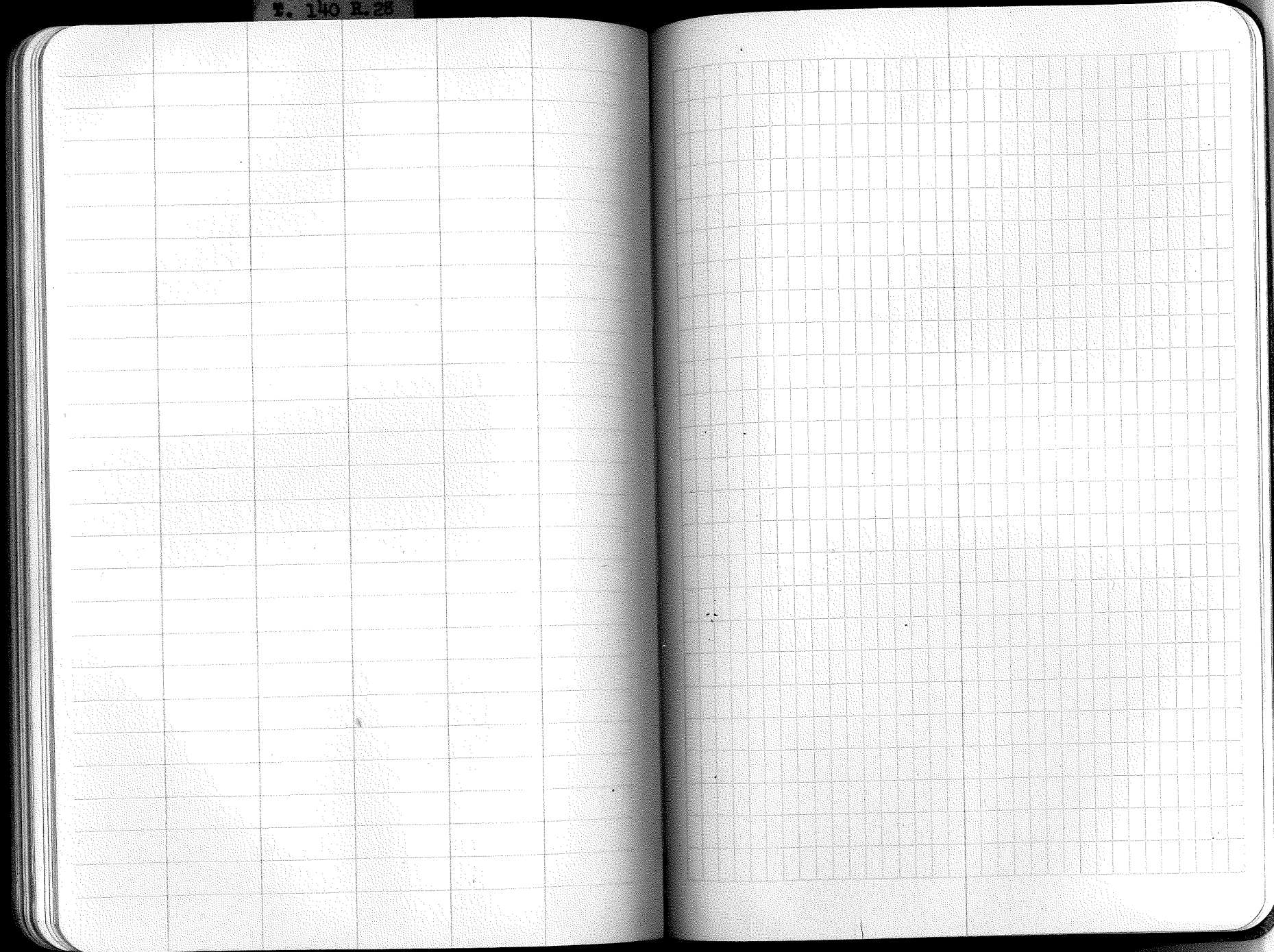
T. 140 R. 28

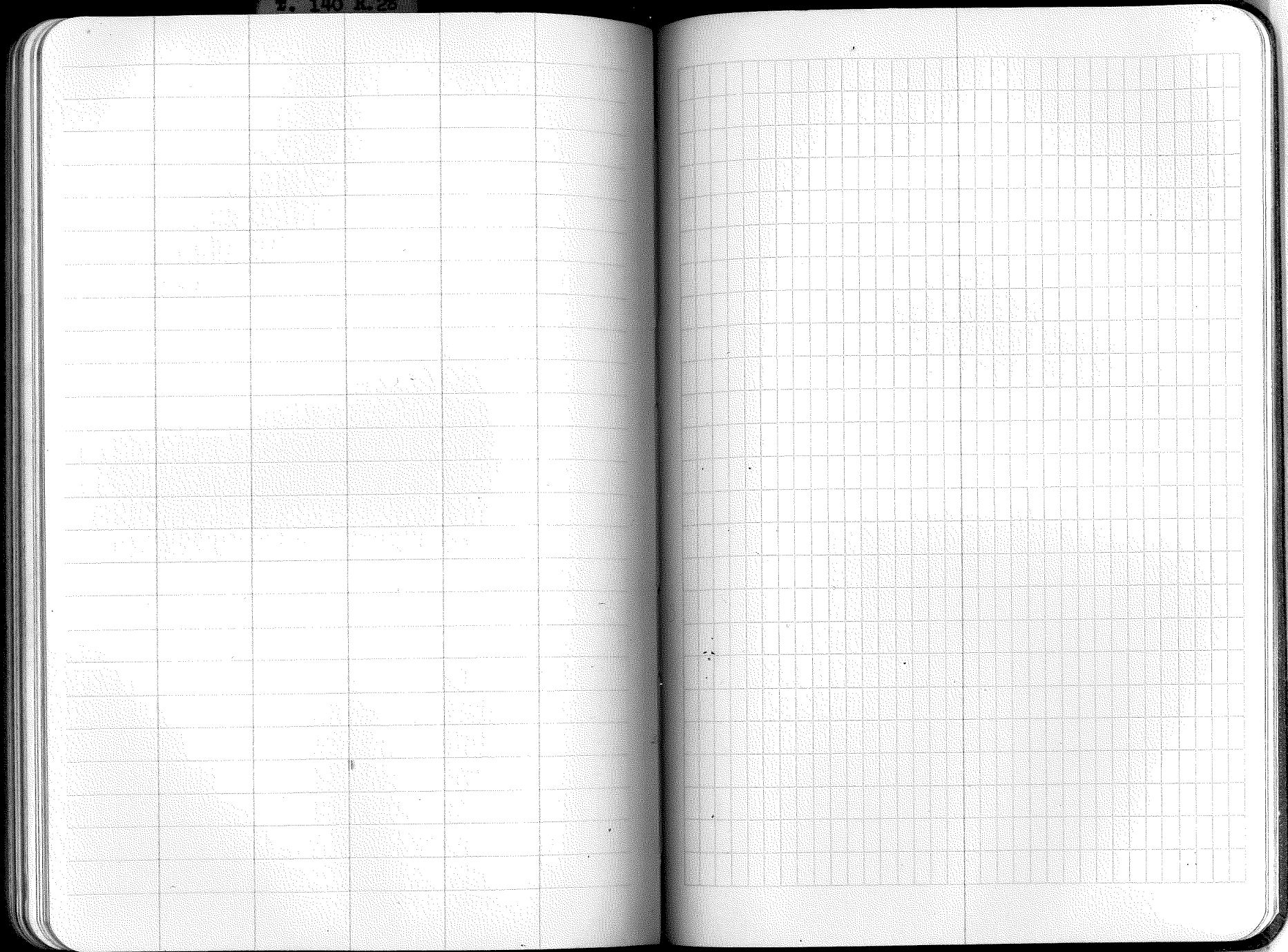




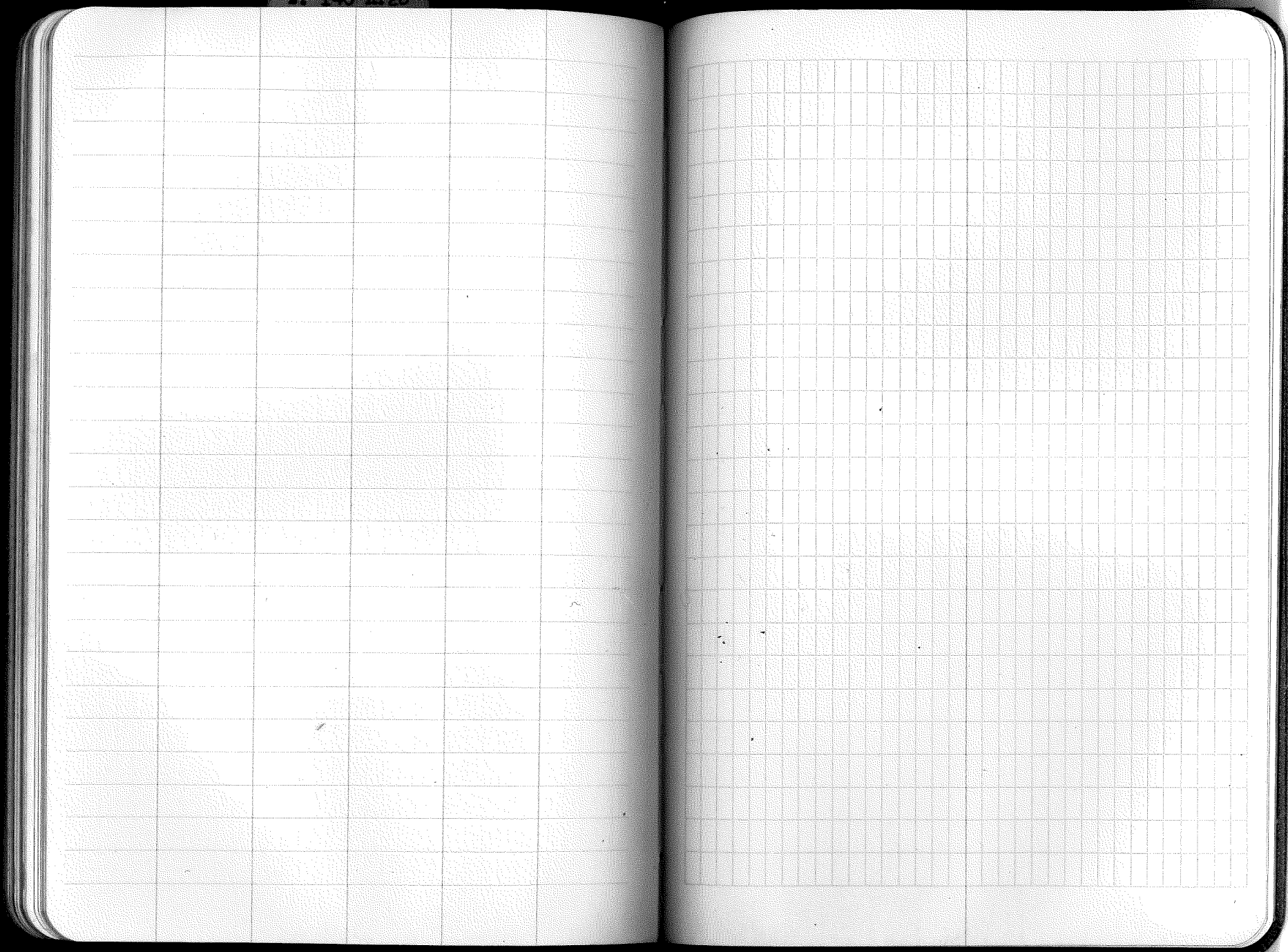


F. 140 B. 28



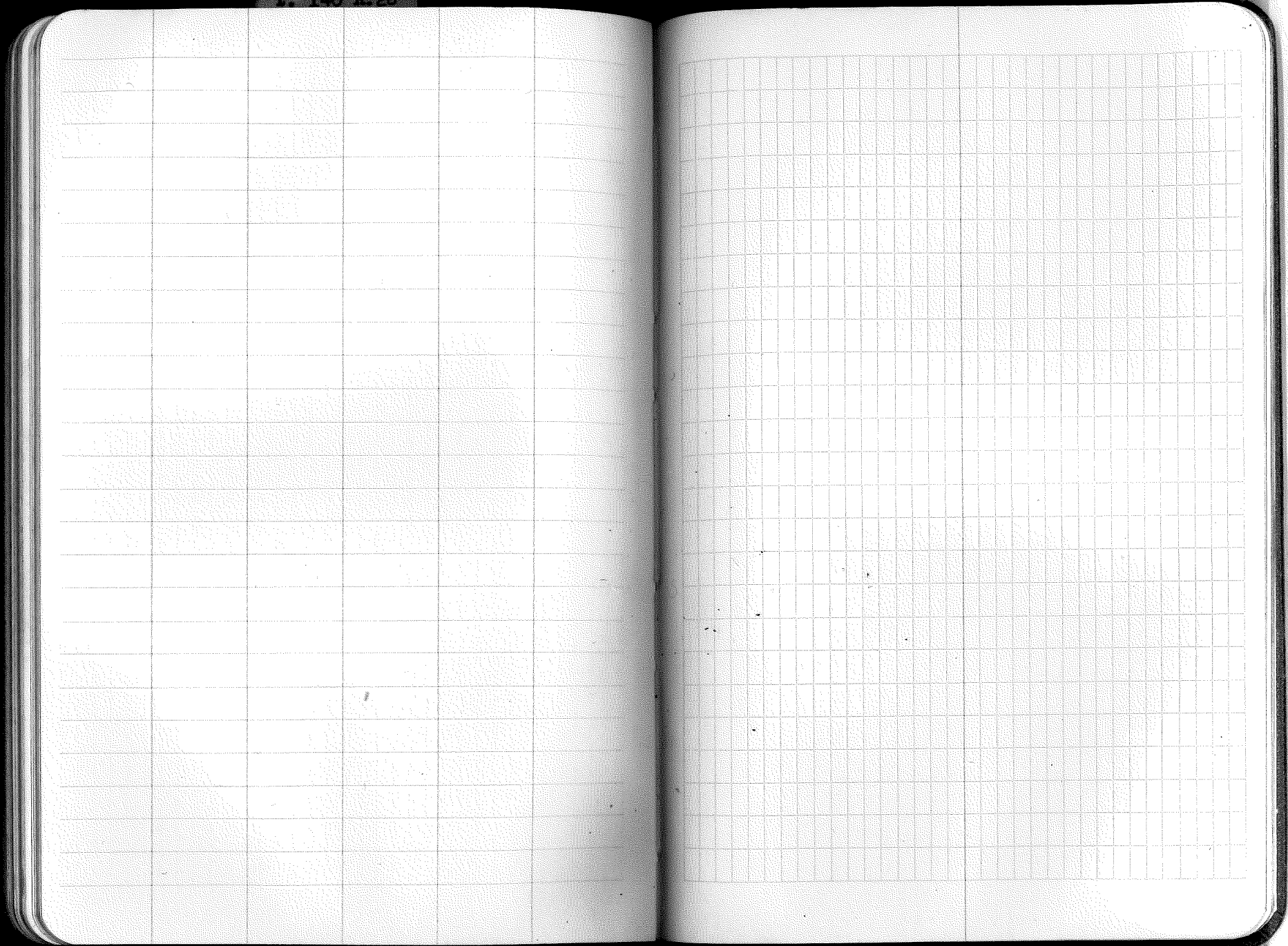


F. 140 R. 28





3. 140 B. 26



F. 140 R. 28

The left page of the notebook features a grid of 20 columns and 25 rows. The grid is composed of thin, light-colored lines on a white background. The columns are of uniform width, and the rows are of uniform height. The grid covers most of the page, leaving a small margin at the top and bottom.

The right page of the notebook features a grid of 20 columns and 25 rows. The grid is composed of thin, light-colored lines on a white background. The columns are of uniform width, and the rows are of uniform height. The grid covers most of the page, leaving a small margin at the top and bottom.

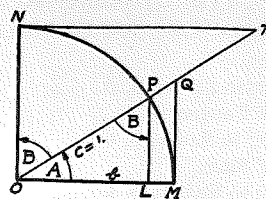


TABLE II

TRIGONOMETRIC FORMULAE

$$\angle A = \angle MOP \quad \angle B = \angle PON = \angle OPL$$

$$R = OB = c = 1$$

