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Township 44 north, ranges 31 and 32 west, specimens 30205-30224. No. 204 1891

Allen, Andrew

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

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204

LAKE SUPERIOR SURVEY

A. Allen

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.







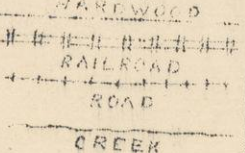




It will be the constant business of the geologist to search for outcrops. All hills within a reasonable distance of the course of travel will be examined. Oftentimes upon the steeper slopes of a hill a rock surface is covered with a coating a few inches thick of moss, leaves or vegetable mold and can be stripped with the pick. Where the exposure is small and there is the least possibility that it may be a large boulder, 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.

 <p>PINE OR HEMLOCK</p>	 <p>HARDWOOD</p>	 <p>PINE OR HEMLOCK AND HARDWOOD</p>	 <p>CEDAR SWAMP</p>
 <p>SPRUCE OR TAMARACK SWAMP</p>	 <p>MARSH</p>	 <p>RAILROAD ROAD</p>	 <p>NO STRUCTURE</p>
 <p>↓ 55° S. NEARLY MASSIVE</p>	 <p>N. 38° E. S. 62° E. SHALY OR BEDDED</p>	 <p>183° SECONDARY STRUCTURE.</p>	

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				

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

1891

1

Andrew Allen (No. 2)

Louisa Allen

Al. Parker

Notes completed June 20, 1891.

SPECIMENS - 205 - 224

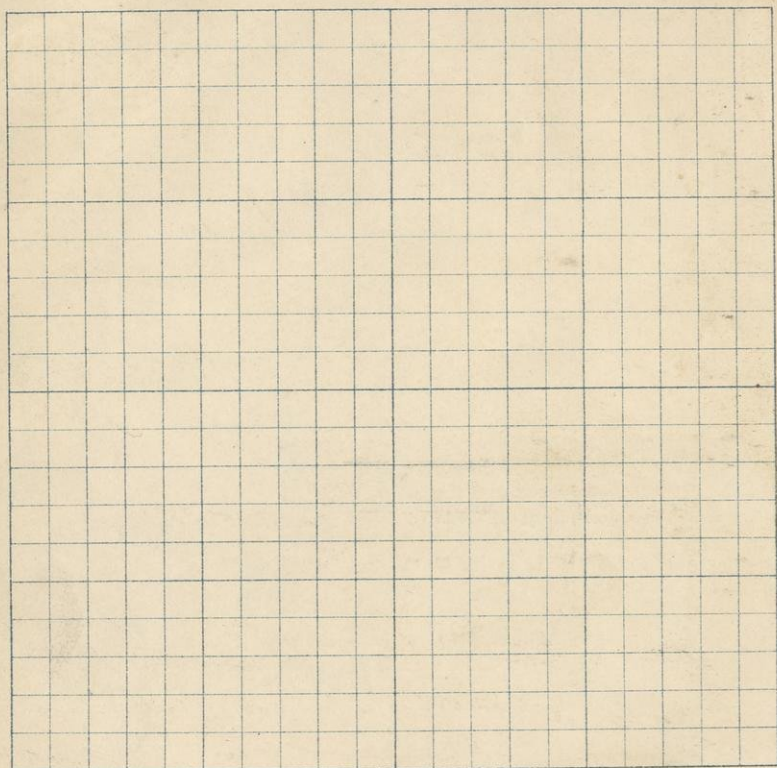
TOWNS 44 - 31

&  44 - 32

S.

T.

R.



Friday June 14, 1891

Arrived 7.30

28,933

28,780

Bench Marks for today

S.E. cor 23, 31.44 - 363.49

E. 1/8 " S line 443.99.

S.E. cor 35. 396.17.

E 1/8 " S. line 423.07.

~~Run for today, commencing
from S.E. cor of 23, 44, 31 south
2 miles thence west 1/4 mile and
thence north 2 miles to line of
Acquing.~~

Run for today, commencing from
the E. 1/8 post on South line of
23, 44, 31, two miles south,
thence 500 paces East, thence
2 miles north to the line
S.E. corner of 23.

On B.M.

