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Township 45 north ranges 35 and 36 west, specimens 31060-31081. No. 223 1891

McNair, F. W.

[s.l.]: [s.n.], 1891

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McNair

723

LAKE SUPERIOR SURVEY

McNair

Index

LAKE SUPERIOR SURVEY. INSTRUCTIONS.

Topography.—On the left-hand page map as much of the section as has actually been seen, counting each of the spaces between the blue lines as 100 paces, and 20 of these spaces to one mile, or 2,000 paces. The scale is four inches to the mile, and the heavier blue lines, outlining one inch squares, mark forties. Denote streams, lakes, swamps, marshes, etc., by the topographical signs annexed.

The geologist will consult with the compassman, and describe as accurately as possible, the timber traversed. When pine is found, give its proportion; tell whether good or poor, and indicate kind—white, norway, jack. If hemlock is found, note the relative amount. In hard wood districts, designate as good or poor, heavy or light, and indicate predominant kinds, oak, maple, birch, etc. Cedar swamps, spruce swamps, tamarack swamps and meadow swamps will be always discriminated. Outline burnt timber.

Each day, just before leaving camp, the geologist will compare his own and the camp aneroids, and the reading of each, with time, will be recorded. At work the aneroid will be read on gentle slopes at intervals of 200 paces; on steeper slopes at intervals of 100 paces; also at all maxima and minima. When minima are streams the map and notes will indicate this, showing width and character of streams. When a stream has made a cut of importance, aneroid readings will be made where the banks break off and at water level. If instead of an abrupt break, the stream valley has steep slopes, aneroid readings will be made with sufficient frequency to show this character.

At reading points the compassman will stop, read the dial compass, and remain until the records are complete. The readings will, as fast as made, be placed upon the map at the right-hand side of the line traveled, and in the notes, the numbers being inclosed in parentheses, basing the work upon the bench-mark which served as a starting point. At bench-marks the absolute reading of the aneroid and the altitude as shown by the bench-mark will be recorded to serve as a base for subsequent readings. For instance, aneroid 29.13 inches; altitude on bench-mark, 275 feet. At each subsequent reading, by setting 275 on the altitude circle at 29.13 on the fixed dial, altitudes may be directly recorded. When the next bench-mark is found at two miles distance, the difference between the aneroid reading on the basis of the first bench-mark and the second bench-mark will be recorded. At intervals of a half hour during the day the time will be attached to the aneroid readings. Upon reaching camp, after the day's work, the geologist will record the readings of his own and the camp aneroid, and also the time. Interpolations will then be made, based upon the bench-marks and times (not distances) if the day has been one of no abnormal atmospheric disturbances, or upon both bench-marks and camp aneroid readings if there have been unusual disturbances, and the corrected numbers, less a constant of 4 feet, will be placed upon the face of the map at the left-hand side of the lines of travel, and in the notes without parentheses, but the parentheses numbers will not be erased.

At each aneroid reading the trend of a horizontal contour line will be indicated upon the face of the map, making the length of the line correspond as nearly as may be with the actual distance seen. In passing directly up or down a slope, the contour lines will be at right angles to the direction of travel. In passing up a hill diagonally the contour lines will intersect the lines of travel at various angles, which can be estimated and plotted with sufficient accuracy by an appreciation of the north and south direction.

The course of travel will be always north and south. In starting from a quarter or a sixteenth post, the work will be plotted on the assumption that the true course is followed, but upon reaching the next section line the geologist will remain in the position at which the line is struck by the compassman until the latter finds the adjacent bench-mark. The intervening distance will then be paced by the compassman, and the point of intersection of the section line marked. From this point to the starting-point, a right line will be drawn as the actual course of travel. The positions of the contour lines, aneroid readings, etc., will not be changed.

Geology. — In running the north and south lines, the compassman will, if possible, determine the course by the dial compass. At the time the geologist reads his aneroid, the compassman will determine the magnetic variation, which will be given to the geologist and recorded in the note-book. Each morning the watch of the compassman will be set to apparent time (corrections being made for the equation of time and for longitude), so that he will need to make no correction in reading magnetic variation. On cloudy days, and at times when the sun is too low for the use of the dial compass, the course run will be by needle upon the supposition that the magnetic variations indicated on the township plats, are right when corrected by deducting 3° if the variation is east, or by adding the same amount if the variation is west.

Not less than once per week the accuracy of the watch of the geologist in charge of a party (who will give time each morning to the compassmen), will be tested. This may be done, first, by obtaining correct time from a railway station by means of a packer when sent out for provisions. Such time will be mean, i. e., watch time for the nintieth meridian. Second, corrected time may be found by blazing out a north and south section line, preferably a range line, for some distance, setting a signal on the line and placing the dial compass duly leveled, in a north and south direction upon a Jacob's-staff just before mid-day, and setting the watch at 12 at the time the line strikes the noon hour. In a watch thus set all corrections are made.






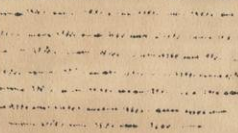
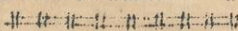
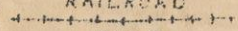
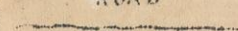
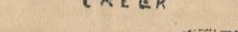




It will be the constant business of the geologist to search for outcrops. All hills within a reasonable distance of the course of travel will be examined. Oftentimes upon the steeper slopes of a hill a rock surface is covered with a coating a few inches thick of moss, leaves or vegetable mold and can be stripped with the pick. Where the exposure is small and there is the least possibility that it may be a large bowlder, indicate this fact in the notes and by a query on the map. All ledges off the line of travel of the compassman will be located by the geologist pacing to this line in an east and west direction, his course being determined by compass.

Denote the ledges of rock, when no structure is made out, by cross-hatching, making the cross-hatching cover as nearly as possible the areas occupied by the exposures. If the rock is a massive one, but still more or less plainly bedded, use the same sign with a dip arrow and number attached, showing the direction and amount of the dip. Denote a shaly or other very plainly bedded ledge by right parallel lines, and a ledge having a secondary structure by wavy parallel lines running in the direction of the strike, having strike line and dip arrow with numbers attached. The greatest care must be taken to avoid confusing slaty or schistose structure, with bedding, and in all cases where there is the least doubt about the true bedding direction, indicate it by a query.

To each exposure on the face of the map, attach the number of the specimens representing it. On the right hand page place the notes descriptive of the exposures. Begin in each case with the number of the specimen, placing the number on the left hand side of the red line, after which give in order on the right of the same red line, the position of the ledges as reckoned in paces from the southeast corner of the section, and the dip and strike when observable, for instance, No. 437, 1226, N., 353 W., Strike, $N. 47^{\circ} E.$, Dip, $68^{\circ} S. E.$ Then follow with as full a description of the ledge as possible.

Collect a specimen from every ledge, and if the ledge exposes different kinds of rock, collect a specimen of all varieties. Take care to get fresh material, unless for a special purpose the weathered surface is desired. Where ledges are infrequent the normal size of specimens will be $3 \times 4 \times 1$ inch. In case several specimens of the same ledge are necessary, and when ledges are numerous, specimens $2 \times 2 \frac{1}{2} \times \frac{3}{4}$ inch will be allowed. In all cases collect chips for slicing. No two specimens will be given the same number. In the cases in which several specimens come from the same ledge, the different numbers assigned to them will enable an easy description of their relations. Specimens will be placed at once in paper bags provided, upon which shall be marked in at least two places, with a blue or red pencil, the specimen number.

TOPOGRAPHICAL SIGNS.

 PINE OR HEMLOCK	 HARDWOOD	 PINE OR HEMLOCK AND HARDWOOD	 CEDAR SWAMP
 SPRUCE OR TAMARACK SWAMP	 MARSH	 RAILROAD  ROAD  CREEK  RIVER	 NO STRUCTURE
 ↓ 55° S. NEARLY MASSIVE	 ↓ N. 35° E. S. 65° E. SHALY OR BEDDED	 ↑ 83° SECONDARY STRUCTURE.	

EQUATION OF TIME FOR 1891.

Day	Min.	Day	Min.	Day	Min.
JUNE.					
Add to watch time.					
1-6	2	7-11	1	12-16	0
Subtract from watch time.					
17-21	1	22-26	2	27-31	3
JULY.					
Subtract from watch time.					
1-6	4	7-13	5	14-31	6
AUGUST.					
Subtract from watch time.					
1-7	6	8-13	5	14-18	4
19-23	3	24-26	2	27-29	1
30-31	0				

223

SEPTEMBER.

		Add to watch time.			
1- 2	0	3- 5	1	6- 8	2
9-11	3	12-14	4	15-17	5
18-19	6	20-22	7	23-25	8
26-28	9	29-30	10		

OCTOBER.

		Add to watch time.			
1	10	2- 4	11	5- 8	12
9-12	13	13-16	14	17-22	15
23-31	16				

NOVEMBER.

		Add to watch time.			
1-13	16	14-19	15	20-23	14
24-26	13	27-29	12	30	11

No 4 Field notes

F. W. McVain Geologist
John Murphy Compassman

SPECIMENS: 1060-1081

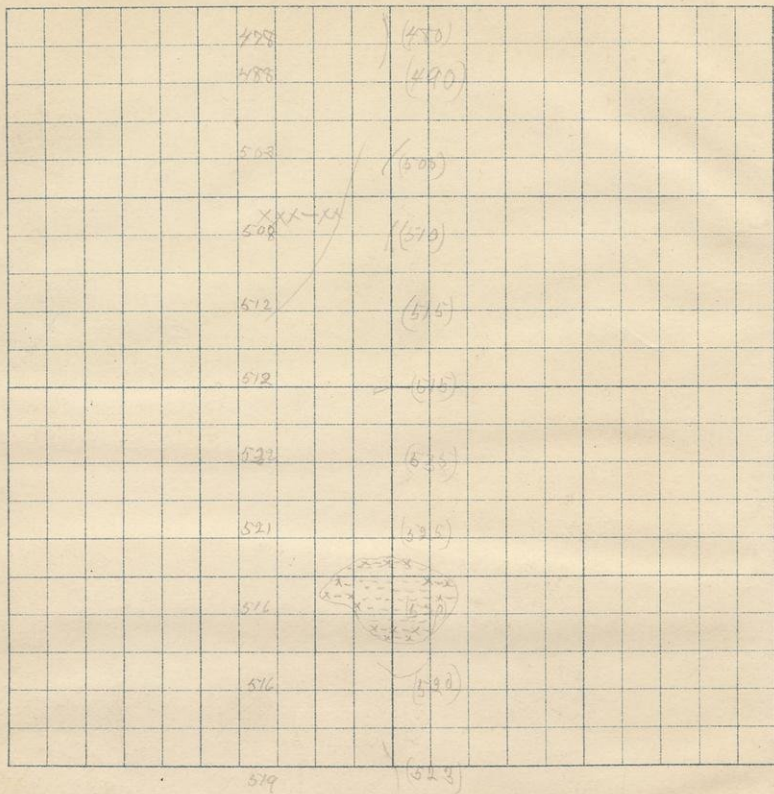
TOWN 1 45-35
45-36

July 13 1891 Run by Smith to line of

S. 35

T. 45

R. 35



July 13 1791 Run $\frac{1}{4}$ line S of Smith of

Sec 35 T45 R35 B.M. 523.52

Set 600 with 28.84 at 740 A.M.

Cor in good hardwood some good white pine
200 North (520) flat

365 S.W. side.

400 (520) in woods, grassy.

600 (525) Good hardwood with a few good pine, flat.

800 (535) flat. Burned from 100 west of line westward.

870 A.M.

1000 (515)

1200 (515) flat

1450 (510)

1600 (500) Enter recent farming mostly west

1800 (490) flat 840 A.M.

1920 line 13 E of $\frac{1}{4}$ pt (480) 842 A.M.

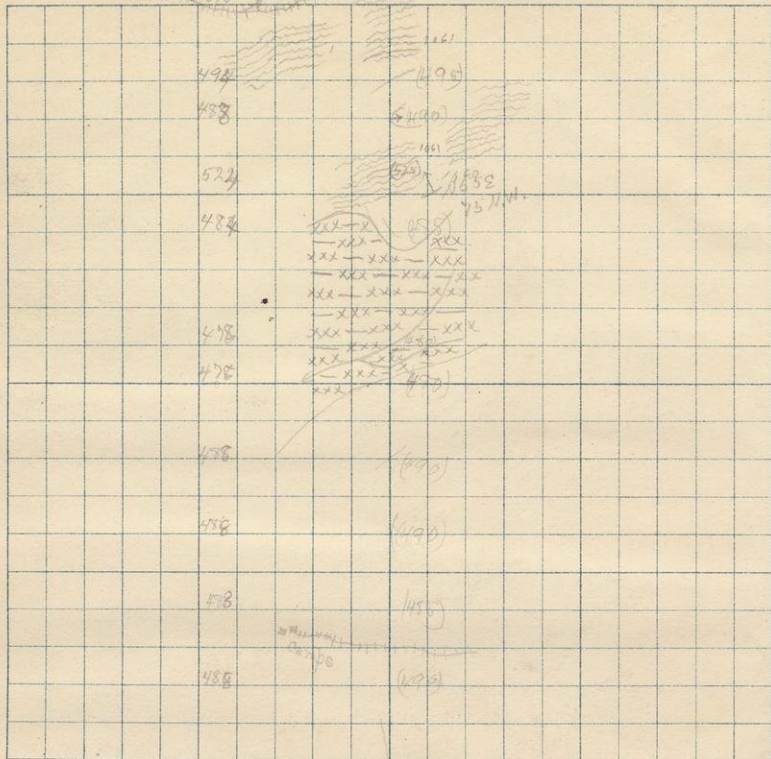
Burned.

July 13, 1891 Run By South 1/2 line of

S. 26

T. 45

R. 35



111

July 13 1891 Run by south $\frac{1}{2}$ line of

5

Sec 26 T45 R 35

Cor in recent burning. A few pine (480) 842 AM.

200 North (490) flat wooded

300 Supply road

400 (485) flat 9/10 of N.

600 (490) Many thousands ^{of cub} of recently burned white
pine just east of line here!

850 (490)

1000 (480) Gutta alder & cedar swamp

Large amount of pine at distance on east $\frac{1}{2}$ of
this section.

1045 small creek W

1094 creek 7 paces S.W. (480)

1200 swamp 9.40 AM.

1371 bare swamp for recent burning.

1400 (485)

1500 foot of range of hills meadow of

1060 N 15 25 W 1000 ^{foliation} Strike much like N0

in general appearance ^{of} strike N 55 E

Dip 75° N.W. Further up the slope which
is quite steep I get

1061 N 75 46 W 1000 ^{of} Strike and dip same as
above. This makes up the body of the hill.

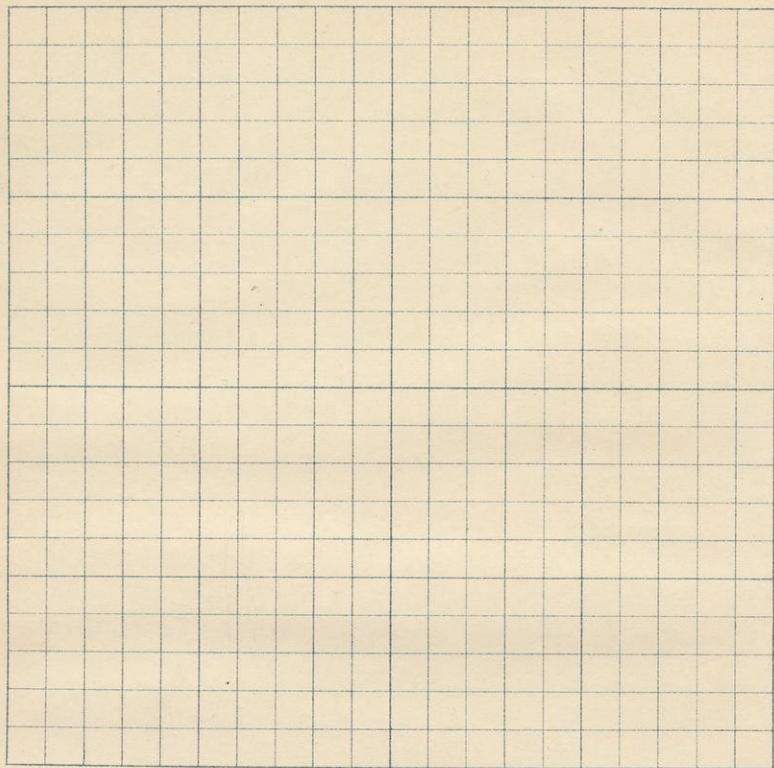
1062 This is taken about 20 feet west of
1061 where there is a large crumpled area
in hope that it may be of mineralogical

6

S.