$$\sin A = \frac{a}{c} = \frac{a}{1} = a = \cos B = LP$$

$$\cos A = \frac{b}{c} = \frac{b}{1} = b = \sin B = OL$$

$$\tan A = \frac{a}{b} = \frac{MQ}{OM} = \frac{MQ}{1} = MQ = \cot B = MQ$$

$$\cot A = \frac{NT}{ON} = \frac{NT}{1} = NT = \tan B = NT$$

$$\sec A = \frac{OQ}{OM} = \frac{OQ}{1} = OQ = \csc B = OQ$$

$$\csc A = \frac{OT}{ON} = \frac{OT}{1} = OT = \sec B = OT$$

$$\text{vers } A = \frac{LM}{OP} = LM = \text{covers } B \#$$

$$\text{covers } A = \frac{OP - LP}{OP} = OP - LP = \text{vers } B$$

$$\text{exsec } A = PQ = \text{coexsec } B$$

$$\text{coexsec } A = PT = \text{exsec } B$$

$$\sin \frac{1}{2}A = \sqrt{\frac{1 - \cos A}{2}} \quad \cos \frac{1}{2}A = \sqrt{\frac{1 + \cos A}{2}}$$

$$\sin 2A = 2 \sin A \cos A \quad \cos 2A = \cos^2 A - \sin^2 A$$

$$\text{Law of Sines} \quad \frac{\sin A}{a} = \frac{\sin B}{B} = \frac{\sin C}{C}$$

$$\text{Law of Cosines} \quad c^2 = a^2 + b^2 - 2ab \cos C$$

$$\text{Law of Tangents} \quad \frac{a+b}{a-b} = \frac{\tan \frac{1}{2}(A+B)}{\tan \frac{1}{2}(A-B)}$$



TABLE II—Continued  