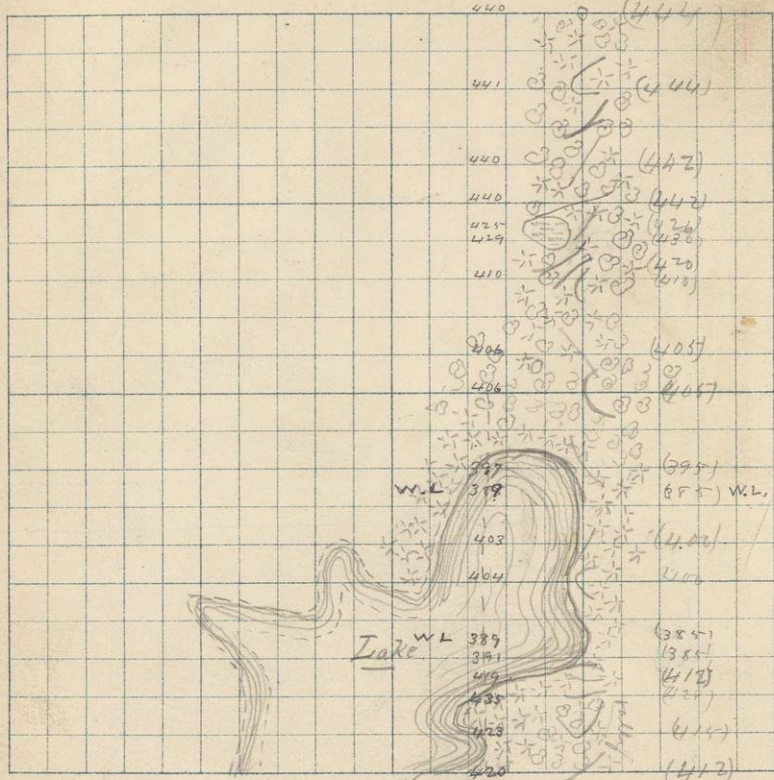
(28,780) 9.5

at

440 (444.)

(500 - 28,82)

S. 26 T. 44 R. 31



Run. South from E 1/8 stake.

maple and hemlock
mostly "

200. 441 (444)

300 449 (452)

edge of tank

400 440 (442)

500 440 (442)

top of tank.

355 bottom 425 (426)

Balsam + hemlock undergrowth
edge of small marsh.

600 429 (430)

665 420 (421)

Hemlock & maple

700 410 (410)

750

Jack pine & Balsam

undergrowth - maple & elm

900 9.30 406 (405)

enter maple & elm
good hardwood timber

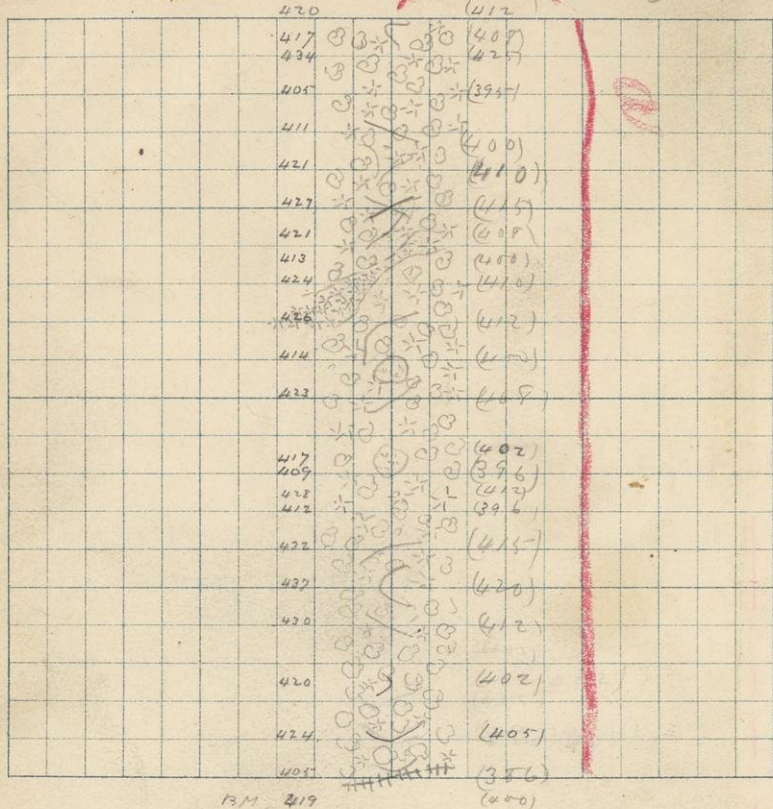
1000 406 (405)

1200 397 (395)

lake to forest edge

1255 edge of lake

S. 35 T. 44 R. 31



Run South in continuation
of line shown on preceding page.