T.

R.



interest. The range of hills trends parallel to the strike of foliation and seems to extend eastward at least half a mile.

1577 (525) 10.25 A.M. top of ridge and outcrop
1700 (490) between hills

1800 (495)

1890 line 43 E of Cor. B.M. 518.96

No 2 (515) at 10.40 A.M.

Outcrop west, north, and east of
10-- etc

Pine to east and north recently burned.

Pine to north of whole quarter of a mile west
burned.

July 13 / 1891 Run by North W $\frac{1}{2}$ line of
 Sec 26 T 2/5 R 35. B.M. 558.73

Co in hardwood & pine recently burned.

St 800 with 27.64 at 11:00 A.M.

Supply road just north of corner.

100 South (570) top of outcrop 1061

200 (535) between hills

292 (550) top of outcrop 1061

386 (505) between hills. Spring of excellent water

453 (520) top of low outcrop 1061

599 entire cedar swamp partly old burning

600 (480) swamp 11:27 A.M.

801 leave swamp for burned clearing

Pine to N.W.

883 (495) top of ridge

1032 Edge of cedar and two-acre swamp. (475)

1201 swamp

1286 Creek 4 pieces W. (450) 11:55 A.M.

1 (465) 12:30 P.M.

1400 swamp 1600 swamp. 1800 swamp.

1890 line 518 of $\frac{1}{2}$ part.

offset at 1400 to east of swamp and ran down to get
 from there on.

July 13/1891. Run W 1/2 line by North of

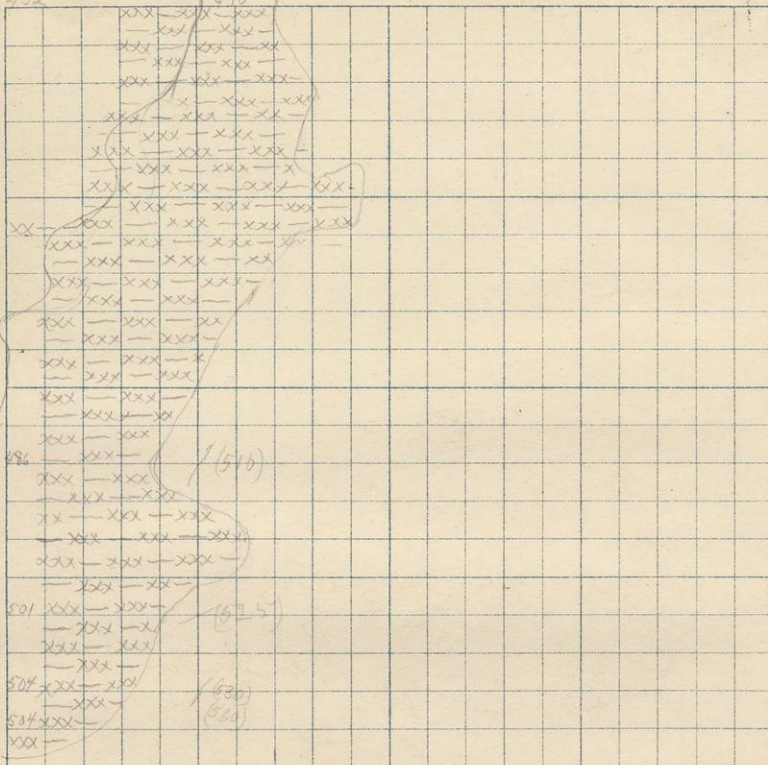
S. 35

T. 45

R. 35

452

74



521

522

523

524

22

22

2

July 13/1891 Run W $\frac{1}{2}$ line by North of
Sec 35 T45R35

11

$\frac{1}{4}$ part in cedar & alder swamp on ^w bank of
creek flowing south 10W.

South 30 paces across creek. (470) 1:00 P.M.

200 Swamp. Burned to east of swamp

400 Swamp 600 swamp. 1:35 P.M.

800 swamp.

1500 leave swamp for burning.

1200 (510) 2:00 P.M.

1300 recent swamp

1400 (515) swamp, old burning.

1600 (525) Center good unburned hardwood

1800 (530)

1830 line 8 West of B.M. 586.36

No 2, (530) at 2:20 P.M.

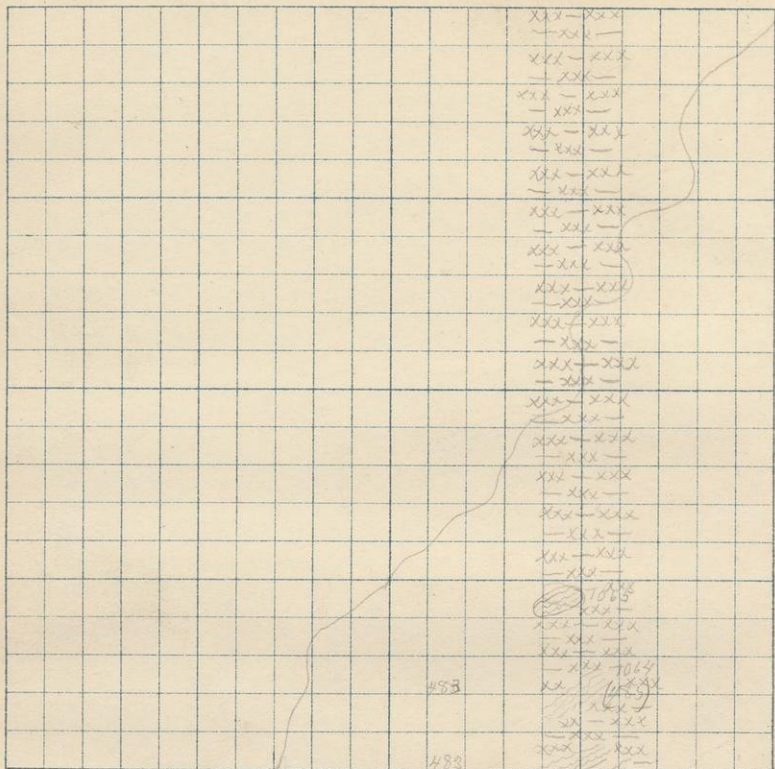
Co. in good hardwood with a few good pine.
We offset to east at beginning of this mile
and measured the east side of the swamp.

July 14 1891 Run By South Line of

S. 34

T. 45

R. 35



453

483

1060
 1064
 1062
 1063

3

July 14, 1891

13

Run $\frac{1}{2}$ mile S_g South of
Sec 34 T 45 R 35 B.M. 48525

Set 600 with 27.92 at 7:55 A.M.

Cor. on ledge at edge of swamp.

1063 N 0 W 0 From northern slope of abrupt
ledge. Strike N 65 E, dip 75 N.W. for
foliation. Long outcrop trending
parallel with strike of foliation.

1064 N 190 W 0. Ledge sticking up out of
the swamp. Strike and dip parallel with
No. 1063. Seeming by the same thing as
No. 1061 found yesterday page 5.
Ledge about 100 paces long and 20 broad
200 (485) on top of outcrop.
400 (460) swamp

1065 N 484 W 15 Strike and dip same as
No. 1063 From a low outcrop about 100
by 40 paces. Raining, 8:30 A.M.
800 swamp

1089 intersect creek.

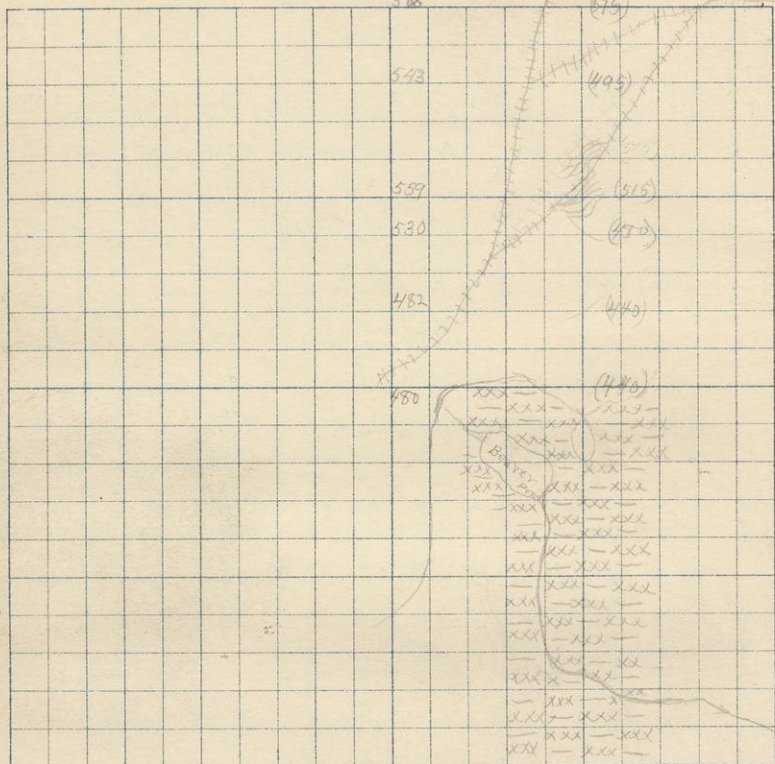
12:55 cross creek Take logging road
here and go around the swamp and rain
are very bad. Find the L.S. corner 150 paces
to far east and 40 or 50 to far north. Cor. corner
taken as the right one.

July 14/89 T^e line by front of

S. 27

T. 45

R. 35



July 14 1891
 Run by south E line of
 Sec 27 T45 R35.

Corner in swamp.

260 N creek small E

900 leave swamp for mixed growth with
 numerous good pine (440)

1/4 stake (440) at 10:40 A.M.

200 N (440)

400 N (480) (1/4 stake?)

1500 N of 1/4 stake (575) 10:55 A.M.

--- N 1500 W 0 Another of the range of
 hills noted on pages 5+6 of this book
 with an outcrop at its summit of

No 1061 page 5

1545 supply road

1800 (325) summit of outcrop of Nos
 1060 and 1061 alternating with
 as half a mile east of here

1800 (495)

1945 decer in hardwood with a few
 pine. flat B.M. 570.44

No 2 (515) at 11:30 A.M.

July 14, 1891 Run E $\frac{1}{2}$ line B_g North of 17

Sec 27 T45 R35 B.M. 629.76

Set 400 with 28.21 at 11:50 A.M.

Cor. in good hardwood.

200 (520)

401 (595)

600 (570)

800 (525) 12:15 P.M.

920 supply road. (495) 12:40 P.M.

Good pine along this half mile all pure
or less barred

1000 (510)

1200 (520) 12:50 P.M.

1400 (505)

1600 (480) enter swamp raining

1700 leave swamp

1913 $\frac{1}{2}$ pat (480) at 12:5 P.M.

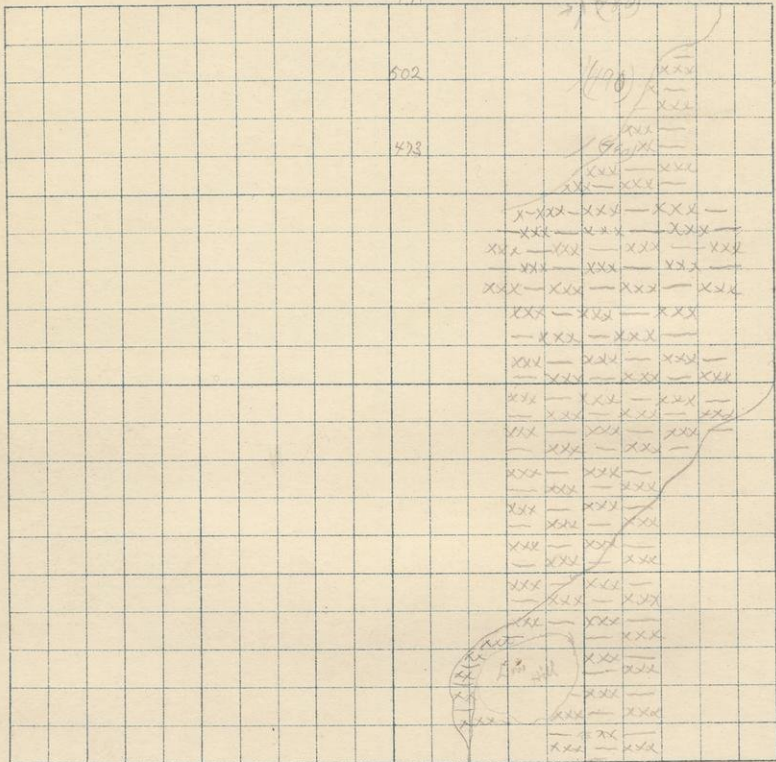
Post in old burning

July 14 1891 $\frac{1}{4}$ line B₇ North of

S. 84

T. 46

R. 36



455

V

720

July 14 / 1891 Run 2 1/2 line 1/3 North of 19

Sec 34 T45 R 35

1/2 post in old town (450) at 1:25 P.M.

200 South (490)

400 (460) 1:40 P.M.

435⁺ enter swamp. very bad Raining, go around by logging road.

Crossing of creek only an approximation Swamp the whole mile from here out.

B.M. at 1/2 post in south edge of swamp at foot of an outcrop. B.M. 459.19

N 12 (430) at 2:35 P.M.

f----- N 72 W 500 low small outcrop of same slate as No 10...lat

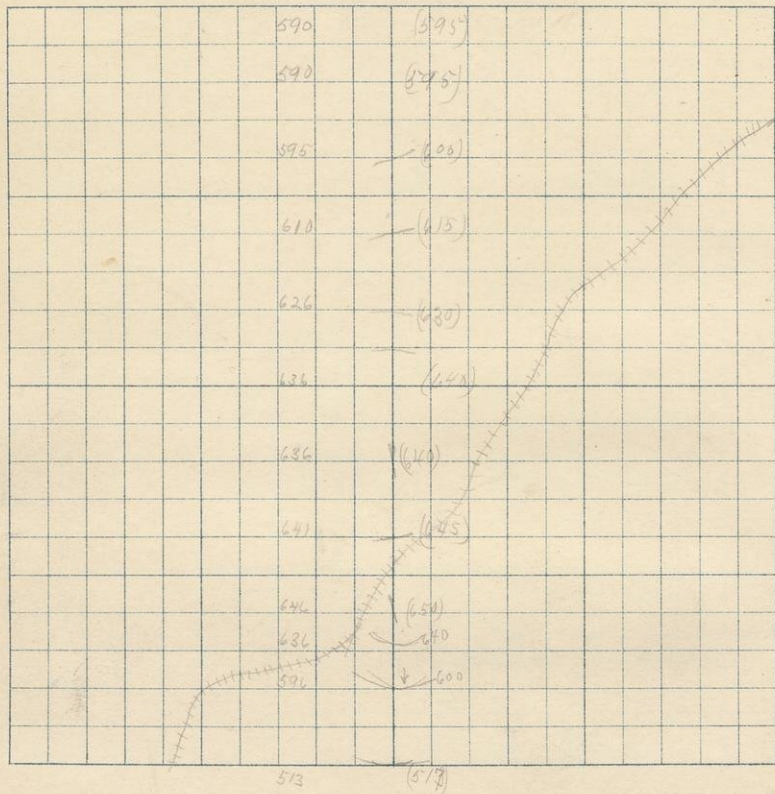
The low hill just to west of line is undoubtedly I think by the same rock but I cannot find an undoubted exposure. Fragments everywhere.