TRIGONOMETRIC FORMULAE (continued)

In any triangle:

Given a, b, C; to find c, B, A.

Use Law of Tangents.

Given A, B, c; to find a, b, C.

Use Law of Sines.

Given a, b, c; to find A, B, C.

$$\text{Let } \frac{a+b+c}{2} = s, \sqrt{\frac{(s-a)(s-b)(s-c)}{s}} = r$$

$$\cos \frac{1}{2}A = \sqrt{\frac{s(s-a)}{bc}}$$

$$\tan \frac{1}{2}A = \frac{r}{s-a}$$

$$\tan \frac{1}{2}B = \frac{r}{s-b}$$

$$\tan \frac{1}{2}C = \frac{r}{s-c}$$

Area of a triangle:

$$\text{Area} = \frac{1}{2} ab \sin C$$

$$\text{Area} = \sqrt{s(s-a)(s-b)(s-c)}$$

PRISMOIDAL FORMULA

$$\text{Vol.} = \frac{h}{6}(B+b+4M)$$

h = altitude; b B = bases; M = midsection

TABLE III  
MINUTES IN DECIMALS OF A DEGREE

1'	.0167	11'	.1833	21'	.3500	31'	.5167	41'	.6833	51'	.8500
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8667
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

TABLE IV  
INCHES IN DECIMALS OF A FOOT

$\frac{1}{16}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729
1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