1255 Water level 388 (385)

Lake fringed with
^{non-fog, pale}
 pine, cedar and birch

1400 403 (400)

1500 404 (400)

1607. enter lake

water level 10. AM 390 (385)

top of bank 401 (405)

10 fms from water

1675 leave lake

1700 391 (385)

1750 419 (412)

Mixed pine, cedar
 hemlock & hardwood

1800 435 (425)

Top of Bank

1900 423 (415)

Hardwood & Hemlock

2000

Stunted forest blaze 420 (412)

39

417 (408)

100 Maple Birch & hemlock 434 (425)

200

405 (395)

300

411 (400)

400

421 (410)

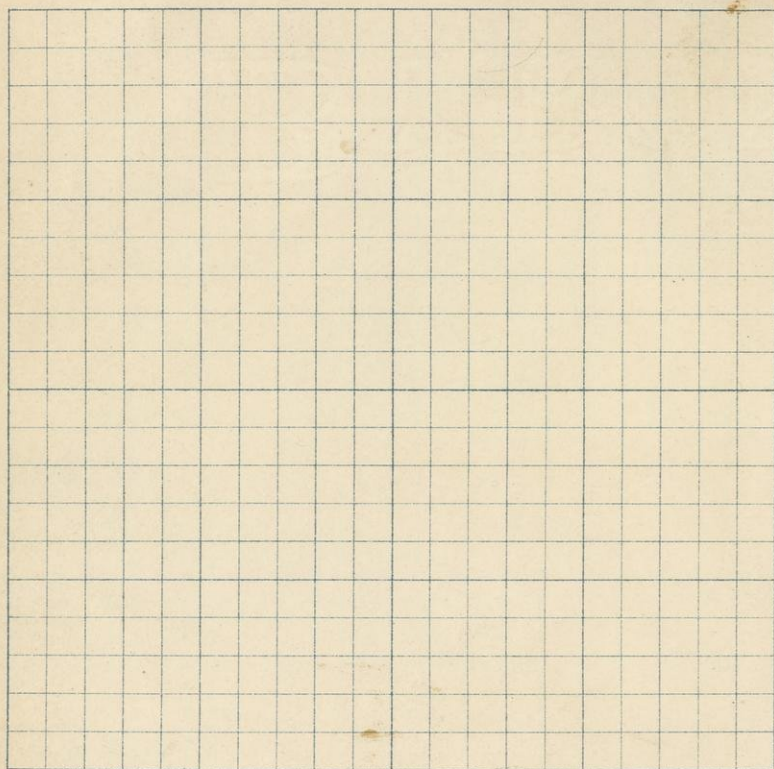
500

427 (415)

S.

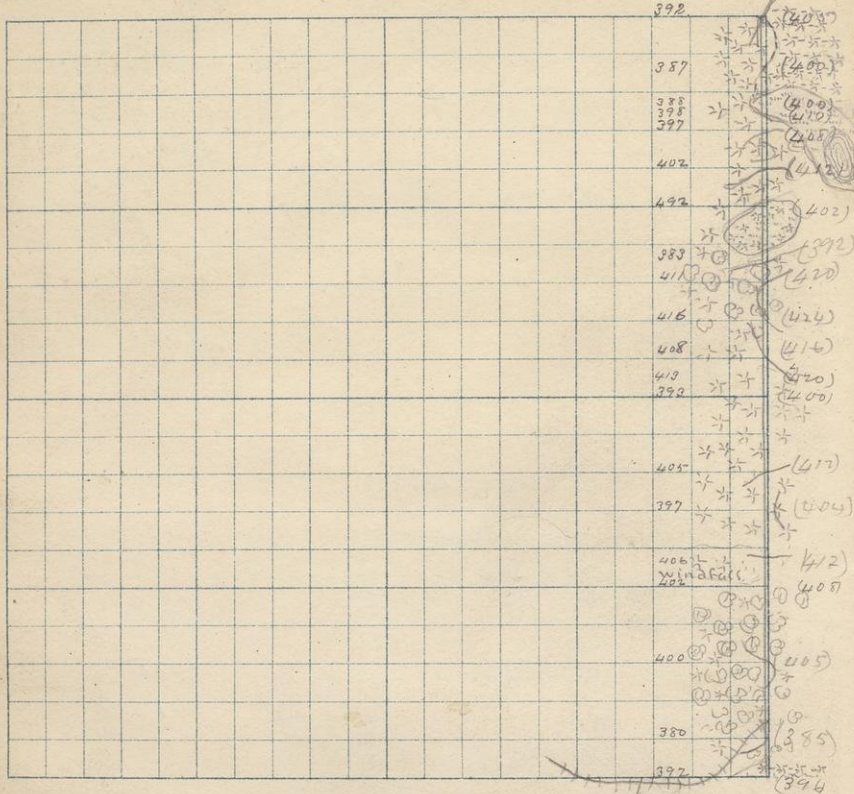
T.

R.