July 15 1891 $\frac{1}{2}$ line Rg south of

S. 33

T. 45

R. 35



July 15 1891 Run N line By South of
 Sec 38 T45 R35 B.M. 517.43
 Set 300 with 28.72 at 7.55 A.M.

On in old burning.

200 North (600)

936 (640) top of hill or ridge

Quite good hardwood.

400 (650)

525. Supply road

600 (645)

800 (640)

1070 (640) flat 8:30 A.M.

1200 (630)

1400 (615)

1600 (600)

1770 (595) flat.

1934 line 152 of 1/4 part. Good hardwood
 (595) at 8:55 A.M. flat

July 15 1891 $\frac{1}{4}$ line R_g South of
 S. 28 T. 48 R. 35

		609	(615)		
		625	(630)		
		620	(625)		
		605	(610)		
		595	(600)		
		590	(595)		
		590	(595)		
		590	(595)		
		590	(595)		
		595	(600)		
		590	(595)		

July 15, 1891. Run by south $\frac{1}{4}$ line of
Sec. 28 T45 R35

Post in good hardwood, flat (595) at 8:55 AM,
200 North (600) flat

400 (595) flat

600 (595) flat

800 (595) flat

1000 (595) flat } Cedar with hardwood

1200 (600) 9:30 }

1400 (610)

1600 (625)

1800 (630) Cedar with hardwood

19 21 line 10 E of post

B.M. 613.27 No 2 (615) at 9:45 AM.

Good hardwood with more or less cedar
and hemlock the whole route.

July 15/1891

Run Bg North W $\frac{1}{2}$ line of
Sec 29 T 45 R 35 N.M. 596.55

Set 400 with 28.31 at 10:10 AM.

Co in good hardwood

200 South (615)

400 (610) flat

600 (600)

800 (585)

825 Enter cedar and tamarack swamp

1000 (585) swamp 10:40 AM.

1100 swamp passes to hardwood

1200 (590)

1400 (595)

1600 (620)

1800 (620) flat

1900 line 135 W of $\frac{1}{2}$ (620) 11:10 AM.Good hardwood. An occasional white
pine of fair size within mile.

2000

Think else should be 6 E instead of 135 W

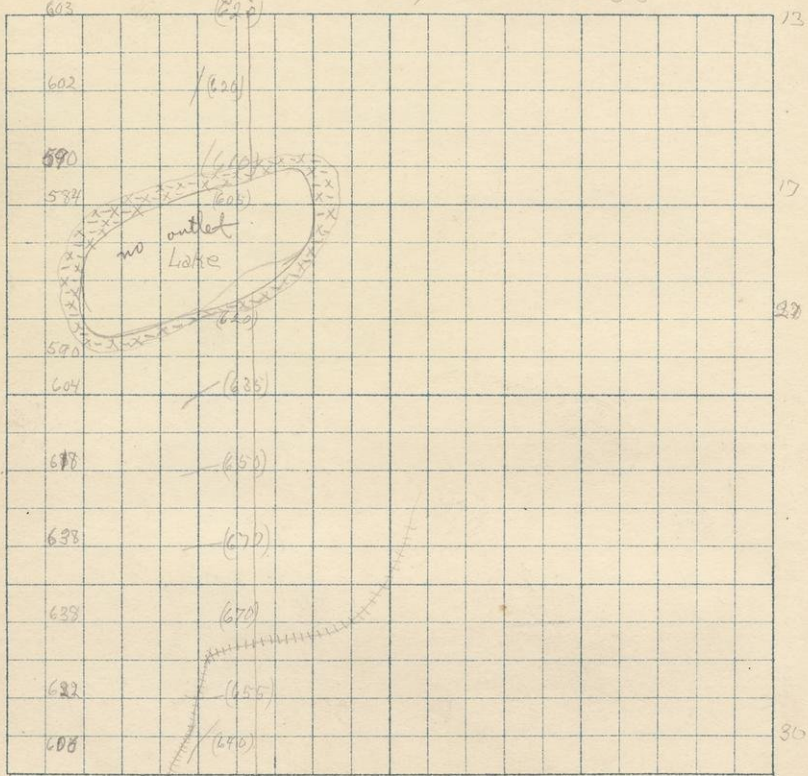
See p 26 and p 13. No line of run drawn on
this account

July 15 1891 W $\frac{1}{2}$ line R $\frac{1}{2}$ North of

S. 29

T. 45

R. 35



July 15, 1891

27

Run W $\frac{1}{2}$ line Bg North of
Sec 33 T45R25.

$\frac{1}{2}$ plat in good hardwood. (620) 11:10 AM. flat
200 South (620)

400 (610) flat

410 Border swamp of lake

464 lake (605) 12:35 AM.

800 Edge of lake swamp south (620) 12:50 M.

A number of small pine left about the lake

1000 (635) Good hardwood

1200 (650) 12:10 PM.

1400 (670)

1600 (670) flat

1800 (655)

1920 line (670) 145° E of R.M. 62290

No 2 (652) at 12:30 P.M.

The $\frac{1}{2}$ plat at beginning of this line evidently
600 far east. Murphy ran both lines on same variation
and ran carefully.

The direction line is drawn on this supposition.
We found a previous $\frac{1}{2}$ at 5 W of our close
one mile north.

July 16 1891 Run Bg South E line of

S. 32

T. 45

R. 35

	571	(580)	
	581	(590)	
	592	(600)	
	603	(610)	
	598	(605)	
	584	(595)	
	575	(585)	
	570	(580)	
		575	
	595	(605)	
	616	(620)	
	609	(615)	

X

July 16 1891 Run by south E line of
 Sec 32 T45R35 B.M. 61253
 Let 700. with 27.98 at 7:28 AM.

Came in good hardwood flat.

200N (620)

400 (600)

600 (595) flat

800 (590) flat

1000 (590) flat

1200 (685)

1400 (610) flat

1600 (600) flat 8:00 AM

1800 (600)

1877 line at post. (580) 8:03 AM.

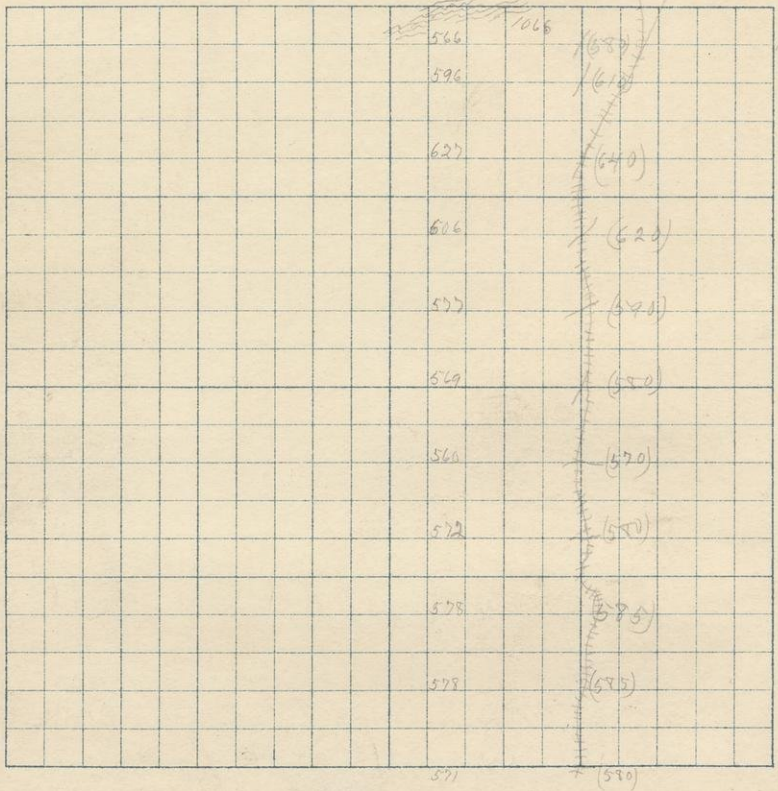
Good hardwood whole mile.

July 16 1891 Run Bg South 2 line of

S. 29

T. 45

R. 35



106

106

July 16 1891 Run B₂ South E line of
Sec 29 T45 R35

Corner in good hardwood (580) 8:05 A.M.

200 North (585) flat

400 (585) flat

600 (580)

800 (570)

1000 (580)

1200 (590) 8:30 A.M.

1400 (620)

1600 (640)

1800 (610)

1890 Post B.M. 571.32

No 2 reaches (580) at 8:45 A.M.

Good hardwood whole mile

1066 N 2000 W 300 Strike of cleavage
N 65° E dip 85° to 90° N.

Seems to be a quartzite

1067 is a facies alternating with 1066.

A long hill unimic nearly E & W.

Seems to be exactly like the beds found
June 16 on the Fence. Described in My Book 7

July 16 1891 Run Bg North 2 1/2 mi of

S. 29

T. 45

R. 33

					526	(612)	
					536	(570) 1560	
					525	(530)	
					529	(535)	
					568	(570) 600 598	
					577	(600)	9
					526	(612)	
					571	(570)	
					550	(570)	
					588	(560)	18
					567	(570)	
					574	(600)	22

July 16 1891 Run By North $2\frac{1}{8}$ line of
 Sec 29 T45 R35 B.M. 510-
 Feb 200 with 2862 at 9:30 A.M.
 Corner in edge of burned cedar swamp
 72 South (540) top of ridge
 200 (530)
 400 (535) Enter green hardwood
 600 (575)
 800 (600) 10:00 A.M.
 1000 (610) flat
 1200 (590)
 1400 (590)
 1600 (560) 10:25 A.M.
 1800 (590)
 1935 line 10 W of Kistake (600) 10:45 A.M.
 Good hardwood

July 16/1891

Rim Rg North 2 1/2 hrs of

35

Sec 32 T45 R35

Co in good hardwood (600) 10:45 AM.

200 South (600) flat

400 (600) flat

600 (600)

800 (590)

1000 (595) flat

1200 (600) flat 11:15 AM.

1400 (600) flat

1600 (595) flat

1800 (600)

2005 B.M. 565.32 No 2, (600) at 11:35 AM

Fair to good hardwood whole mile,
only three or four standing pine seen

July 15 1891 Run by South 1/2 line of
Sec 31 T45 R35 RM 46862

Sect 500 with 28.00 at 7:10 A.M.

Post in river

200 Run

400 Run bank (470)

491 (495) top of bank 550 into grasshadow

600 (495)

800 (670) 7:45 A.M. leave green woods

1000 (510)

1200 (490)

1279 Creek 4 paces SW.

1450 (485) ^{forward} creek bottom 8:15 A.M.

1600 swamp tamarack + alder

1690 leave swamp for old burning

1800 (490)

1850 line 36 2 of post (485) at 8:30 A.M.

July 15 1891 $\frac{1}{4}$ mile S_W of

S. 30

T. 45

R. 38

	521	(525)	
	521	(545)	
	537	(535)	
	524	X 670 X X X X X X - X - (525)	
	534	(540)	
	508	(495)	
	517	(505)	
	510	510 511 513	
	500	X X X X X X X X X X X X Dem	
	502	495 1466	
	510	(495)	
489		(480)	

18

July 17/1891 Run N. by South $\frac{1}{4}$ line of
Sec 30 T45 R35

39

Corner in old burning (#75) at 8:30 A.M.
200 North (545)

----- N380 W 1000 A long low outcrop trending
nearly E+W. of N. 1066 and 1067 also
numbered 1004 & 1005 (C) Strike of foliation here
N65 E dip nearly 90° N.W.
400 (#95) 8:55 A.M.

----- N420 W 980 large low outcrop of
1066 and 1067 trending E+W. dip here is
almost vertical. The harder 1067 sticks
up four feet above the softer schist.
515 Enter Beaver meadow
600 (#95) Meadow

1868 N 708 W 1050 From an abrupt
quartzite ledge trending N65 E
at least 200 paces long. A cleavage plane
makes the south face.

My hammer handle a wetted piece of bracing
oak breaks just as I reach the ledge, and with
nothing but the head I cannot get a decent
specimen. This is the third time it has served
me this trick. 9:30 A.M.

Top of outcrop (520)

As I go north over it blocks of schist are
found which lead me to think that there

S.

T.

R.

A large grid of graph paper with 20 columns and 20 rows, occupying the central portion of the page. The grid is composed of thin black lines forming a uniform pattern of squares.

186

may be beds of it here as in the outcrop
just above but I cannot find them
to a certainty.

800 (500)

1069 Going further north I find
N90° W 100° The schist alternating
with quartzite. Strike & dip same as before.
1068 and 1069 are taken for fear of mistake in
judgement.

1000 (505)

1200 (495)

----- 1366 (540) top of outcrop of 1068 with
the schist or plate 1069 as before

Large hill trending N70° E. 1000 AM

drops abruptly 15 feet and again at 450 to
swamp, low creek, (510)

1639 top of another large hill and outcrop (530)

1801 (510)

1944 line 100 2 of 13M. 525.40

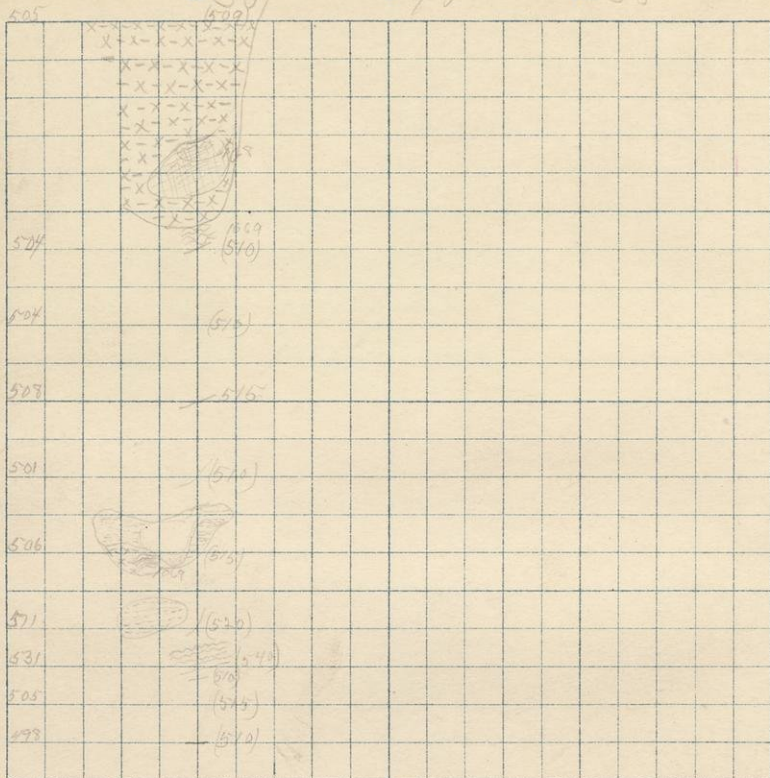
N02 (505) at 10:30 AM.