TABLE V.—RADII, ORDINATES AND DEFLECTIONS

Deg.	Radius	Mid. Ord.	Tan. Offset	Def. for 1 Foot	Deg.	Radius	Mid. Ord.	Tan. Offset	Def. for 1 Foot
0° 10'	34377.5	.036	.145	0.05'	7°	819.02	1.528	6.105	2.10'
20	17188.8	.073	.291	0.10	20'	781.84	1.600	6.395	2.20
30	11459.2	.109	.436	0.15	30	764.49	1.637	6.540	2.25
40	8594.42	.145	.582	0.20	40	747.89	1.673	6.685	2.30
50	6875.55	.182	.727	0.25	8	716.78	1.746	6.976	2.40
1	5729.65	.218	.873	0.30	20	688.16	1.819	7.266	2.50
10'	4911.15	.255	1.018	0.35	30	674.69	1.855	7.411	2.55
20	4297.28	.291	1.164	0.40	40	661.74	1.892	7.556	2.60
30	3819.83	.327	1.309	0.45	9	637.28	1.965	7.846	2.70
40	3437.87	.364	1.454	0.50	20	614.56	2.037	8.136	2.80
50	3125.36	.400	1.600	0.55	30	603.80	2.074	8.281	2.85
2	2864.93	.436	1.745	0.60	40	593.42	2.110	8.426	2.90
10	2644.58	.473	1.891	0.65	10	573.69	2.183	8.716	3.00
20	2455.70	.509	2.036	0.70	30	546.44	2.292	9.150	3.15
30	2292.01	.545	2.181	0.75	40	521.67	2.402	9.585	3.30
40	2148.79	.582	2.327	0.80	30	499.06	2.511	10.02	3.45
50	2022.41	.618	2.472	0.85	12	478.34	2.620	10.45	3.60
3	1910.08	.655	2.618	0.90	30	459.28	2.730	10.89	3.75
10	1809.57	.691	2.763	0.95	13	441.68	2.839	11.32	3.90
20	1719.12	.727	2.908	1.00	30	425.40	2.949	11.75	4.05
30	1637.28	.764	3.054	1.05	14	410.28	3.058	12.18	4.20
40	1562.88	.800	3.199	1.10	30	396.20	3.168	12.62	4.35
50	1494.95	.836	3.345	1.15	15	383.07	3.277	13.05	4.50
4	1432.69	.873	3.490	1.20	30	370.78	3.387	13.49	4.65
10	1375.40	.909	3.635	1.25	16	359.27	3.496	13.92	4.80
20	1322.53	.945	3.718	1.30	30	348.45	3.606	14.35	4.95
30	1273.57	.982	3.926	1.35	17	338.27	3.716	14.78	5.10
40	1228.11	1.018	4.071	1.40	18	319.62	3.935	15.64	5.40
50	1185.78	1.055	4.217	1.45	19	302.94	4.155	16.51	5.70
5	1146.28	1.091	4.362	1.50	20	287.94	4.374	17.37	6.00
10	1109.33	1.127	4.507	1.55	21	274.37	4.594	18.22	6.30
20	1074.68	1.164	4.653	1.60	22	262.04	4.814	19.08	6.60
30	1042.14	1.200	4.798	1.65	23	250.79	5.035	19.94	6.90
40	1011.51	1.237	4.943	1.70	24	240.49	5.255	20.79	7.20
50	982.64	1.273	5.088	1.75	25	231.01	5.476	21.64	7.50
6	955.37	1.309	5.234	1.80	26	222.27	5.697	22.50	7.80
10	929.57	1.346	5.379	1.85	27	214.18	5.918	23.35	8.10
20	905.13	1.382	5.524	1.90	28	206.68	6.139	24.19	8.40
30	881.95	1.418	5.669	1.95	29	199.70	6.360	25.04	8.70
40	859.92	1.455	5.814	2.00	30	193.18	6.583	25.88	9.00

Note. Chord Deflection = 2 times tangent deflection.









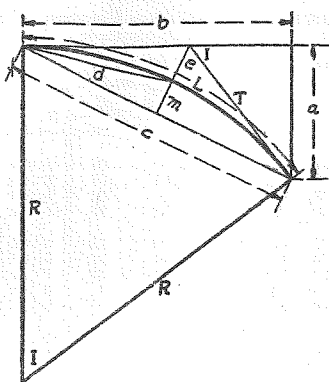


TABLE X  
CURVE FORMULAE FOR SIMPLE CURVES  
COMPILED BY J. CALVIN LOCKE, C.E.

- (1)  $c = \sqrt{2Ra}$  (2)  $c = \sqrt{a^2 + b^2}$   
 (3)  $c = \sqrt{2R(R - \sqrt{(R+b)(R-b)})} = \sqrt{2R(R - \sqrt{R^2 - b^2})}$   
 (4)  $c = 2\sqrt{m(2R - m)}$   
 (5)  $c = 2R \sin \frac{1}{2} I$  (6)  $c = 2T \cos \frac{1}{2} I$   
 (7)  $e = R \operatorname{exsec} \frac{1}{2} I$   
 (8)  $e = R \tan \frac{1}{2} I \tan \frac{1}{4} I$  (9)  $e = T \tan \frac{1}{4} I$   
 (10)  $b = \sqrt{a(2R - a)}$   
 (11)  $b = \sqrt{\left(c + \frac{c^2}{2R}\right)\left(c - \frac{c^2}{2R}\right)} = \sqrt{c^2 - \frac{c^4}{4R^2}}$   
 (12)  $b = R \sin I$  (13)  $b = a \cot \frac{1}{2} I$   
 (14)  $R = \frac{a^2 + b^2}{2a} = \frac{c^2}{2a}$  (15)  $R = \frac{d^2}{2m} = \frac{c^2 + 4m^2}{8m}$   
 (16)  $d = \sqrt{R(2R - \sqrt{(2R+c)(2R-c)})} = \sqrt{R(2R - \sqrt{4R^2 - c^2})}$   
 (17)  $d = \sqrt{2Rm}$  (18)  $d = 2R \sin \frac{1}{4} I$  (19)  $m = \frac{d^2}{2R}$   
 (20)  $m = R = \sqrt{\left(R + \frac{c}{2}\right)\left(R - \frac{c}{2}\right)} = R = \sqrt{R^2 - \frac{c^2}{4}}$   
 (21)  $m = R \operatorname{vers} \frac{1}{2} I$  (22)  $m = R \sin \frac{1}{2} I \tan \frac{1}{4} I$  (23)  $m = \frac{1}{2} c \tan \frac{1}{4} I$   
 (24)  $a = \frac{c^2}{2R}$  (25)  $a = R - \sqrt{(R+b)(R-b)} = R - \sqrt{R^2 - b^2}$   
 (26)  $a = 2R(\sin^2 \frac{1}{2} I)^2$  (27)  $a = R \operatorname{vers} I$  (28)  $a = R \sin I \tan \frac{1}{2} I$   
 (29)  $a = b \tan \frac{1}{2} I$  (30)  $a = T \sin I$  (31)  $T = R \tan \frac{1}{2} I$   
 (32)  $I = \frac{L}{R} \times 57.295780$  (33)  $R = \frac{L}{I} \times 57.295780$   
 (34)  $L = IR \times 0.01745329$  (35)  $L = \frac{8d - c}{3}$   
 (36)  $\text{Area Seg.} = \frac{LR - R^2 \sin I}{2} = \frac{LR - Rb}{2}$