2564.		421 (408)
624		413 (400)
700	Enter Cedar + ponderosa swamp mud at base again	424 (410)
	Cedar Elm + Birch	
777	Heavy hardwood timber mostly maple	
800		426 (412)
900		414 (400)
	Mud hole	
1000	11. AM	423 (408)
1157.	800	417 (402)
	Hemlock Timber	
1200	min	409 (394)
1250	max	428 (412)
1300		412 (396)
	very heavy timber Hemlock + hardwood	(415)
1400		432 (415)
1500		437 (424)
1600		430 (412)
1750		420 (402)
	Wet end of marsh	
1910		424 (405)
	Maple Timber	

S. 35 T. 44 R. 31



Rim Nord from S.E. cor 35

2000 struck line. 5 paces
 East of Stake
 at Wagon road
 On B. M. 11.30 419. (400)
 (289.10)

Marked 423.07
 500 paces East then Sec 35.
 Thence Stake North from just

12 On B. M. (289.30)
 set at 392 (396)
 (29.090 - 250)

In cedar & tamarack swamp
 50. Clear swamp
 enter sparse hardwood timber
 100. 380 (375)

114 Wagon road
 Hardwood & Hemlock

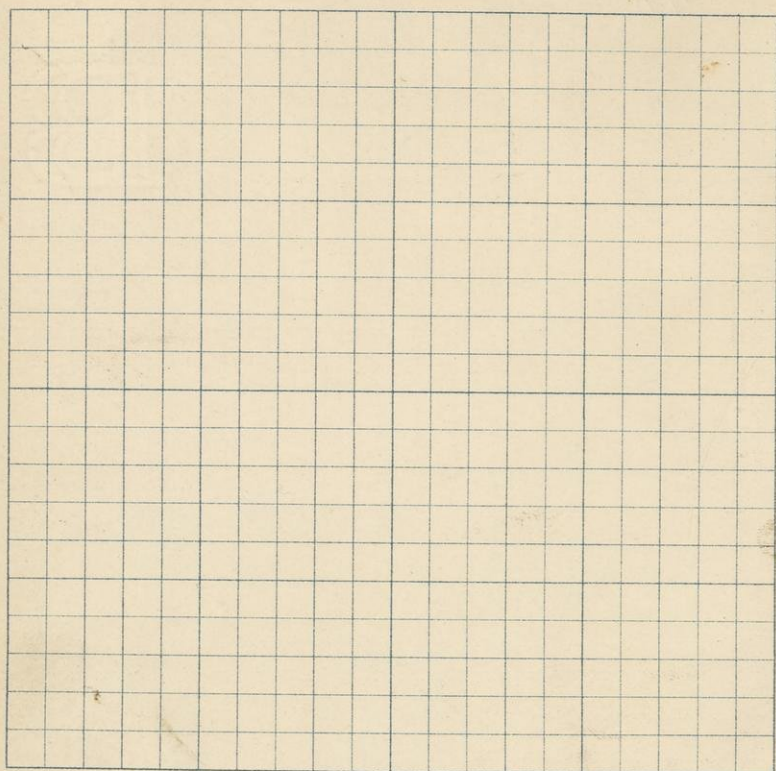
300 400 (405)
 500 Enter wind fall of 402 (408)
 turning - dead pine
 timber

590 406 (412)
 600 leave wind fall
 enter hemlock & cedar

S.

T.

R.



200.

397

(404)

scrub timber, balsam
hemlock etc

800.

405 (412)

1000

12.15

393

(400)

1020.

enter tamarack

12.20 413

(420)

1143

leave

408

(416)

enter pine Hemlock and
hardwood

1200

"

" 416 (424)

1300

411

(420)

1366

383

(392)

Enter tamarack swamp
and open marsh

1500.

492 (472)

leave tan swamp

1600

Hemlock timber

402

(412)

1620

max

409

(420)

1200

397

(409)

marsh and pond about
100 paces to East

1720

top of bank

398

(410)

1776

reenter open

388

(400)