July 17/1891 W $\frac{1}{2}$ line B $\frac{1}{2}$ North of

S. 30

T. 45

R. 35



July 13, 1891. Run by North W 1/4 line of
 Sec 30 T45R 35 B.M. St 509.12
 St 600 with 27.98 at 11:15 A.M.

Cor in tamarack & cedar swamp

200 South swamp

413 Leave swamp for outcrop of 1068 trending
 in same direction as before

466 North swamp 531 leave it for outcrop of
 1069, and dense thicket of poplar balsam tamarack etc.

600 (510) Thicket or old burning 11:45

800 (510) Very uneven surface, but generally plane.

1000 (515)

1200 (510) 1300 Beaver meadow & pond.

1400 (515) 12:20 P.M.

1600 (520)

1670 ft. of very large abrupt ridge of the quartzite
 and schist or slate. (540)

1800 (515) 12:40

1901 Run 162 W of 1/4 state

(510) 110

Old pine burning whole mile after leaving swamp
 Quartzite and schist every few paces.

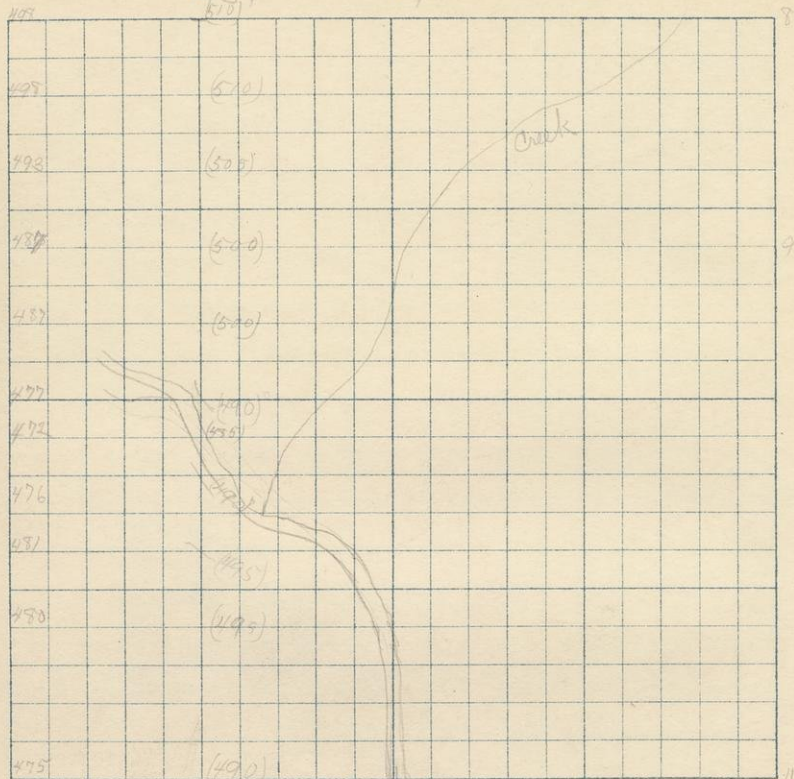
Whole region was once heavily pined, all of
 which was destroyed by fire.

July 17 1891 W $\frac{1}{2}$ line Ry North of

S. 31

T. 45

R. 35

McQuadeout
River

July 17/1891 Run By North W $\frac{1}{2}$ line of

Sec 31 T45R35

On in old burning grown up with aspen. (510) 11:00 AM

200 South (510) flat

400 (505) flat

600 (500) flat 120

800 (500) flat

1000 (490)

1095 River (485) Stream

1200 (490)

1400 (495) 2:00 P.M.

1600 (495) flat

1895 mile 292 of R.M. 479:00

1902 (490) at 2:25 P.M. flat

Whole mile old burning and except the slight depression of the river almost a plane.

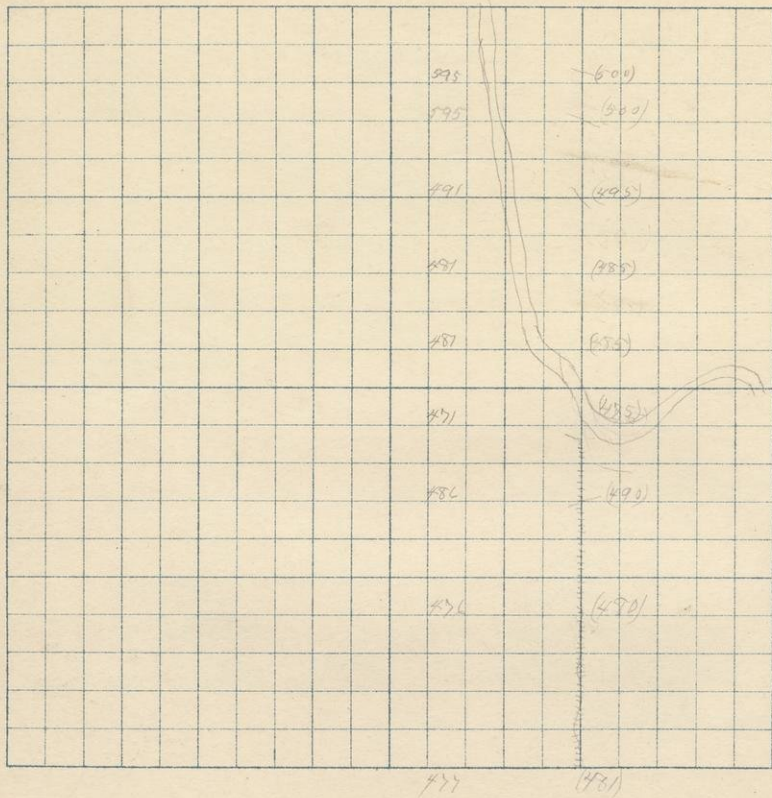
46

July 1891 2 line R_g south of

S. 36

T. 45

R. 36



July 18, 1891 Run by fourth 2 line of
Sec 36 T45 R 36 B.M. 487.85

Set 800 with 25.90 at 7:30 AM.

On in old burning, flat.

400 North (480) flat

500 (490)

920 Run (475)

1100 (485) 7:50 AM.

1300 (485) flat

1500 (495)

1700 (500) 8:30 AM.

1826 line 202 of corner. (500) 8:40 AM.

Old pine burning the whole mile except right
at river. all grown up with aspen.

July 17 1891 Run by South E line of
Sec 25 T45 R36

Con in old burning region with cifer (501) 840 AM

41 North (520) top of abrupt ledge of
the quartzite 1068 and the slate 1069

Trends N & W. and is over 300 paces long

Abrupt on both sides. Slate nearly vertical

170 pothole

200 (500) pothole

400 (500) flat 800 AM.

520 (495) Beaver meadow, drawn to small yesterday

700 Leaf meadow

800 (505)

1000 (610) 9:30 AM, 1049 west end of large
outcrop of quartzite and slate

1100 leave outcrop for swamp (500)

1233 leave swamp for low island burned (505)

1400 (515) 1520 Enter tamarack & cedar swamp

1600 (570) swamp

1821 line 40 E of Con B.M. 509.63

No 2 (520) at 10:15 AM.

July 18/1891 Run Bg North $\frac{2}{3}$ line of

Sec 25 T45R30 BM. 505.28

Set 1000 with 28.75' ab 10:40 AM,

Cor in aspen grove burning

200 South (495) flat

400 (510)

600 (510) flat

800 (510) flat 11:00 AM,

1000 (510) flat

1200 (500) flat

1400 (510) flat

1600 (510) flat

1750 (500) River 11:40 AM,

1800 (500) alder bottom

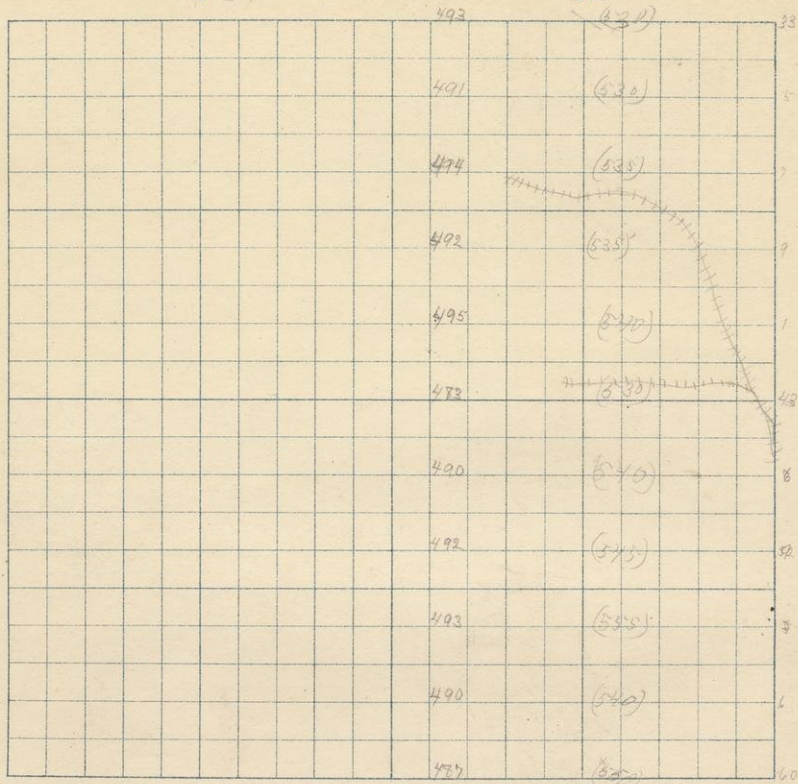
1950 line at stake (520) ab 11:50 AM.

July 11 1891 2 1/2 Bg North of

S. 36

T. 45

R. 36



July 18/1941 Run by North E & line of
Sec 36 T 45 R 36

Post in aspen grove burning (520) at 11:50 A.M.
(530) 12:30 P.M.

200 South (530) flat

400 (535) flat

473 Road wagon w.

600 (535) flat

707 (540) flat

1000 (531) flat 1:00 P.M.

1200 (540) flat

1400 (545) flat

1600 (555) flat

f-- 1763 N 237 W 410 large outcrop forming a
hill trending N50E, of 1068 + 1069.
Outcrop over 300 paces long and 20 feet high.

1800 (540) flat

2002 line 70 W of BM. 490.56

N 02 (550) at 1:35 P.M.

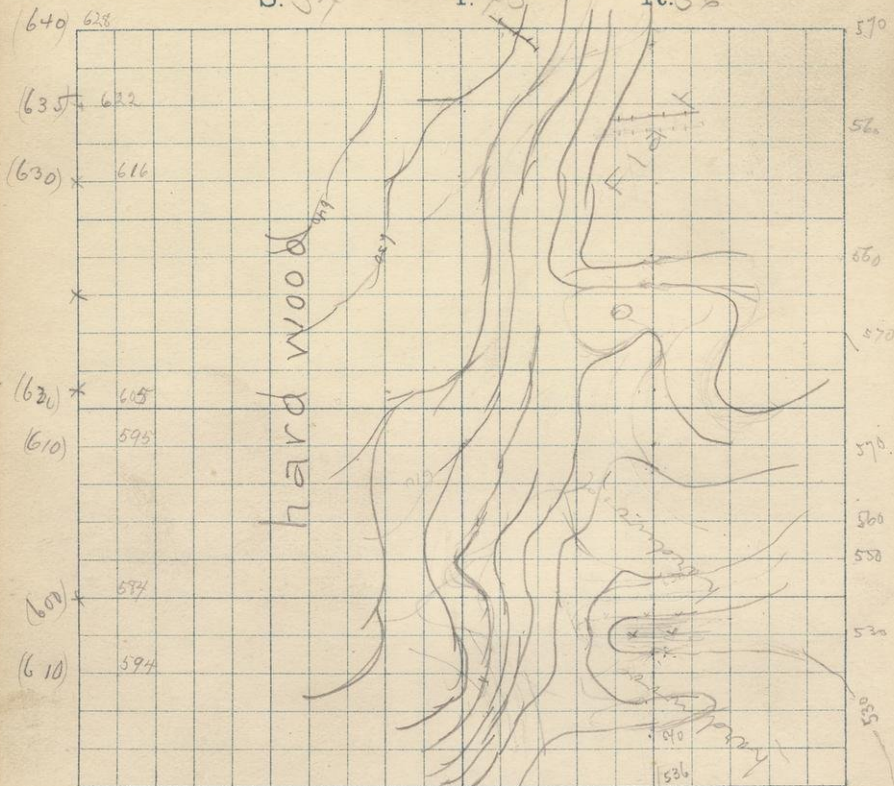
54

July 20. 1891 2 line Rg south of

S. 34

T. 45

R. 36



Red 57
540

July 20 1941 River Road South E line of
Sec 34 T45 R36 B.M. 531.48
Feb 300 with 28.63 at 7:20 A.M.
Corner in post hardwood + cedar.

560 8.20 A.M.

Nov 570 - 1°15

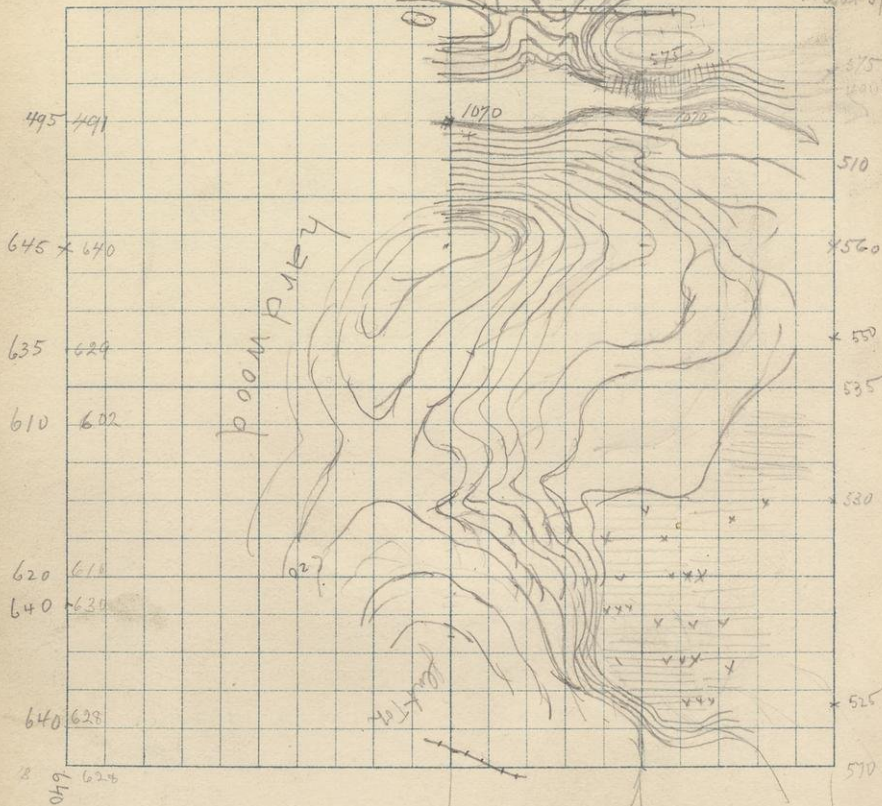
56

July 20 1891 Run by South a line of

S 27

R. 36

Bound 575



July 20 1891

57

Run Rg South E line of
Sec. 27 T45 R 36.

Co in hardwood (570) 8:40 A.M.

530 — 9:21 A.M.

560 — 9:40 A.M.