TABLE XI.—CALCULATION OF EARTHWORK

Width	HEIGHT														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.02	.04	.06	.07	.09	.11	.13	.15	.17	.18	.20	.22	.24	.26	.28
2	.04	.07	.11	.15	.18	.22	.26	.30	.33	.37	.41	.44	.48	.52	.56
3	.06	.11	.17	.22	.28	.33	.39	.44	.50	.56	.61	.67	.72	.78	.83
4	.07	.15	.22	.30	.37	.44	.52	.59	.67	.74	.81	.89	.96	1.04	1.11
5	.09	.19	.28	.37	.46	.56	.65	.74	.83	.93	1.02	1.11	1.20	1.30	1.39
6	.11	.22	.33	.44	.56	.67	.78	.89	1.00	1.11	1.22	1.33	1.44	1.55	1.67
7	.13	.26	.39	.52	.65	.78	.91	1.04	1.16	1.30	1.42	1.55	1.68	1.81	1.94
8	.15	.30	.44	.59	.74	.89	1.04	1.19	1.33	1.48	1.63	1.78	1.92	2.08	2.22
9	.17	.33	.50	.67	.83	1.00	1.17	1.33	1.50	1.67	1.83	2.00	2.17	2.33	2.50
10	.18	.37	.56	.74	.93	1.11	1.30	1.48	1.67	1.85	2.04	2.22	2.41	2.59	2.78
11	.20	.41	.61	.82	1.02	1.22	1.43	1.63	1.83	2.04	2.24	2.44	2.65	2.85	3.06
12	.22	.44	.67	.89	1.11	1.33	1.56	1.78	2.00	2.22	2.44	2.67	2.89	3.11	3.33
13	.24	.48	.72	.96	1.20	1.44	1.68	1.92	2.16	2.41	2.65	2.89	3.13	3.37	3.61
14	.26	.52	.78	1.04	1.30	1.55	1.81	2.08	2.33	2.59	2.85	3.11	3.37	3.63	3.89
15	.28	.56	.83	1.11	1.39	1.67	1.94	2.22	2.50	2.78	3.06	3.33	3.61	3.89	4.17
16	.30	.59	.89	1.18	1.48	1.78	2.07	2.37	2.67	2.96	3.26	3.56	3.85	4.15	4.44
17	.31	.63	.94	1.26	1.57	1.89	2.20	2.52	2.83	3.13	3.46	3.78	4.09	4.41	4.72
18	.33	.67	1.00	1.33	1.67	2.00	2.33	2.67	3.00	3.33	3.67	4.00	4.33	4.67	5.00
19	.35	.70	1.06	1.41	1.76	2.11	2.46	2.82	3.17	3.52	3.87	4.22	4.57	4.92	5.28
20	.37	.74	1.11	1.48	1.85	2.22	2.59	2.96	3.33	3.70	4.07	4.44	4.81	5.18	5.56
21	.39	.78	1.17	1.55	1.94	2.33	2.72	3.11	3.50	3.89	4.28	4.67	5.06	5.44	5.83
22	.41	.81	1.22	1.63	2.04	2.44	2.85	3.26	3.67	4.07	4.48	4.89	5.30	5.70	6.11
23	.43	.85	1.28	1.70	2.13	2.56	2.98	3.41	3.83	4.26	4.68	5.11	5.54	5.96	6.39
24	.44	.89	1.33	1.78	2.22	2.67	3.11	3.56	4.00	4.44	4.89	5.33	5.78	6.22	6.67
25	.46	.92	1.39	1.85	2.31	2.78	3.24	3.70	4.17	4.63	5.09	5.56	6.02	6.48	6.94
26	.48	.96	1.44	1.92	2.41	2.89	3.37	3.85	4.33	4.82	5.30	5.78	6.26	6.74	7.24
27	.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
28	.52	1.04	1.55	2.07	2.59	3.11	3.63	4.15	4.67	5.18	5.70	6.22	6.74	7.26	7.78
29	.54	1.07	1.61	2.15	2.68	3.22	3.76	4.30	4.83	5.37	5.91	6.44	6.98	7.52	8.06
30	.56	1.11	1.67	2.22	2.78	3.33	3.89	4.44	5.00	5.55	6.11	6.67	7.22	7.78	8.33
31	.57	1.15	1.72	2.30	2.87	3.44	4.02	4.59	5.17	5.74	6.32	6.89	7.46	8.04	8.61
32	.59	1.18	1.78	2.37	2.96	3.56	4.15	4.74	5.33	5.92	6.52	7.11	7.70	8.30	8.89
33	.61	1.22	1.83	2.44	3.05	3.67	4.28	4.89	5.50	6.11	6.72	7.33	7.94	8.55	9.17
34	.63	1.26	1.89	2.52	3.15	3.78	4.40	5.04	5.67	6.29	6.93	7.56	8.18	8.81	9.44
35	.65	1.30	1.94	2.59	3.24	3.89	4.53	5.18	5.83	6.48	7.13	7.78	8.42	9.08	9.72
36	.67	1.33	2.00	2.67	3.33	4.00	4.66	5.33	6.00	6.67	7.33	8.00	8.67	9.33	10.00
37	.68	1.37	2.06	2.74	3.42	4.11	4.79	5.48	6.17	6.85	7.54	8.22	8.91	9.59	10.28
38	.70	1.41	2.12	2.82	3.52	4.22	4.92	5.63	6.33	7.03	7.74	8.44	9.15	9.85	10.56
39	.72	1.44	2.17	2.89	3.61	4.33	5.05	5.78	6.50	7.22	7.95	8.67	9.39	10.11	10.83
40	.74	1.48	2.22	2.96	3.70	4.44	5.18	5.92	6.67	7.41	8.16	8.89	9.63	10.37	11.11

Table gives cu. yds. in 1 ft. of a triangle of given width and height. Corrections for tenths of width are one tenth the values found under each height considering the widths from 1 to 9 as tenths and similarly the corrections for tenths of height are one tenth the figures opposite width considering the heights from 1 to 9 as tenths. Thus if  $w = 16.2$  and  $h = 5.3$ , cu. yds. =  $1.48 + .028 + .089 = 1.597$  cu. yds. or practically 160 cu. yds. per 100 ft. If  $w$  exceeds 40 ft., use one-half and multiply result by 2, if both  $w$  and  $h$  are large use one-half of each and multiply result by 4. Any cross-section may be divided into triangles by the following rule. To the triangle of the sum of the outside outs (or fills) =  $h$ , and  $\frac{1}{2}$  the roadbed =  $w$ , add the triangles formed by taking the distance out to each break in turn (=  $w$ 's) by the difference between the cuts (or fills) on each side of it (=  $h$ 's) always subtracting the outer from the inner.