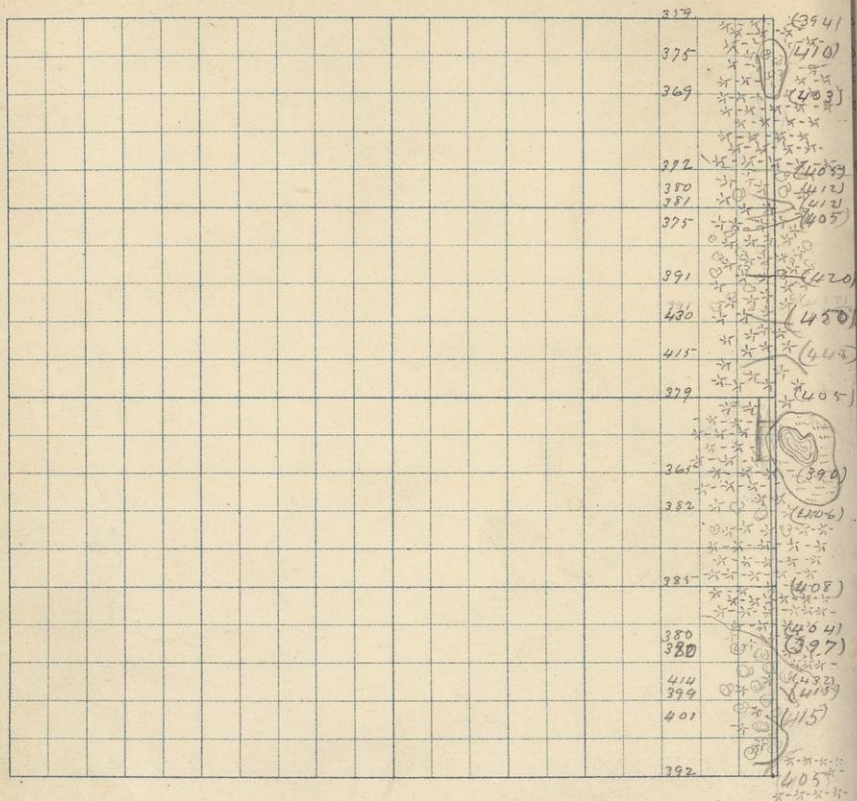
tamarack swamp

1890

leave same

387

(400)



Run North in continuation of
line on preceding page

1100

12.50 392 (405)

struck line 15 feet

West of corner post

corner in tamarack swamp

133. max

401 (415)

Maple with a few
large white firs

200

399 (415)

250 top of ridge

414 (432)

337. foot "

1.10 380 (397)

354. Enter cedar swamp 1.30 380 (404)

there is actually a
slight fall between the
two above stations

500

385 (407)

600. cedar tamarack and
a little scrub hardwood

700

382 (406)

800 mensl and lade on East ³⁶⁵ (390)840. Tree offsets to East 51 feet
as far as920 enter spruce and
tamarack swamp

1000 leave swamp

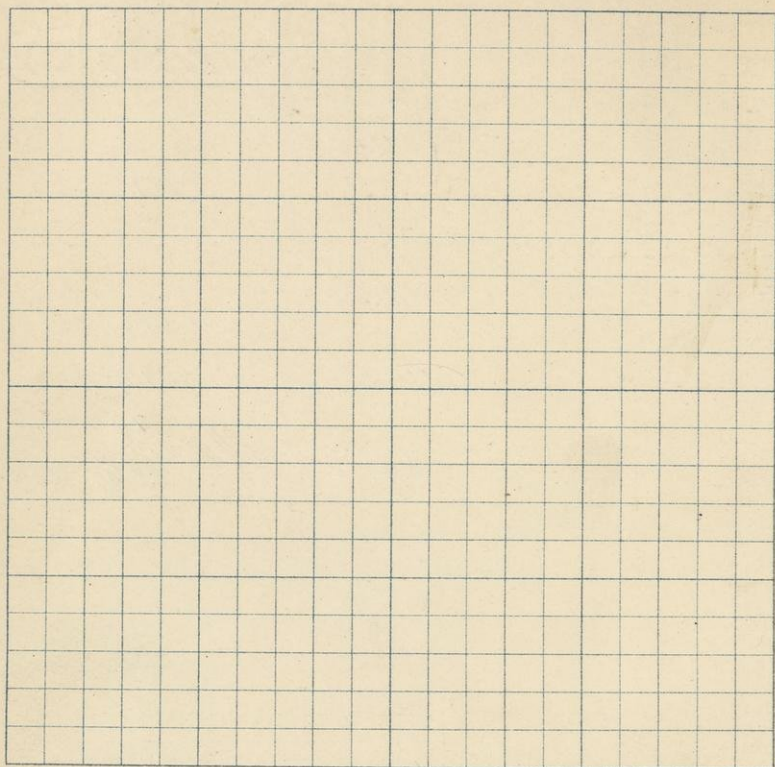
379 (405)

Enter Hemlock

S.

T.

R.



~~4421~~

1120

415 (442)

1200

max

430 (458)

1300

foot of bank

391 (420)

scrub timber

mostly hemlock and
fir

1450

min

375 (405)

1500

max

381 (412)

1552

380 (412)

1600

enter tamarack

372

sway 1405

2.20

1800

lean

"

369 (403)

1900

375 (410)

1920

reenter

"

"

1975

strike E & W line

24 step west of corner

On B. M.

(394)

359

(28.921)

Marker

363

2.35

At camp.

28,678

Camp Amore

28,899

No 10

221

Sat June 13

19

Run for Today

South from $S\frac{1}{4}$ 22. 44. 31

B. M. - $S\frac{1}{4}$ 22. 372.

W. $\frac{1}{8}$ on S. line 22 364.

$S\frac{1}{4}$ 34 422.

W. $\frac{1}{8}$ on S line 34 420.

Camp America 28.725 } 7.45 AM
America at 10. 28.944 }

On B. M. 8.40 AM (28.905)
(520 - 28.74) 368 (372.)