1870

N/200 W/O Outcrops at different
points along the creek bed.

Plenty of fragments but no ledge of any
considerable size.

N/1550 W/O ledge of the quartzite 1050
on south slope of high hill on north bank of stream

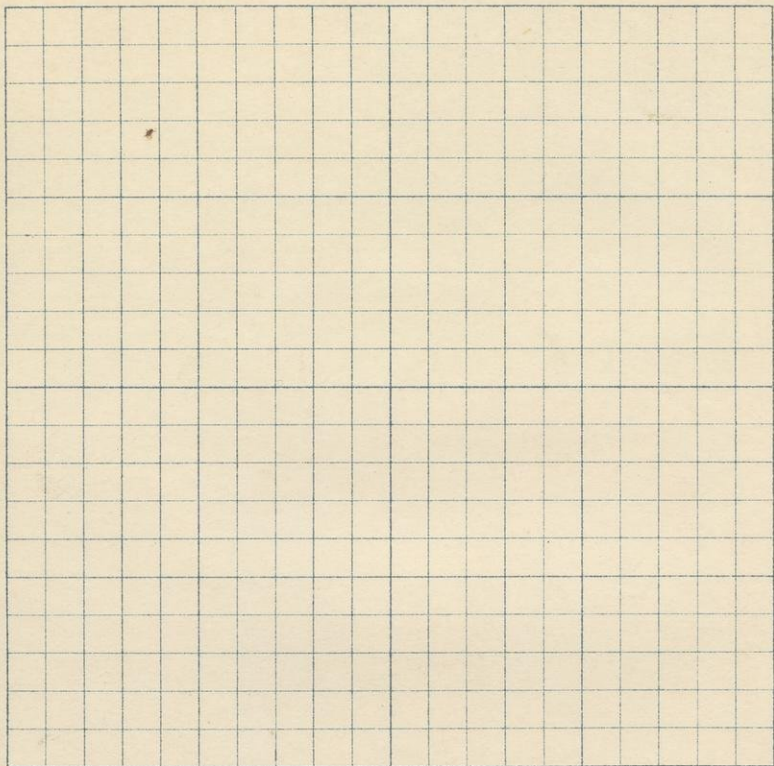
58

July 20 1891 River Co North

S.

T.

R.



July 20/891 Run By North $\frac{1}{2}$ line of
Sec 25 T45 R36M. 522.54
Sep 800 with 2808 at 10:35 AM.

10.50 El 495

11.25 500

12.20 640

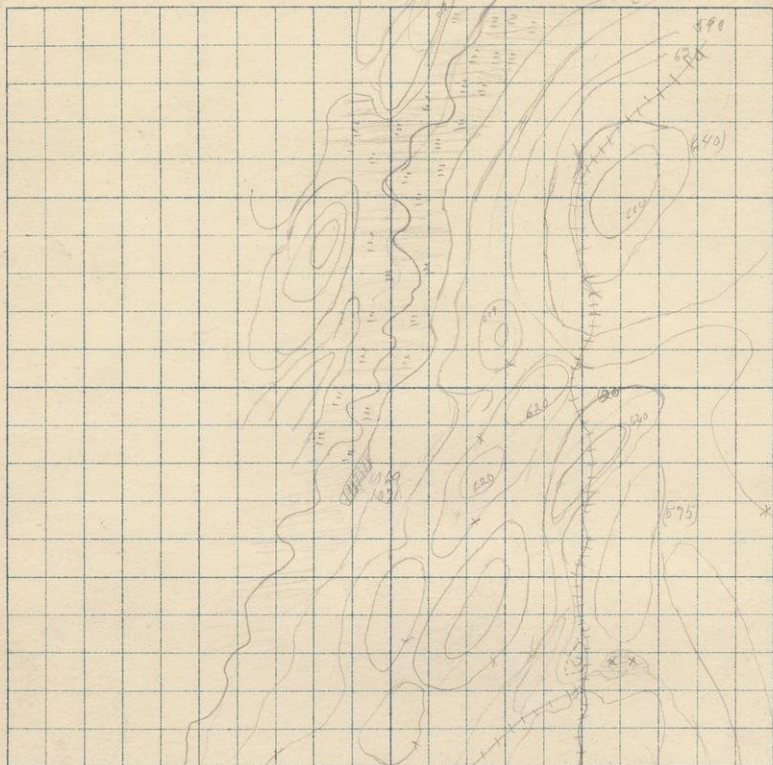
July 21 1891

Run Elm Co. with ant

S. 32

T. 45

R. 3 (350) 590



Branch 592

630

632

680

650

660

620

675

640

698

650

640

630

620

630

620

630

620

680

670

660

650

640

630

620

610

600

590

580

570

560

550

540

530

520

510

500

490

480

470

460

450

440

430

420

410

400

390

380

370

360

350

340

330

320

310

300

290

280

270

260

250

240

230

220

210

200

190

180

170

160

150

140

130

120

110

100

90

80

70

60

50

40

30

20

10

0

July 21/1891 Run E line Co South of
 Sec 32 T45R36 BN 62862

Set 60' with 2824 at 7:20 AM.
 Corner in streak of hardwood N+E about 400 paces
 wide. After this and on each side burned recently.
 (85) (630) 8:55 AM.

Secor (665) 8:40 AM.

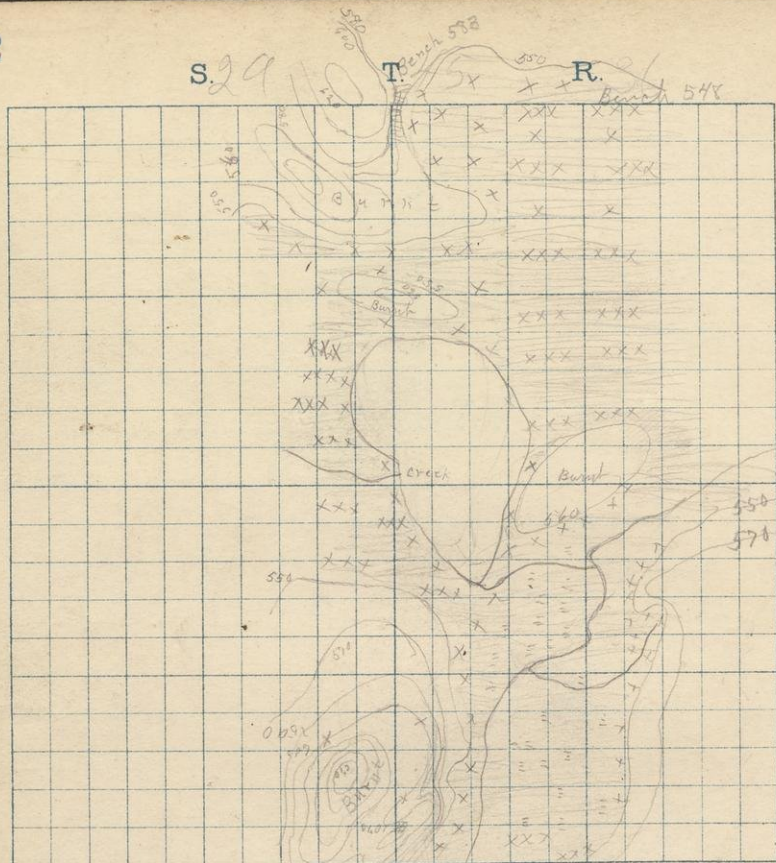
Since 200 everything on this mile burned
 Corner in creek valley

W's N of Sec 32 T45R36
 The whole mile except along creek burned
 BN. at and 59212 N02 (640) 1:30 PM.
 Close of 1970, 40 E of corner

S. 29

T.

R.



Left Contours etc. etc.
when marked otherwise
MCC

July 21 1791 Run $\frac{1}{2}$ line Bg south of

Sec 29 T45 R36.

Corner in creek valley (565) 8:40 AM. flat.

575 Creek 4 paces N.N.E

950 (580) 9:05 AM.

Corner in cedar and tan oak swamp

B.M. 548.07 No 2, (600) at 9:55 AM.

Run Bg North $\frac{1}{4}$ line of Sec 29 T45 R36

B.M. 582.67 Feb 301 with 28.55 at 10:15 AM.

Corner in recent burning.

Lake (550) 10:35 AM. (565) 11:05 AM.

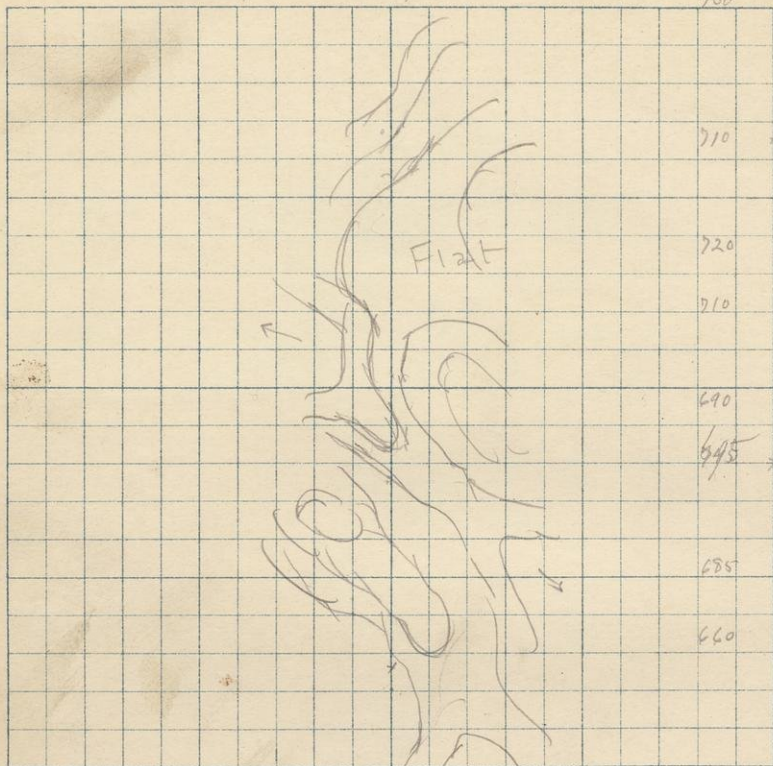
line at 1975 (610) 12:30 PM.

64

W line of
S. 37

T. 45

R. 36



(710)

710

(720)

Flat

720

(730)

710

(720)

690

(695)

645

(707)

685

(690)

660

660

655

X

July 22 1891 Run by south W line of
Sec 31 T45 R36 B.M. 65519

Set 800 with 2775 at 8:25 A.M.

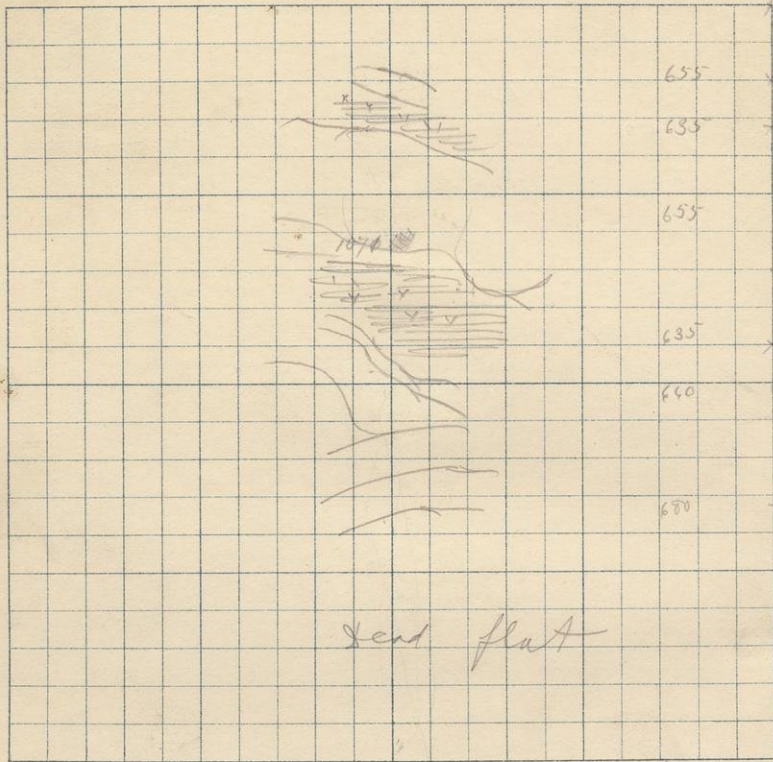
8:45 - 7020

9:00 710 at end of run

Fair hardwood entire side

W. line of S. B. Bench 650 T. 45

R. 36



sand flat

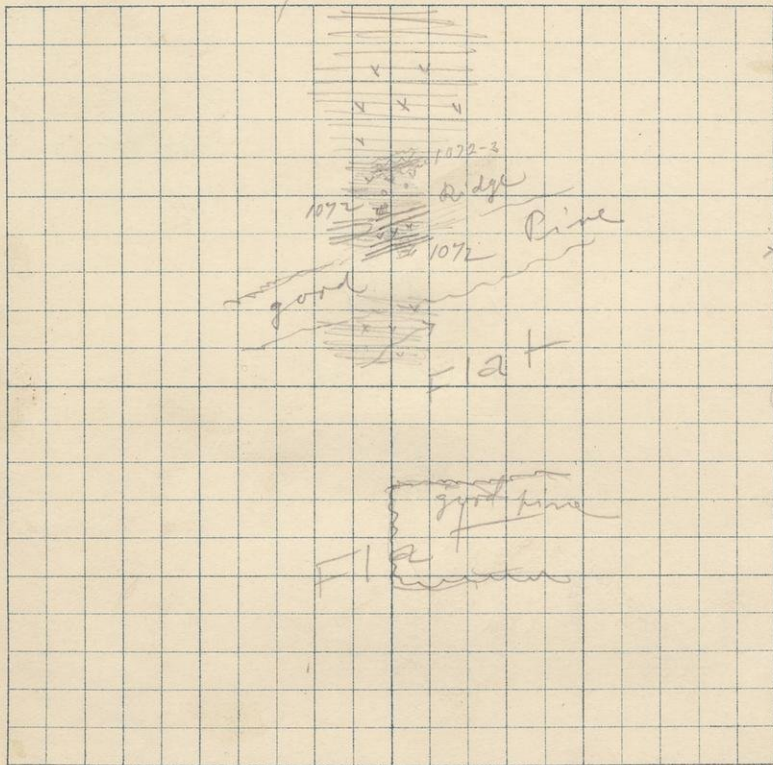
X

107

July 22/71 Bin Bz south W line of
 Sec 30 T45R36

1071 At 1340 W 2000. From south slope of
 rather abrupt ridge of the rock.
 This particular place was chosen on account
 of the inclusion the structure made out
 665 at 9.45 A.M.