TABLE XII. STADIA REDUCTIONS  
VERTICAL HEIGHTS

Minutes	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°
0	0.00	1.74	3.49	5.23	6.96	8.68	10.40	12.10	13.78	15.45	17.10
2	0.06	1.80	3.55	5.28	7.02	8.74	10.45	12.15	13.84	15.51	17.16
4	0.12	1.86	3.60	5.34	7.07	8.80	10.51	12.21	13.89	15.56	17.21
6	0.17	1.92	3.66	5.40	7.13	8.85	10.57	12.26	13.95	15.62	17.26
8	0.23	1.98	3.72	5.46	7.19	8.91	10.62	12.32	14.01	15.67	17.32
10	0.29	2.04	3.78	5.52	7.25	8.97	10.68	12.38	14.06	15.73	17.37
12	0.35	2.09	3.84	5.57	7.30	9.03	10.74	12.43	14.12	15.78	17.43
14	0.41	2.15	3.90	5.63	7.36	9.08	10.79	12.49	14.17	15.84	17.48
16	0.47	2.21	3.95	5.69	7.42	9.14	10.85	12.55	14.23	15.89	17.54
18	0.52	2.27	4.01	5.75	7.48	9.20	10.91	12.60	14.28	15.95	17.59
20	0.58	2.33	4.07	5.80	7.53	9.25	10.96	12.66	14.34	16.00	17.65
22	0.64	2.38	4.13	5.86	7.59	9.31	11.02	12.72	14.40	16.06	17.70
24	0.70	2.44	4.18	5.92	7.65	9.37	11.08	12.77	14.45	16.11	17.76
26	0.76	2.50	4.24	5.98	7.71	9.43	11.13	12.83	14.51	16.17	17.81
28	0.81	2.56	4.30	6.04	7.76	9.48	11.19	12.88	14.56	16.22	17.86
30	0.87	2.62	4.36	6.09	7.82	9.54	11.25	12.94	14.62	16.28	17.92
32	0.93	2.67	4.42	6.15	7.88	9.60	11.30	13.00	14.67	16.33	17.97
34	0.99	2.73	4.48	6.21	7.94	9.65	11.36	13.05	14.73	16.39	18.03
36	1.05	2.79	4.53	6.27	7.99	9.71	11.42	13.11	14.79	16.44	18.08
38	1.11	2.85	4.59	6.33	8.05	9.77	11.47	13.17	14.84	16.50	18.14
40	1.16	2.91	4.65	6.38	8.11	9.83	11.53	13.22	14.90	16.55	18.19
42	1.22	2.97	4.71	6.44	8.17	9.88	11.59	13.28	14.95	16.61	18.24
44	1.28	3.02	4.76	6.50	8.22	9.94	11.64	13.33	15.01	16.66	18.30
46	1.34	3.08	4.82	6.56	8.28	10.00	11.70	13.39	15.06	16.72	18.35
48	1.40	3.14	4.88	6.61	8.34	10.05	11.76	13.45	15.12	16.77	18.41
50	1.45	3.20	4.94	6.67	8.40	10.11	11.81	13.50	15.17	16.83	18.46
52	1.51	3.26	4.99	6.73	8.45	10.17	11.87	13.56	15.23	16.88	18.51
54	1.57	3.31	5.05	6.79	8.51	10.22	11.93	13.61	15.28	16.94	18.57
56	1.63	3.37	5.11	6.84	8.57	10.28	11.98	13.67	15.34	16.99	18.62
58	1.69	3.43	5.17	6.90	8.63	10.34	12.04	13.73	15.40	17.05	18.68
60	1.74	3.49	5.23	6.96	8.68	10.40	12.10	13.78	15.45	17.10	18.73

HORIZONTAL CORRECTIONS

Dist.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°
100	0.0	0.0	0.1	0.3	0.5	0.8	1.1	1.5	1.9	2.5	3.0
200	0.0	0.1	0.2	0.5	1.0	1.5	2.2	3.0	3.9	4.9	6.0
300	0.0	0.1	0.4	0.8	1.5	2.3	3.3	4.5	5.8	7.4	9.1
400	0.0	0.1	0.5	1.1	2.0	3.0	4.4	6.0	7.8	9.8	12.1
500	0.0	0.2	0.6	1.4	2.5	3.8	5.5	7.5	9.7	12.3	15.1
600	0.0	0.2	0.7	1.6	2.9	4.6	6.5	8.9	11.6	14.7	18.1
700	0.0	0.2	0.8	1.9	3.4	5.3	7.6	10.4	13.6	17.2	21.1
800	0.0	0.2	1.0	2.2	3.9	6.1	8.7	11.9	15.5	19.6	24.2
900	0.0	0.3	1.1	2.4	4.4	6.8	9.8	13.4	17.5	22.1	27.2
1000	0.0	0.3	1.2	2.7	4.9	7.6	10.9	14.9	19.4	24.5	30.2

TABLE XII. STADIA REDUCTIONS  
VERTICAL HEIGHTS

Minutes	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°
0	18.73	20.34	21.92	23.47	25.00	26.50	27.96	29.39	30.78	32.14
2	18.78	20.39	21.97	23.52	25.05	26.55	28.01	29.44	30.83	32.18
4	18.84	20.44	22.02	23.58	25.10	26.59	28.06	29.48	30.87	32.23
6	18.89	20.50	22.08	23.63	25.15	26.64	28.10	29.53	30.92	32.27
8	18.95	20.55	22.13	23.68	25.20	26.69	28.15	29.58	30.97	32.32
10	19.00	20.60	22.18	23.73	25.25	26.74	28.20	29.62	31.01	32.36
12	19.05	20.66	22.23	23.78	25.30	26.79	28.25	29.67	31.06	32.41
14	19.11	20.71	22.28	23.83	25.35	26.84	28.30	29.72	31.10	32.45
16	19.16	20.76	22.34	23.88	25.40	26.89	28.34	29.76	31.15	32.49
18	19.21	20.81	22.39	23.93	25.45	26.94	28.39	29.81	31.19	32.54
20	19.27	20.87	22.44	23.99	25.50	26.99	28.44	29.86	31.24	32.58
22	19.32	20.92	22.49	24.04	25.55	27.04	28.49	29.90	31.28	32.63
24	19.38	20.97	22.54	24.09	25.60	27.09	28.54	29.95	31.33	32.67
26	19.43	21.03	22.60	24.14	25.65	27.13	28.58	30.00	31.38	32.72
28	19.48	21.08	22.65	24.19	25.70	27.18	28.63	30.04	31.42	32.76
30	19.54	21.13	22.70	24.24	25.75	27.23	28.68	30.09	31.47	32.80
32	19.59	21.18	22.75	24.29	25.80	27.28	28.73	30.14	31.51	32.85
34	19.64	21.24	22.80	24.34	25.85	27.33	28.77	30.19	31.56	32.89
36	19.70	21.29	22.85	24.39	25.90	27.38	28.82	30.23	31.60	32.93
38	19.75	21.34	22.91	24.44	25.95	27.43	28.87	30.28	31.65	32.98
40	19.80	21.39	22.96	24.49	26.00	27.48	28.92	30.32	31.69	33.02
42	19.86	21.45	23.01	24.55	26.05	27.52	28.96	30.37	31.74	33.07
44	19.91	21.50	23.06	24.60	26.10	27.57	29.01	30.41	31.78	33.11
46	19.96	21.55	23.11	24.65	26.15	27.62	29.06	30.46	31.83	33.15
48	20.02	21.60	23.16	24.70	26.20	27.67	29.11	30.51	31.87	33.20
50	20.07	21.66	23.22	24.75	26.25	27.72	29.15	30.55	31.92	33.24
52	20.12	21.71	23.27	24.80	26.30	27.77	29.20	30.60	31.96	33.28
54	20.18	21.76	23.32	24.85	26.35	27.81	29.25	30.65	32.01	33.33
56	20.23	21.81	23.37	24.90	26.40	27.86	29.30	30.69	32.05	33.37
58	20.28	21.87	23.42	24.95	26.45	27.91	29.34	30.74	32.09	33.41
60	20.34	21.92	23.47	25.00	26.50	27.96	29.39	30.78	32.14	33.46