Start from $S\frac{1}{4}$ post Sec 22
run through South

Hemlock & Hardwood

100. 373 (377)

200. max burnt pine (barney, and Spruce) 376 (380)

300. enter tamarack or cedar swamp 358 (362)

350 leave camp
enter burnt timber as before

400 max 378 (372)

460 top of fair 370 (374)

500 bottom enter 358 (362)

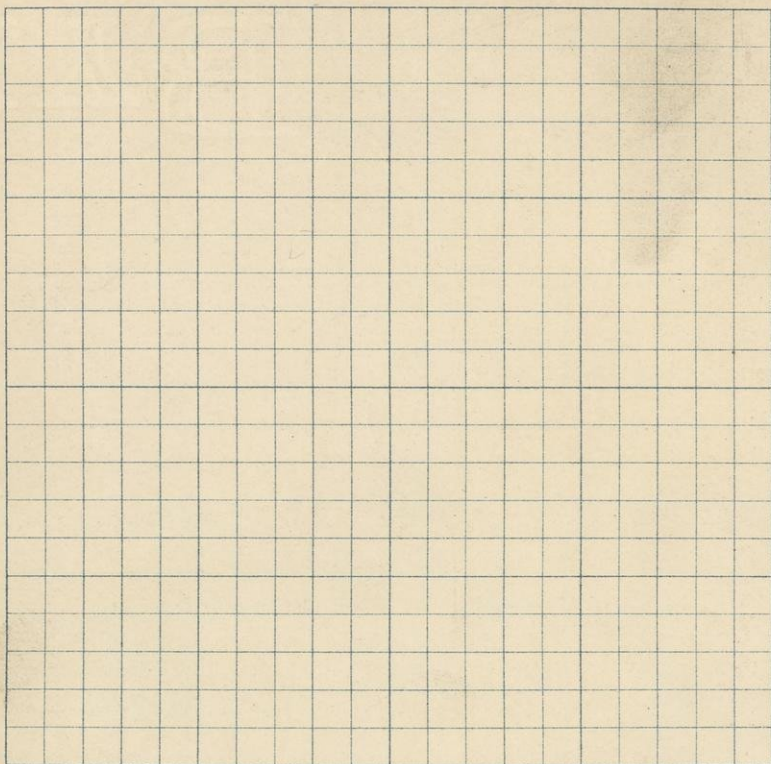
550 tamarack swamp 358 (362)

leave "

S.

T.

R.



600. max. 380 (374)

burns or partially burns
pine, hemlock and
hardwood

740 top of tank 394 (398)

800 min 371 (375)

850 max 396 (400)

burns Hemlock and
hard wood

980 burns tamarack ^{min} 360 (364)

970

985 small creek flowing West

1000 9.25) 366 (370)

1165 max. burns hemlock 381 (385)

and hard wood

1220 edge of tamarack ^{and cedar} 366 (370)

1300 in " " 368 (372)

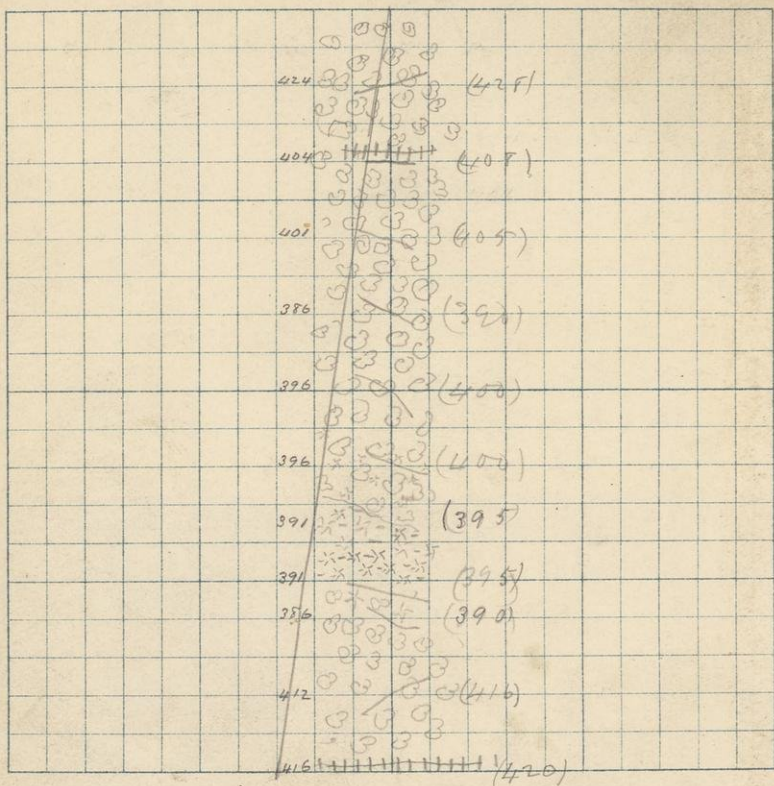
1400 leave away 368 (372)

enter Hemlock and
hardwood

1500 396 (400)

Standing maple and
fir trees.