S. 19 T. 45 R. 36



(625)

(600)
(620)

(605)

107

107

Bend 650

x

July 22 1891
Run By South W. line of
Sec 19 T45 R36

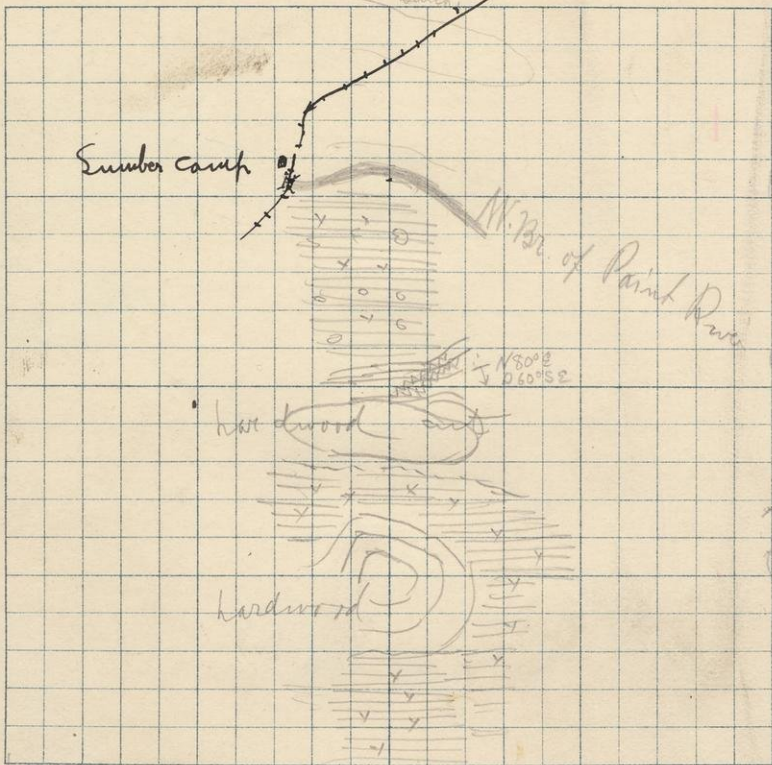
69

500 North streak of good thick pine
running to 800 on East of line
From 1/4 stake to 2000 fair medium
thick pine on both sides of line.

- 1072 N 15° 80 W 2000 strike of foliation
N 60° E dip 65° ~~SE~~ Northern side of outcrop
a rather abrupt ridge.
- 1073 Same location and outcrop about 10 feet
west of 1072.

625 at end of run 10.50 A.M.

S. 18 T. 45 R. 36



*

July 22 1981
 Run by Smith
 W line of Sec 17 T4 S R 36

1074 N1050 W 1980 Strike of foliation
 N80E dip 60° SE From N.W. side of ridge
 with vertical edge. There are vertical fractures
 and veins of quartz parallel to foliation.

Scattering good pine whole mile
 North of river thick sapling pine.

At North B.M. — ? Burned
 No 2 roads (660) 12:10 P.M.

July 23/191 1/4 line By Mouth of

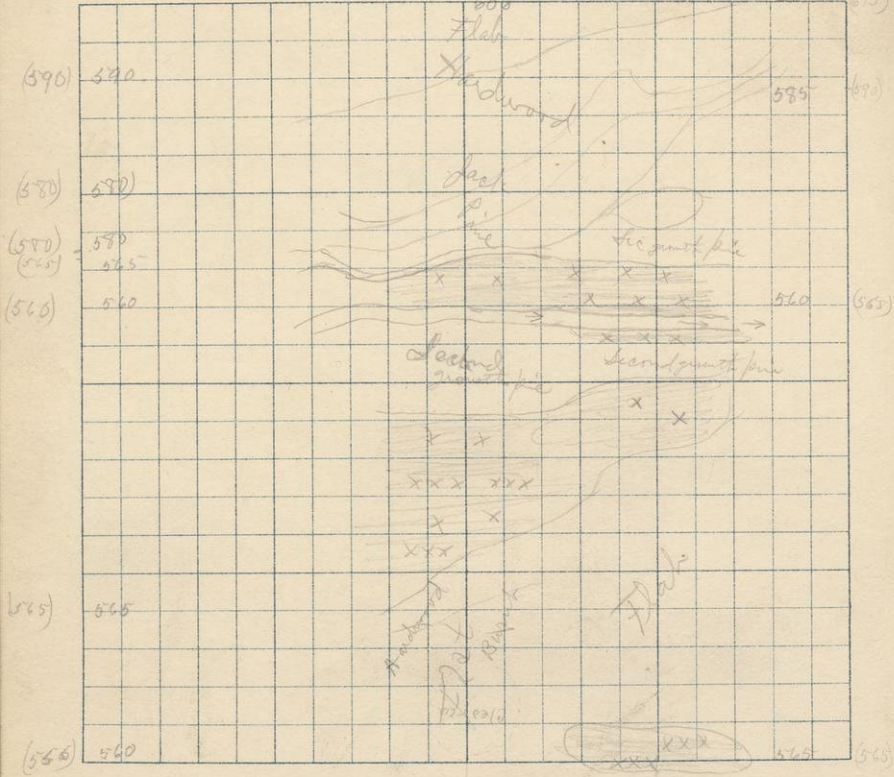
S. 17

T. 45

R. 36

610

(615)



July 23/1991 Run By North $\frac{1}{4}$ line of
 Sec 17 T45 R36 B.M. 605.77
 Left 400 with 28.25 at 8:15 A.M.
 Cor in good hardwood, flat,
 River (545) 875
 1600 (565) 915
 1960 State (655) at 9:25 A.M.

E $\frac{1}{4}$ line of Sec 17 T45 R36 Bg. South
 Corner in cedar swamp 565 at 12:30 P.M. 1000
 1154 River (565) 1:10 P.M. (575) 1:45 P.M. 300
 1567 (590) 2:20 P.M.
 2084 line 74 E of post
 B.M. 610.00 No 2 (615) at 2:30 P.M.

1/2 line Bg North of + 2 1/8 Bg South of

S. 20

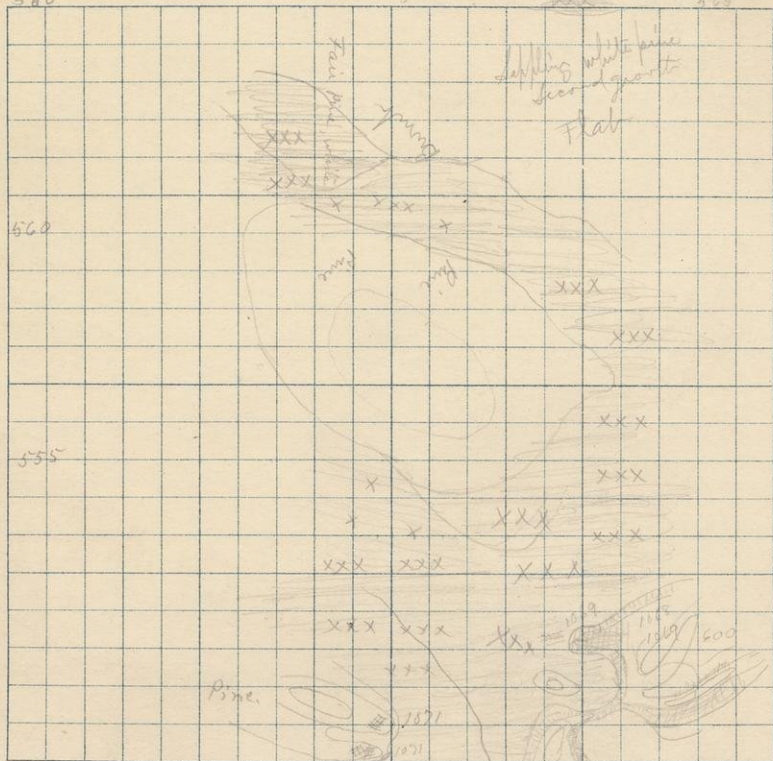
T. 45

R. 96

(585) 580 425 (565)

(555) 560

(545) 555



X
X

July 23/891 Am Bg North $\frac{1}{2}$ line of

Sec 20 T45 R36.

Cover (655) left 9:25 AM.

500 South (655) 9:50 AM.

Pine so far only fair, but thick, white.

N 170 W 1070 Abrupt ridge running nearly
E & W expose at eastern end the rock 1071

Quartzite?

2051 line 58 W of cr. BM. 55489

No 2 (680) at 10:50 AM.

$\frac{1}{2}$ line Bg South of Sec 20 T45 R36

BM 58267 left 500 with 2817 at 11:15 AM.

N 300 W 500 very large outcrop of
1068 and 1069.

Cr at 2035 (565) at 12:30 PM.

76

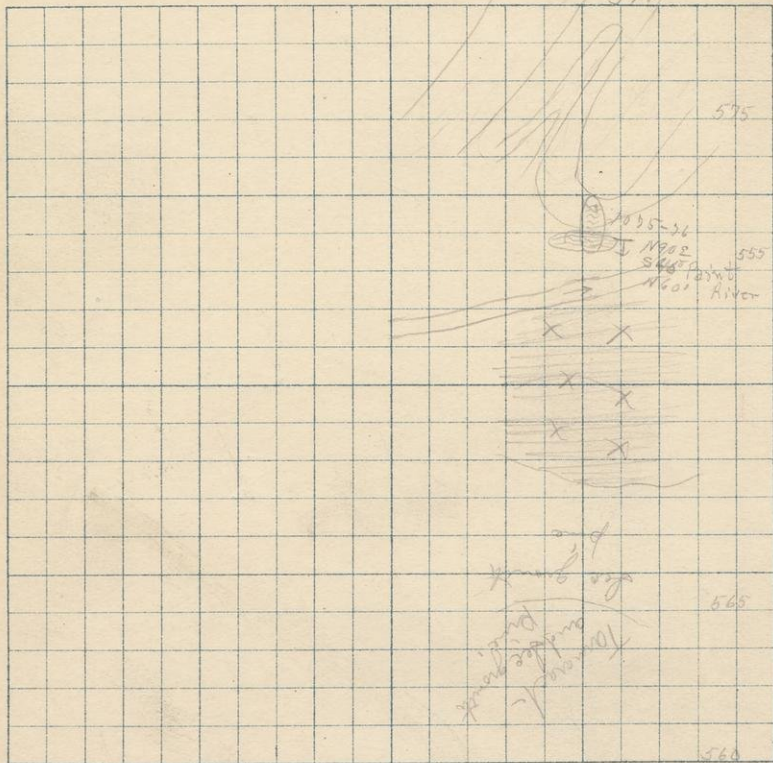
E line Bq North of

S. 17

T. 45

R. 86

578



107

107

(575) 1/2

(575) 1/2

(575) 2/3

1000 ft
Boulder Pt.
Boulder Pt.

575

555

565

560

X

July 24, 1891 Run By North E line of
Sec 17 T45R36 BM. 57795

Set 600 with 28.33 at 8:30 AM.
300 South (580)

1075 N1495 W 0 Strike of foliation N90E
Dip 60° N From west face of outcrop
which is a ridge, abrupt trending nearly
N90E. There is a break in the western, vertical,
face at which I find this rock.

1076 Location as above strike of foliation
N 90E Dip S 45°
Relations of the two are sketched roughly
on page 107

725 River. (565) 9:55 AM.

1600 (575) 11:10 AM.

1850 Corner (575) 11:25 AM.

See Page 107 for Geology

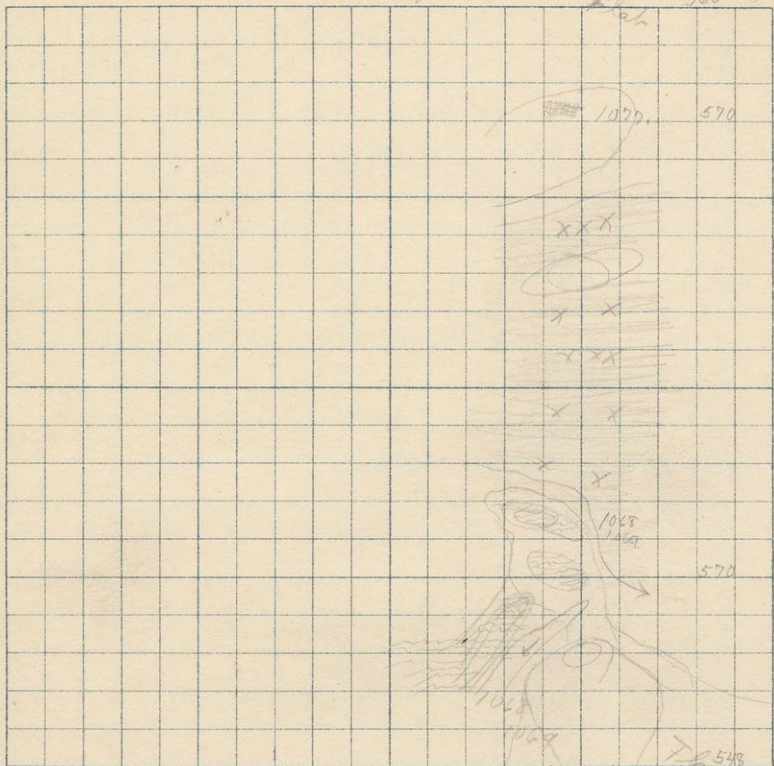
July 24 1891 Ellice By N. 6

S. 20

T. 45

R. 36

560 13 (575)



107

(535)

(570) 11

580

Block 548

X

July 24/1891 Run by North Eline of
Sec 20 T45 R36.

Cor in mixed tamarack birch sec growth pine
cedar etc. etc. (575) 11:25 AM.

1077

N 1735 W 10 From eastern end
of low ridge of the rock.

Think it a repetition of 1071 but
take specimen to be safe.

I think this whole vicinity for two miles
each way is underlain by rock much
like this specimen.

----- N 500 W 0 Another large out crop of
1068 and 1069 evidently continuation of
yesterday's.

1500 (580) 12:45 PM.

1947 line 90 E of cor. (585)

BM 54307 No 2. (580) at 1:15 PM.

Burned from 1400 South

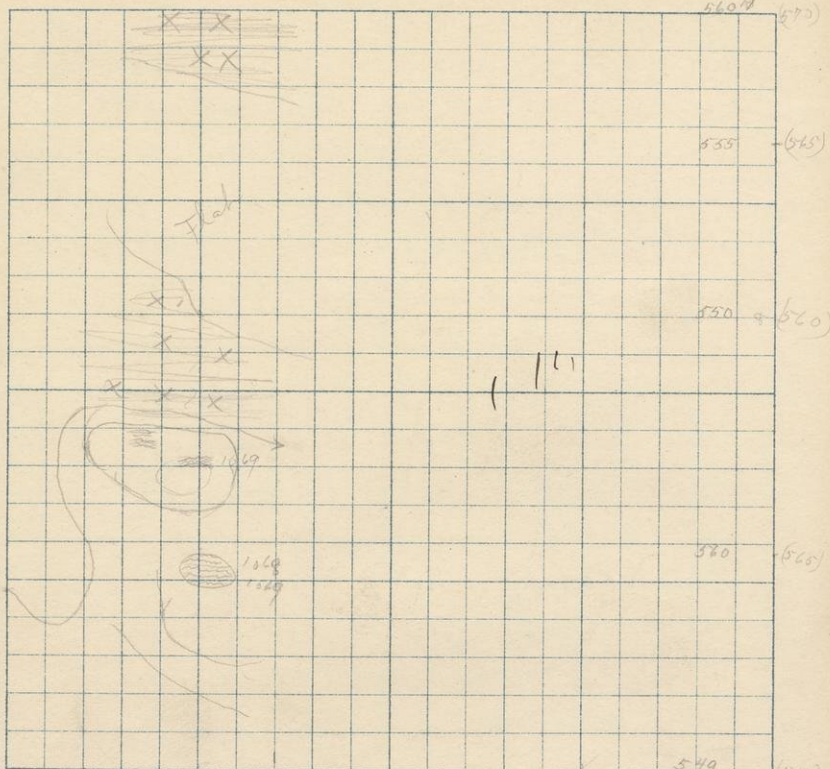
July 24, 1891

Run by South W¹/₂ line of

S. 21

T. 45

R. 36



549
X

~~XXXXXXXXXX~~



July 24 1891 Run by South W & line of

Sec 21 T45R36 B.M. 548.60

Set 900 with 27.97 at 1:30 PM.