HORIZONTAL CORRECTIONS

District	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°
100	3.6	4.3	5.1	5.9	6.7	7.6	8.5	9.5	10.6	11.7
200	7.3	8.6	10.1	11.7	13.4	15.2	17.1	19.1	21.2	23.4
300	10.9	13.0	15.2	17.6	20.1	22.8	25.6	28.6	31.8	35.1
400	14.6	17.3	20.2	23.4	26.8	30.4	34.2	38.2	42.4	46.8
500	18.2	21.6	25.3	29.3	33.5	38.0	42.7	47.7	53.0	58.5
600	21.8	25.9	30.4	35.1	40.2	45.6	51.3	57.3	63.6	70.2
700	25.5	30.2	35.4	41.0	46.9	53.2	59.8	66.8	74.2	81.9
800	29.1	34.6	40.5	46.8	53.6	60.8	68.4	76.4	84.8	93.6
900	32.8	38.9	45.5	52.7	60.3	68.4	76.9	85.9	95.4	105.3
1000	36.4	43.2	50.6	58.5	67.0	76.0	85.5	95.5	106.0	117.0



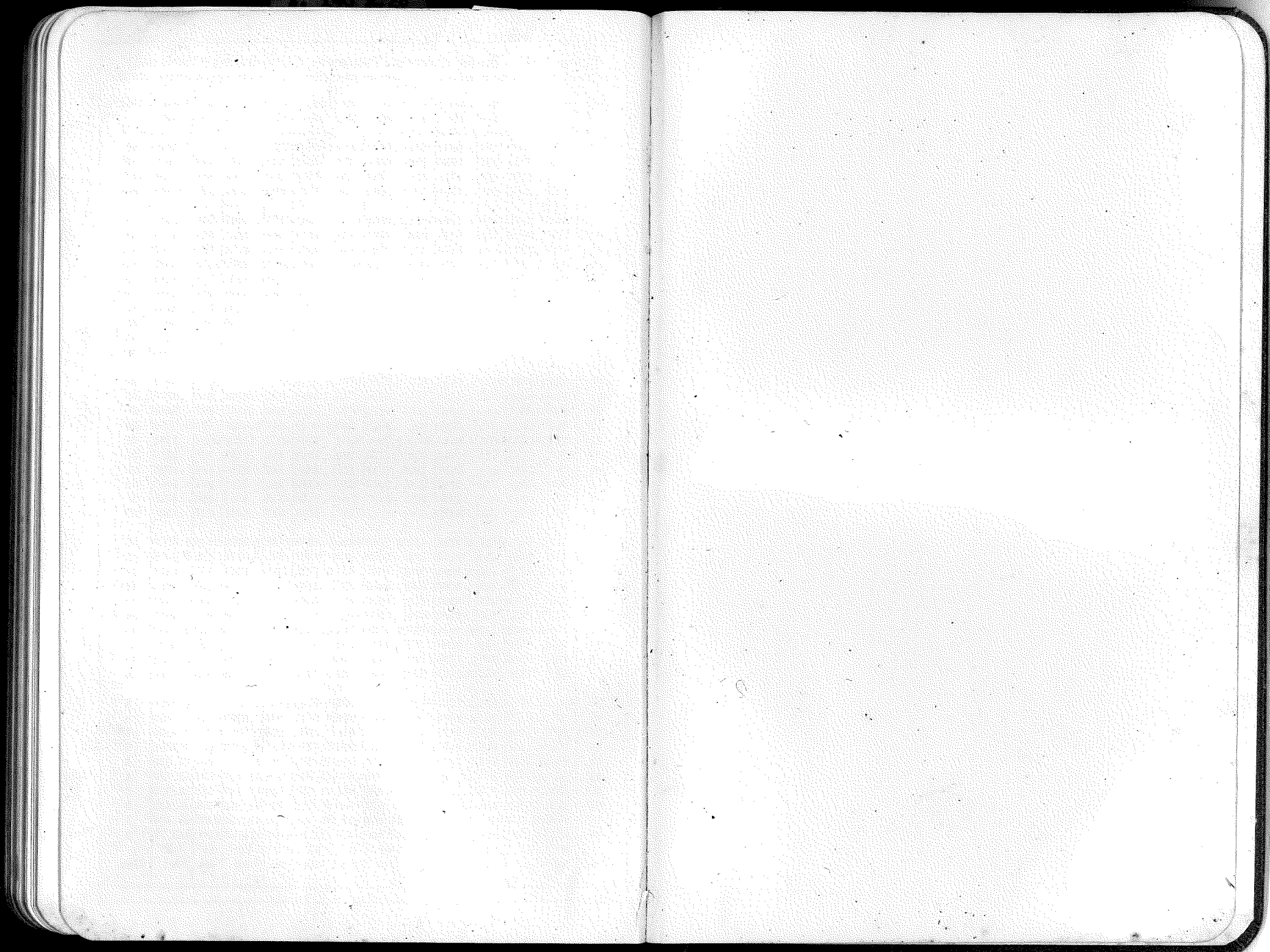
Natural

TABLE XIII.—SINES, COSINES, TANGENTS, COTANGENTS

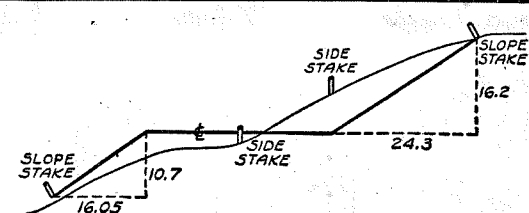
Table with columns for Deg., sin 0', tan 0', sin 10', tan 10', sin 20', tan 20', sin 30', tan 30', sin 40', tan 40', sin 50', tan 50', and Deg. containing trigonometric values from 0 to 90 degrees.