1600 good maple (Leary) 413 (417)



Run South in continuation of
line on preceding page

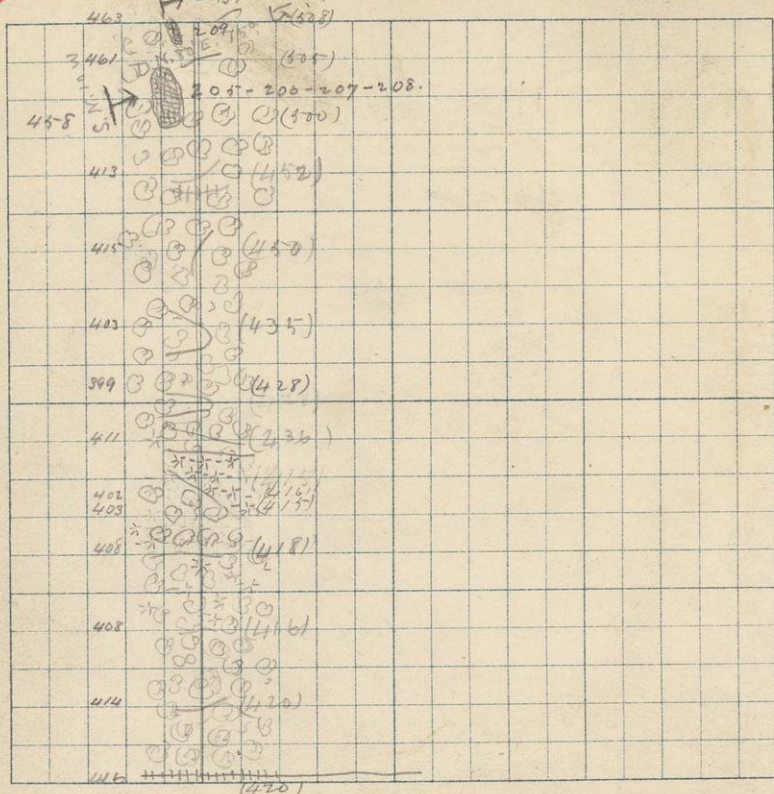
- 1700: 421 (425)
- 2015 struck E & W line 440 (444)
- timber same 9.50.
- quater post not standing
but found upon the ground
- 200 424 (425)
- Timber same
- 300 Old wagon road
- 400 404 (408)
- 600 401 (405)
- 800 Timber as before 386 (390)
- with Hemlock, Cedar and
Balsam underground
- 1000 10.30. 396 (400)
- 1200 Cedar and Hemlock 396 (400)
- beginning to mingle with the
Maple
- 1363 enter tamarack swamp 391 (395)
- 1400 in " 391 (395)
- 1536 leave "
- enter Cedar, Hemlock
& Maple
- 1600 Maple country as before 386 (390)
- 1700 cedar underground 412 (416)
- (2002 struck E & W line
1995 wagon road)

S.N

S.D.S. 34° $30'$ 90°

T. 44

R. 31



Run North from the West 1/4 pro
South side of sec 34

Struck Ex N. line 300 paces West of
 $\frac{1}{4}$ corner

The Dial Compass was not used,
 as they are all undergoing repairs,
 this course was run by the magnetic
 needle, and the changing variation
 is accountable for the error in
 line

On B.M. West $\frac{1}{8}$ S. side 34. 11.10
 416 (420) (28.857)
 marked (420)

Start & run west from
 W $\frac{1}{8}$ S. Side of 34 11.13

On B.M. 416 (420) 28.86
 (320-28.85)

3- Wagon road

200 415 (420)

Maple with cedar and
 balsam underground

400 and Hemlock 408 (416)
 cedar mingled with
 maple

600 408 (415)