Co in recent burning. Buried up to 400
550 (565)

1200 (560) 210 PM Tamarack and balsam

1651 (565) " " "

1990 line 6 W of stake (570) 240 PM.

Co in tamarack (swamp?)

July 24/1899 Ranch W & line By South

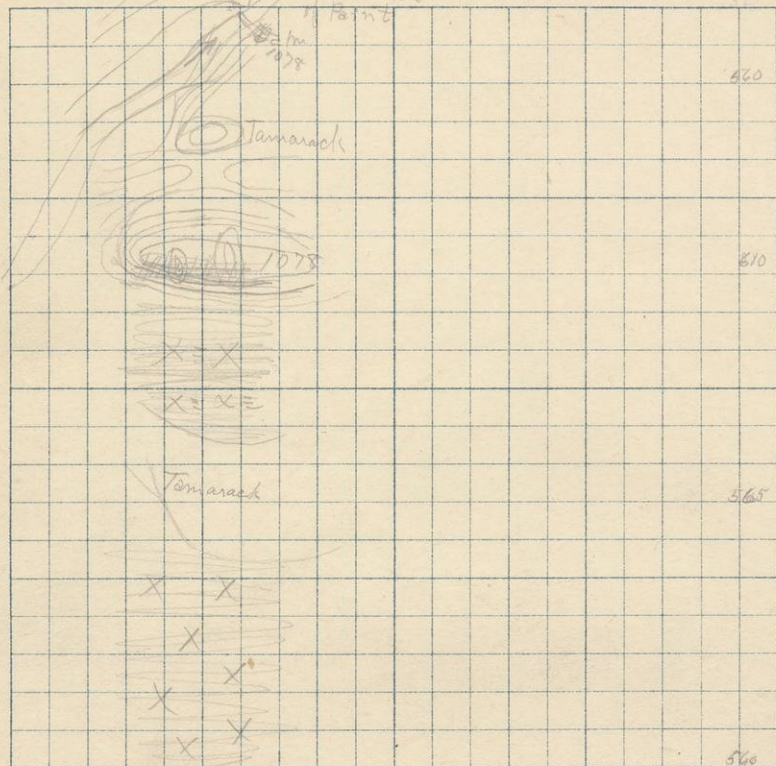
S.

T. 45

R. 36

West Branch

1/2 mile



Beginning with 1000 Sch everything
 South 200. An error was made by calling
 500, 1000.

July 24/1891

83

Run by south W $\frac{1}{4}$ line of
Sec 16 T45 R36

Cor in tamarack swamp, truck. (530) 2440 PM
700 (550) 3:10 PM.

1078 N 130° W 150° From south slope of
an immense outcrop. Seams to be
just like 1071

1336 (620) 3:40 PM.

1800 (585) River.

2031 line 16 W of cor.

B.M. 57566 No 2, (610) at 4:30 PM.

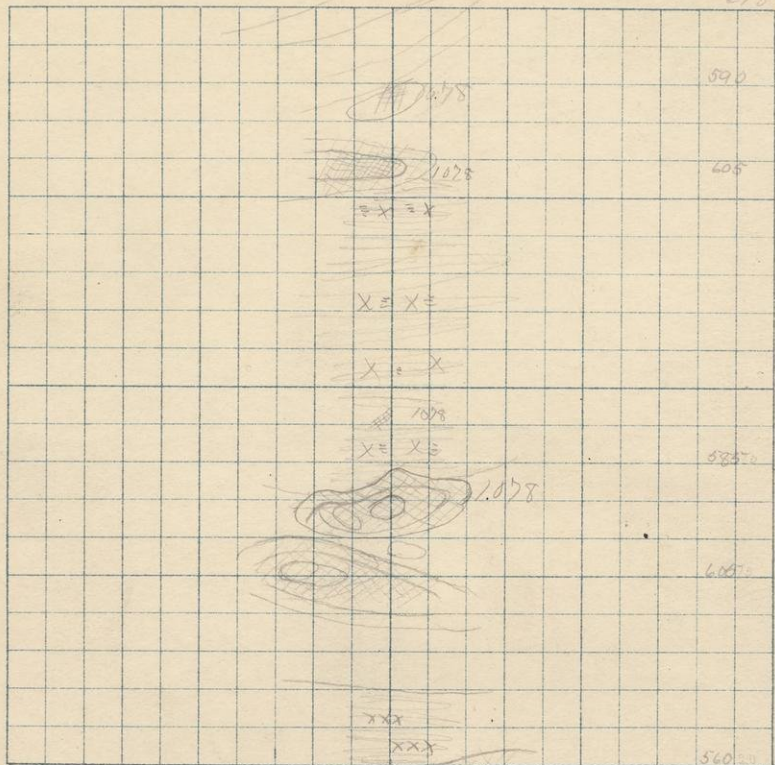
July 25, 1891 $\frac{1}{4}$ line B₂ North of

S. 15

T. 45

R. 36

618



1078

July 25 1891, Run By North $\frac{1}{4}$ line of
 Sec. 15 T45 R36 B.M. 678.29
 696
 610

 675
 1078 with 28.75 at 7.35 A.M.
 Corner in good hardwood mostly maple.
 N 1785 W 1000 A large outcrop of 1078
 It is broken into a mass of generally
 rhombohedral boulders.
 Growth from 150 on to 500 is tamarack,
 cedar and balsam, very thick. Wet woodsy swamp.
 425 (610)

 1079 N 939 W 1010 Small outcrop of 1078 showing
 a slight tendency to foliation.
 1237 (595) 8.35 A.M.

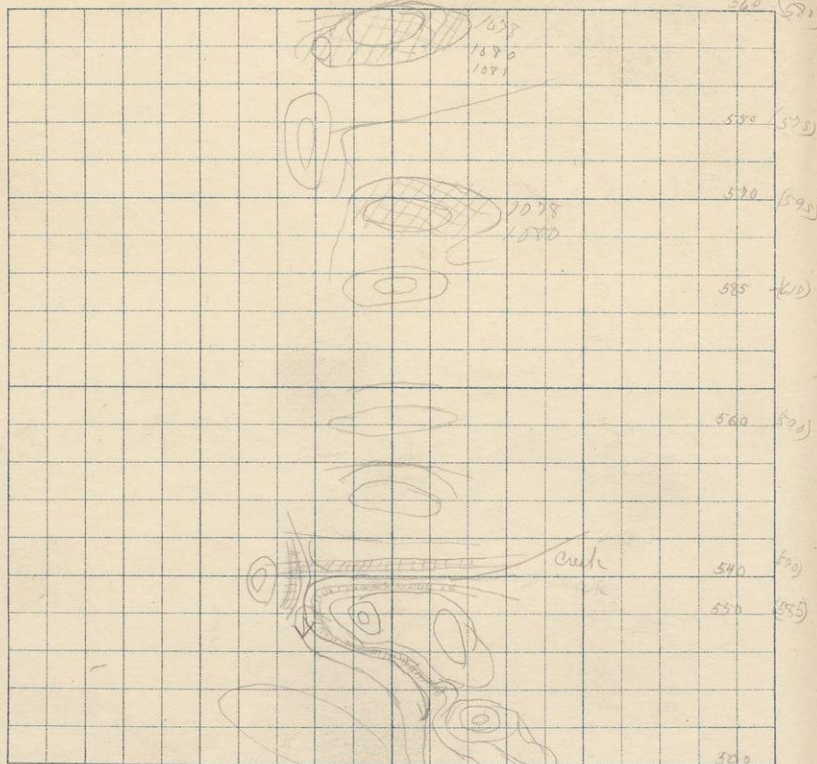
1079 N 740 W 1000 A very large outcrop of 1078
 This specimen is taken for the pebble it shows.
 1500 (620) 9.05
 2050 line at post (580) at 9.30 A.M.
 Burned on this side from 1200 to 1800
 620
 670

July 25/1891 $\frac{1}{4}$ line By North of

S. 22

T. 25

R. 36



July 25/1891
 Run Bg North $\frac{1}{4}$ line of
 Sec 22 T45 R36

Cor in recent burning. (580) at 9:30 AM.

(1080) N/1980 W/1000 Strike N81°E Dip 90°N
 Both fr foliation. Alternates with
 1078 in the hill shown.

At one point I find

(1081) N/1834 W/1000 Strike and Dip of foliation
 as above, alternating with 1078

I find two layers each about 4 inches thick
 and cannot trace them either way except
 a few feet E + W. Outcrop is covered.
 300 (578)

526 (595) 10:00 AM.

1090. 590

466 (570) 10:30 AM.

1980 line 80 W of Cdr. (530) 11:00 AM.

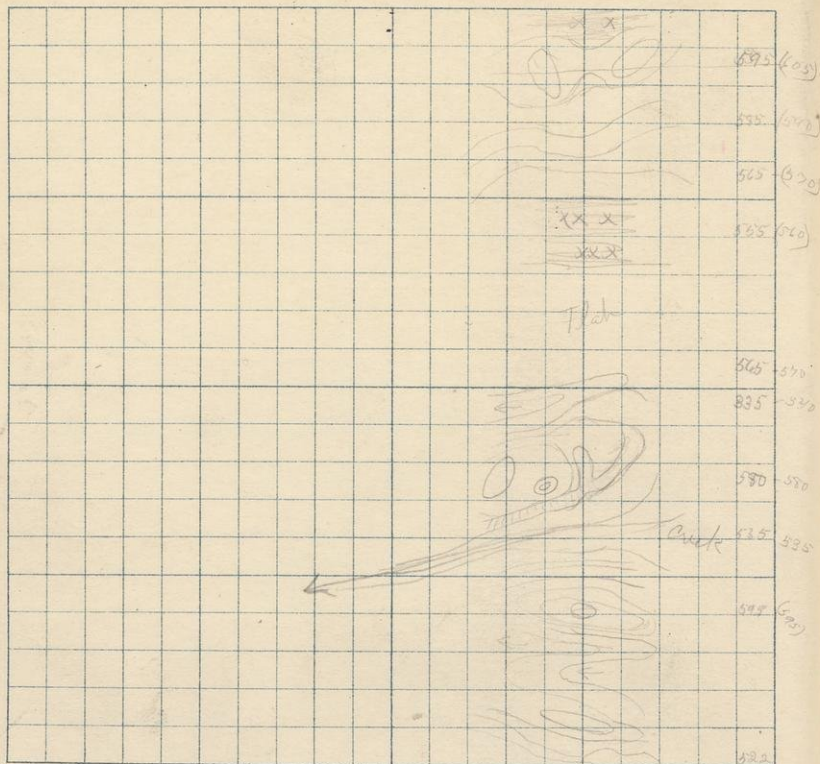
B.M. 499.38 No 2 (585) 11:05 AM.

July 25/89/ Elk line by South of

S. 22

T. 45

R. 36



622

July 25 1891 Run By South $\frac{1}{2}$ line of
 Sec 22 T45 R36 B.M. 622.54
 Let 600 with 28.14 at 11:55 AM.

Post in recent burning

420 (595)

600 (535)

750 (580) 12:25 PM.

1546 (570) 12:55 PM. Tamarack + birch

1700 (590)

1750 line 50 E of stake (605) 12:55 PM.

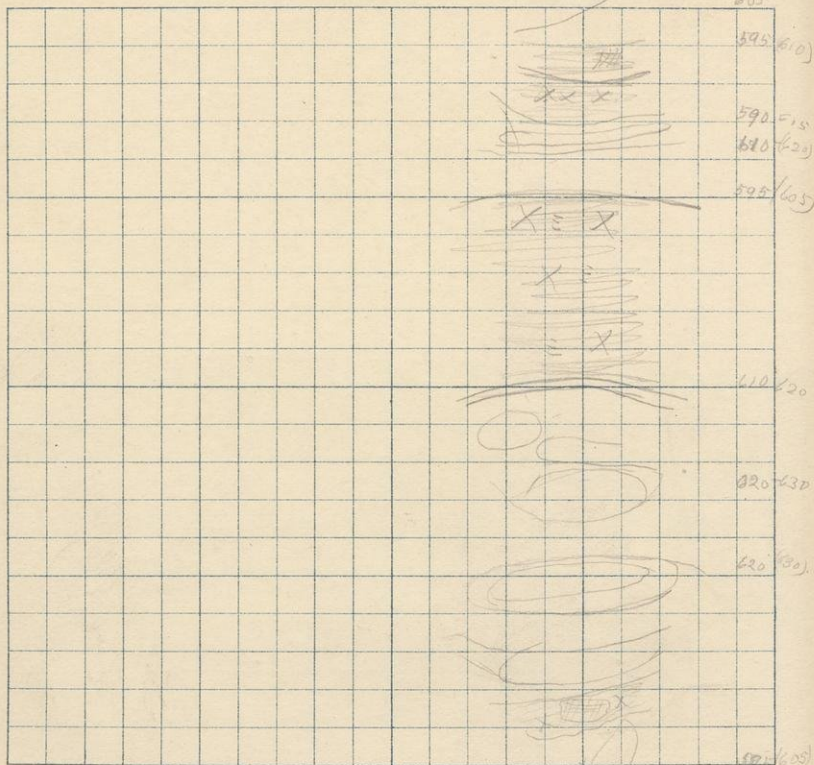
Whole mile except swamp burned.

July 25, 1891 W⁴ line B⁴ to H⁴ d.

S. 15

T. 45

R. 36



X

July 25 1891 Run By South W¹/₂ line of 91

Acc 15T45 R36

Corner in recent burning (605) 12.5 PM.

540 (630)

240 (630) 1.55 PM.

1000 (620)

1500 (605)

1700 (605) 2.25 PM.

2020 line B1 E of cor

B.M. 60355 No 2, (620) at 2.40 PM.

92

July 27, 1991 White Bg/North of

S. 14

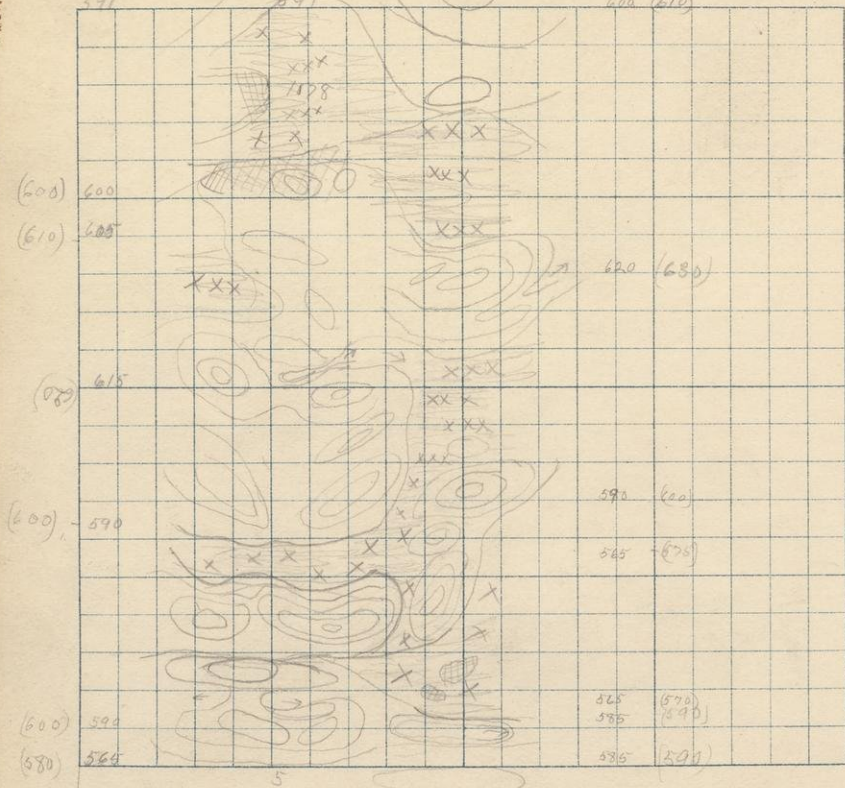
T. 45

R. 36

591

591

600 (610)



July 27 / 1891 Run Bg North W line of 93
Sec 14 T45 R36 B.M. 590.55

Set 400 with 28.17 at 7.55 A.M.