TABLE XIII.—SINES, COSINES, TANGENTS, COTANGENTS (Continued)

Continuation of the trigonometric table with columns for Deg., sin 0', tan 0', sin 10', tan 10', sin 20', tan 20', sin 30', tan 30', sin 40', tan 40', sin 50', tan 50', and Deg. containing values from 46 to 90 degrees.



5280  
 142  
 5422



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING  
 SLOPE 1 1/2 TO 1. ROADWAY OF ANY WIDTH

	0	1	2	3	4	5	6	7	8	9	
0	0.00	0.15	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	0
1	1.50	1.65	1.80	1.95	2.10	2.25	2.40	2.55	2.70	2.85	1
2	3.00	3.15	3.30	3.45	3.60	3.75	3.90	4.05	4.20	4.35	2
3	4.50	4.65	4.80	4.95	5.10	5.25	5.40	5.55	5.70	5.85	3
4	6.00	6.15	6.30	6.45	6.60	6.75	6.90	7.05	7.20	7.35	4
5	7.50	7.65	7.80	7.95	8.10	8.25	8.40	8.55	8.70	8.85	5
6	9.00	9.15	9.30	9.45	9.60	9.75	9.90	10.05	10.20	10.35	6
7	10.50	10.65	10.80	10.95	11.10	11.25	11.40	11.55	11.70	11.85	7
8	12.00	12.15	12.30	12.45	12.60	12.75	12.90	13.05	13.20	13.35	8
9	13.50	13.65	13.80	13.95	14.10	14.25	14.40	14.55	14.70	14.85	9
10	15.00	15.15	15.30	15.45	15.60	15.75	15.90	16.05	16.20	16.35	10
11	16.50	16.65	16.80	16.95	17.10	17.25	17.40	17.55	17.70	17.85	11
12	18.00	18.15	18.30	18.45	18.60	18.75	18.90	19.05	19.20	19.35	12
13	19.50	19.65	19.80	19.95	20.10	20.25	20.40	20.55	20.70	20.85	13
14	21.00	21.15	21.30	21.45	21.60	21.75	21.90	22.05	22.20	22.35	14
15	22.50	22.65	22.80	22.95	23.10	23.25	23.40	23.55	23.70	23.85	15
16	24.00	24.15	24.30	24.45	24.60	24.75	24.90	25.05	25.20	25.35	16
17	25.50	25.65	25.80	25.95	26.10	26.25	26.40	26.55	26.70	26.85	17
18	27.00	27.15	27.30	27.45	27.60	27.75	27.90	28.05	28.20	28.35	18
19	28.50	28.65	28.80	28.95	29.10	29.25	29.40	29.55	29.70	29.85	19
20	30.00	30.15	30.30	30.45	30.60	30.75	30.90	31.05	31.20	31.35	20
21	31.50	31.65	31.80	31.95	32.10	32.25	32.40	32.55	32.70	32.85	21
22	33.00	33.15	33.30	33.45	33.60	33.75	33.90	34.05	34.20	34.35	22
23	34.50	34.65	34.80	34.95	35.10	35.25	35.40	35.55	35.70	35.85	23
24	36.00	36.15	36.30	36.45	36.60	36.75	36.90	37.05	37.20	37.35	24
25	37.50	37.65	37.80	37.95	38.10	38.25	38.40	38.55	38.70	38.85	25
26	39.00	39.15	39.30	39.45	39.60	39.75	39.90	40.05	40.20	40.35	26
27	40.50	40.65	40.80	40.95	41.10	41.25	41.40	41.55	41.70	41.85	27
28	42.00	42.15	42.30	42.45	42.60	42.75	42.90	43.05	43.20	43.35	28
29	43.50	43.65	43.80	43.95	44.10	44.25	44.40	44.55	44.70	44.85	29
30	45.00	45.15	45.30	45.45	45.60	45.75	45.90	46.05	46.20	46.35	30
31	46.50	46.65	46.80	46.95	47.10	47.25	47.40	47.55	47.70	47.85	31
32	48.00	48.15	48.30	48.45	48.60	48.75	48.90	49.05	49.20	49.35	32
33	49.50	49.65	49.80	49.95	50.10	50.25	50.40	50.55	50.70	50.85	33
34	51.00	51.15	51.30	51.45	51.60	51.75	51.90	52.05	52.20	52.35	34
35	52.50	52.65	52.80	52.95	53.10	53.25	53.40	53.55	53.70	53.85	35
36	54.00	54.15	54.30	54.45	54.60	54.75	54.90	55.05	55.20	55.35	36
37	55.50	55.65	55.80	55.95	56.10	56.25	56.40	56.55	56.70	56.85	37
38	57.00	57.15	57.30	57.45	57.60	57.75	57.90	58.05	58.20	58.35	38
39	58.50	58.65	58.80	58.95	59.10	59.25	59.40	59.55	59.70	59.85	39
40	60.00	60.15	60.30	60.45	60.60	60.75	60.90	61.05	61.20	61.35	40
41	61.50	61.65	61.80	61.95	62.10	62.25	62.40	62.55	62.70	62.85	41
42	63.00	63.15	63.30	63.45	63.60	63.75	63.90	64.05	64.20	64.35	42
43	64.50	64.65	64.80	64.95	65.10	65.25	65.40	65.55	65.70	65.85	43
44	66.00	66.15	66.30	66.45	66.60	66.75	66.90	67.05	67.20	67.35	44
45	67.50	67.65	67.80	67.95	68.10	68.25	68.40	68.55	68.70	68.85	45
46	69.00	69.15	69.30	69.45	69.60	69.75	69.90	70.05	70.20	70.35	46
47	70.50	70.65	70.80	70.95	71.10	71.25	71.40	71.55	71.70	71.85	47
48	72.00	72.15	72.30	72.45	72.60	72.75	72.90	73.05	73.20	73.35	48
49	73.50	73.65	73.80	73.95	74.10	74.25	74.40	74.55	74.70	74.85	49
50	75.00	75.15	75.30	75.45	75.60	75.75	75.90	76.05	76.20	76.35	50

Distance of slope stake from side or shoulder stake for any width roadway, slope 1 1/2 to 1. If ground is nearly level, the cut or fill at side stake is located by the double entry method in left column and top row. The number in body of table in same row and column gives distance from side stake to slope stake. If ground is not level estimate the difference in elevation between the side stake and slope stake, lower target by this amount if cut, elevate if fill. Add this amount to cut or fill and find distance in table. Set up rod at this point, and line of sight should cut target. If it does not make the slight adjustment necessary.



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FIELD BOOK