Corner on hardwood edge of hardwood and
tamarack.

400 (600) 600 Etn hardwood

610 (610) Burned from 600 to 800

1000 (620) 8:25 A.M.

1365 (600)

1500 (580)

1400 (600)

1960 line of post (580) at 8:55

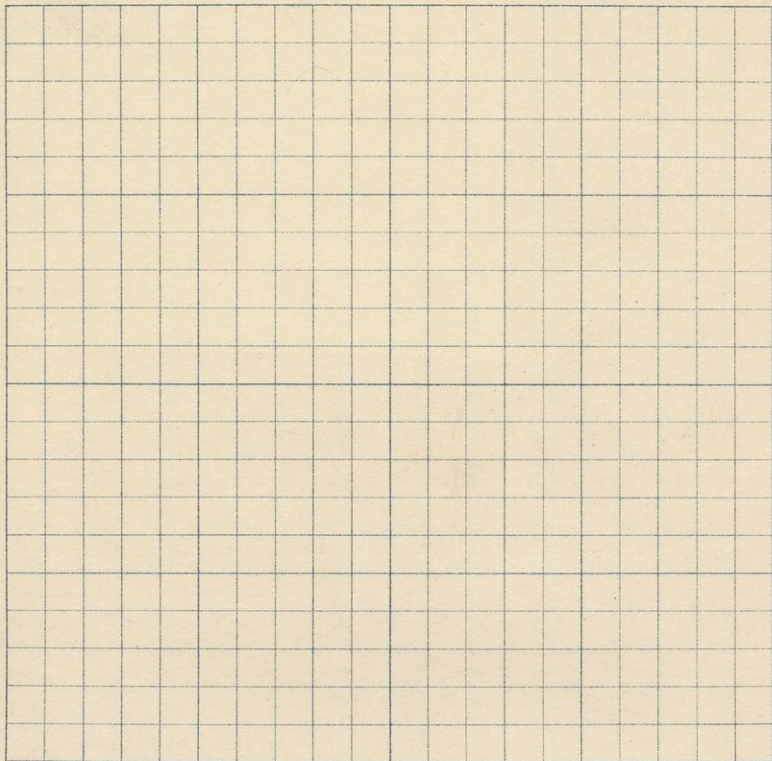
After 1000 burned except very narrow streak.

Every elevation contoured is outcrop of
yesterday's rocks and depression are
but slightly covered outcrop.

S.

T.

R.



July 27/1891 Run Bg South W & line of 95

Sec 14 T45R36

Post in tamarack (890) at 11:35 AM.

700 (600) 12:40 PM.

800 to 890 a few fair pine

1300 (630) 12:40

1975 line 89 w of post

B.M. 598.99 No 2 (610) at 1:00 PM.

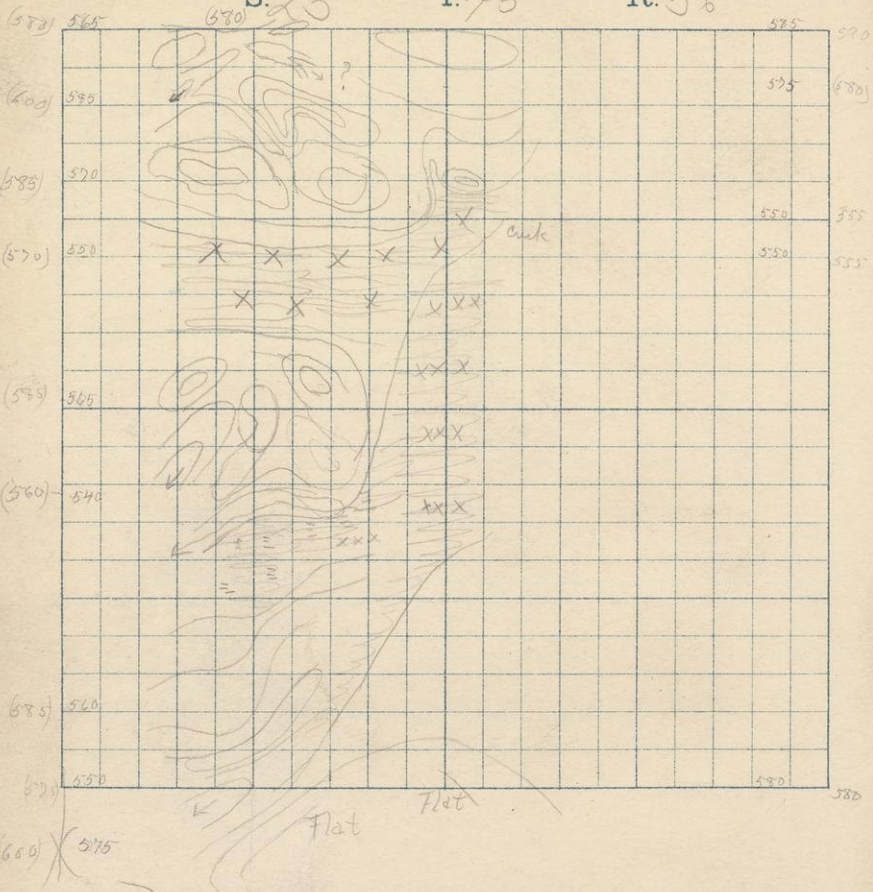
96

July 27, 1891 Whiting Bay North and W $\frac{1}{2}$ B $\frac{1}{2}$ South of

S. 23

T. 45

R. 36



July 27 1891 Run Bg North White of 97

Sec 28 T45 R36.

Post in partly burned tamarack almost a
swamp as are all depressions in this ^{immediate} region.
Co. (580) at 8:55 A.M.

200 (600)

400 (575)

980 (575) 9:30 A.M.

1230 (560)

1800 (585) 4:15

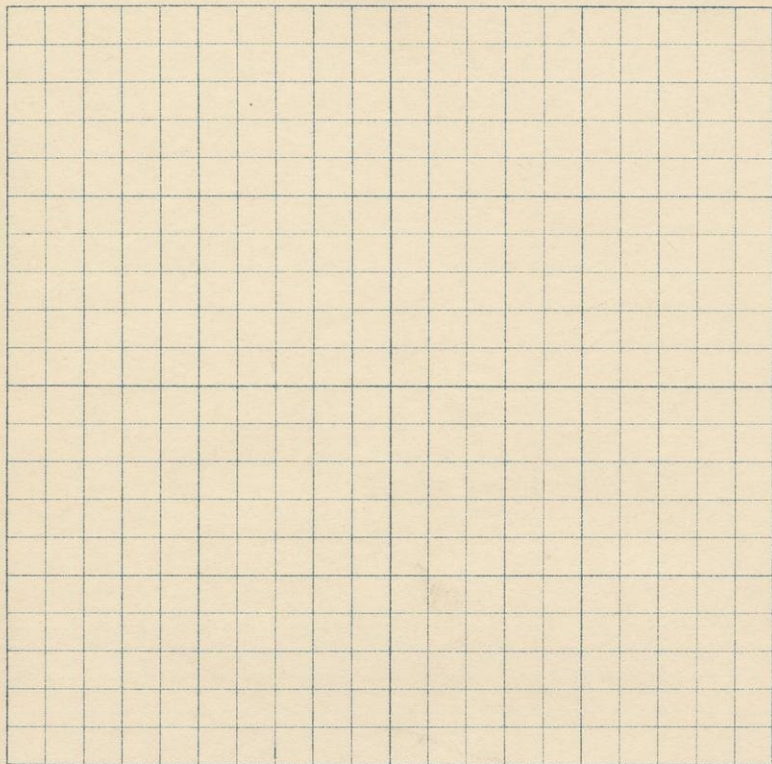
2135 Post Mistake in tallying sounder
BM 573.71 No 2, (600) at 1:50 A.M.

Post in edge of green hardwood
whole mile except swamp burned.
Same rocks as on previous mile outcrop
everywhere. Every elevation is rock

S.

T.

R.



July 27, 1941 Run Bg South $W\frac{1}{2}$ line of 99

Sec 23 T45R36 B.M. 52998

Set 700 with 2583 at 1020 A.M.

Post in good hardwood. flat;

1400 (555) 11:10 A.M.

1943 line at post (590) at 11:35

From 500 to 1000 there is a small
proportion of fair pine.

From 600 up tamarack.

July 28, 1891 Km. By North $\frac{1}{4}$ line of

Sec 13 T45 R36 B.M. 58235

Set 300 with 28.30 at 7:45 AM.

Post at edge of hardwood on west &
bearing on east

100 South enter green hardwood.

670 (620) 8:15 AM.

1400 (600) 8:45 Enter old bearing, aspen grown

1600 (590)

1890 line 10 W of State (570) 9:45 AM.

E $\frac{1}{4}$ line B₂ South of Sec. 13 T45 R36

Post in old bearing (530) at 1:45 PM.

760 (540) 2:30 PM.

1468 (585) 3:05 PM.

1830 line 35 W of post

B.M. 57213 NO 2, (580) 3:15 PM.

River (497)

102

July 26, 1891.

S. 24

T. 45

R. 36

510 (532)

(570) 550

Flats

1078

(570) 565

(570) 535

(570) 546

(570) 540

(570) 540

(570) 510

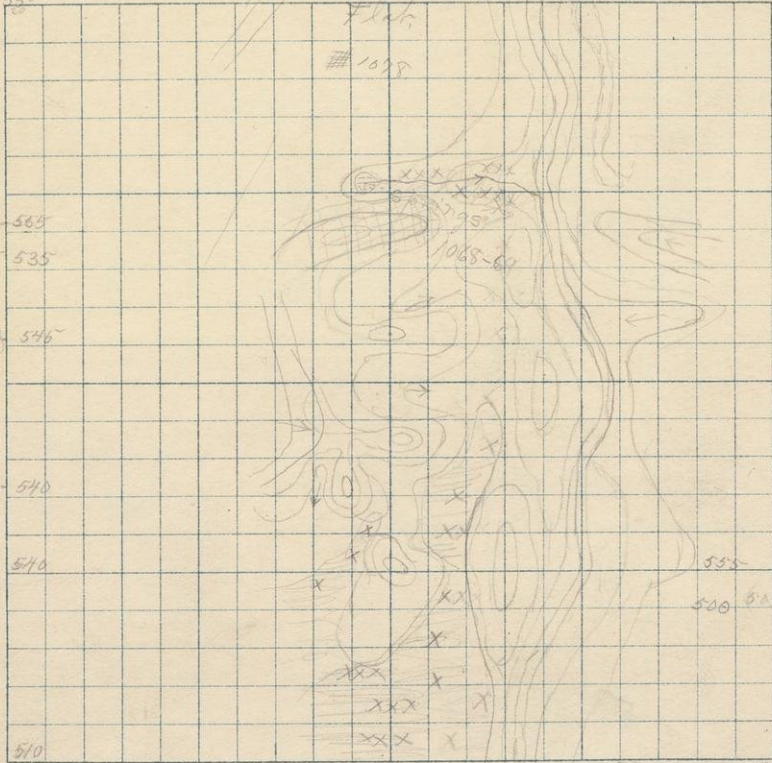
510

505

505

535 (500)
500 (535)

Point R.



July 28 1891 Run by North $\frac{1}{2}$ line Sec of
Sec 24 T45 R 3E

Post in old burning aspen grove (570) 9:15 AM
~~580~~ (580)

660 (560) 10:15 AM

1260 (570)

1500 (570) 10:45

1986 line 50 W of stake in swamp
B.M. 50987 No 2, (545) at 11:15 AM

Contoured elevations on this mile are outcrops
of 1068 and 1069, striking from N80SE N90E
Dip is nearly vertical. These of course fix the
foliation of 1069.

Q's line by South of Sec 24 T45 R 3E

B.M. 50928 at 500 with 2802 at 12:15 PM

Post in old burning aspen grove

485 River (600)

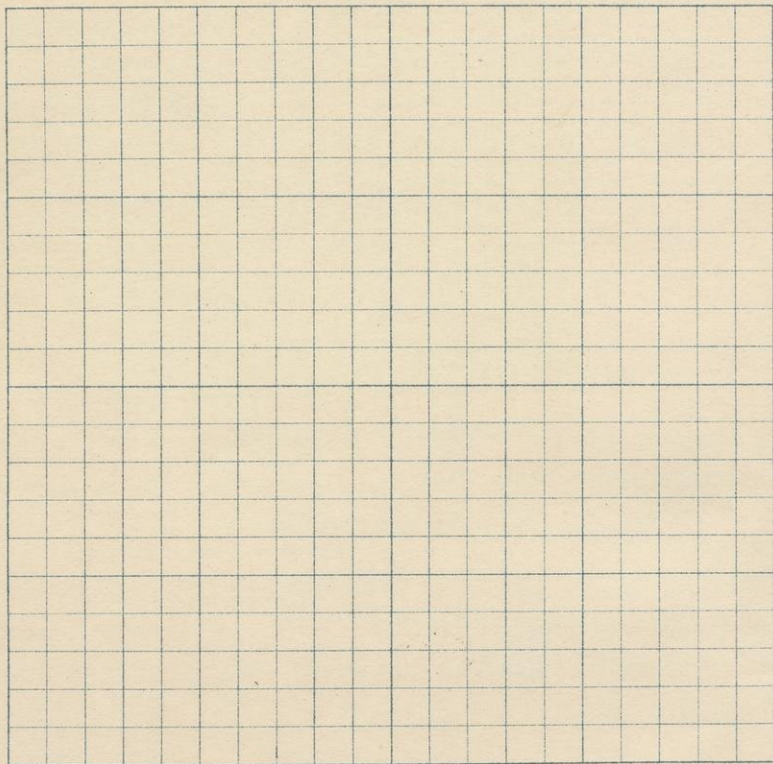
1360 (570) 1:15 PM

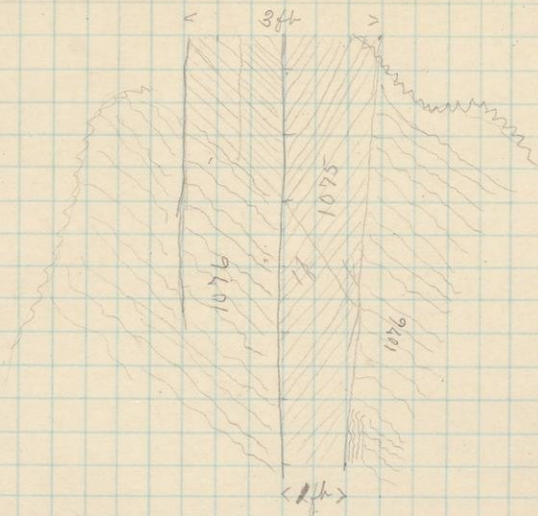
2000 line (530) 1:45 PM

S.

T.

R.





Small portion of outcrop of 1075 and 1076 page 77
 Section exposed on western face. Face very
 nearly vertical. Sketched on scale of 2 squares = 1 ft.
 Lines except broken ones represent cleavages.



43919 430 235 22 26

72.11 small of sh.

5

8

675

20 26

35

18

12

24

11

2

8