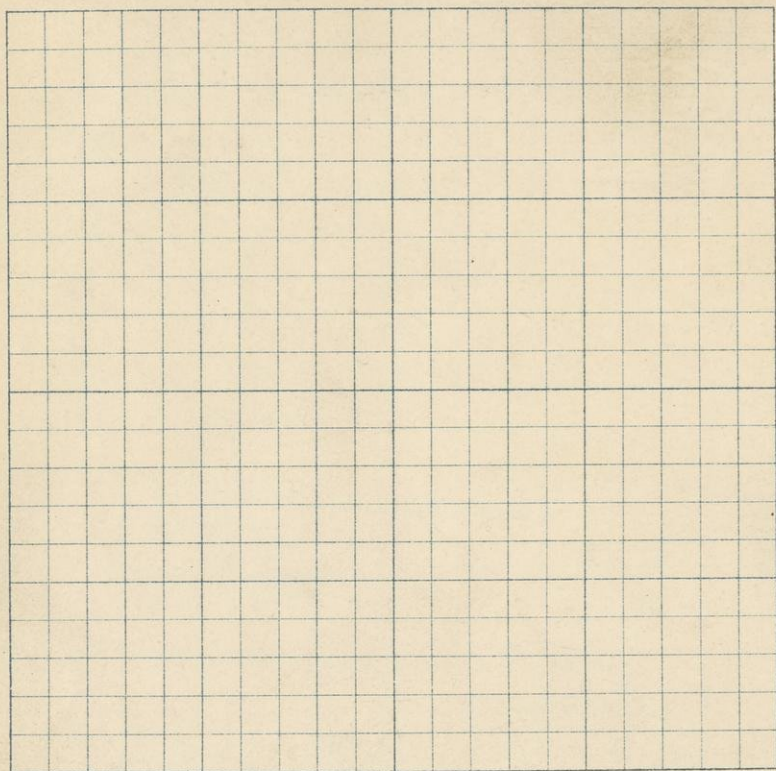
740 Enter Tamarack swamp 403 (415) 11.45

770 11.45 402 (416)

S.

T.

R.



770.	same place 12, 10	402 (421)
780.	leave Swamp enter cedar undergrowth and maple ^{hemlock} timber	
900	max	411 (436)
1090.	min.	399 (428)
1200		403 (435)
1300.	good leafy maple	
1400		415 (450)
1500.	Old wagon road	
1600		413 (452)

205- 1725 paces North and 1515 paces

West of Section Sec 34. T44, R31

205. Large ledge of rock.

about 200 ft long 10 ft high
and about 100 ft wide

lyg with its axis North 30 W

the structure could not be
definitely made out.

but the principal plane of
cleavage has the following strike
and dip

Strike N. 10° W. Dip 75° N 80° E

S

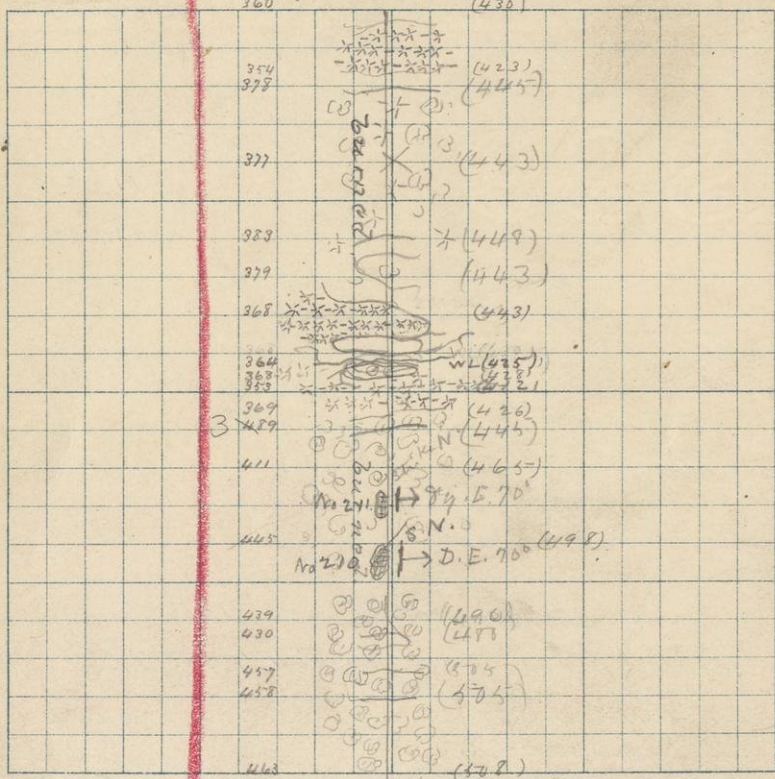
27

T.

244

R.

31



Run not in continuation of
line on preceding page

~~20~~
 205 { specimens from Southern
 206 { face

207 } from centre where there
 208 } seems to be a mass, around
 which the strata of 205 and
 206 are piled

Ledge created in pp 27
and in map p 24

1762 1.20 458 (500)

1900 461 (505)

2000 463 (508)

209. 2000 faces N. and 25 faces N. of
 S.E. en. of sec 34. Town 44 R. 31.
 about 30 ft long its arch runs
 N. 10° W.

209. nearly massive, but general
 direction of foliation is in a
 plane which strikes N. and
 dips 30° East

ledge somewhat weathered

200 centre partially buried 458 (505)
 maple

270 edge of tank 457 (505)

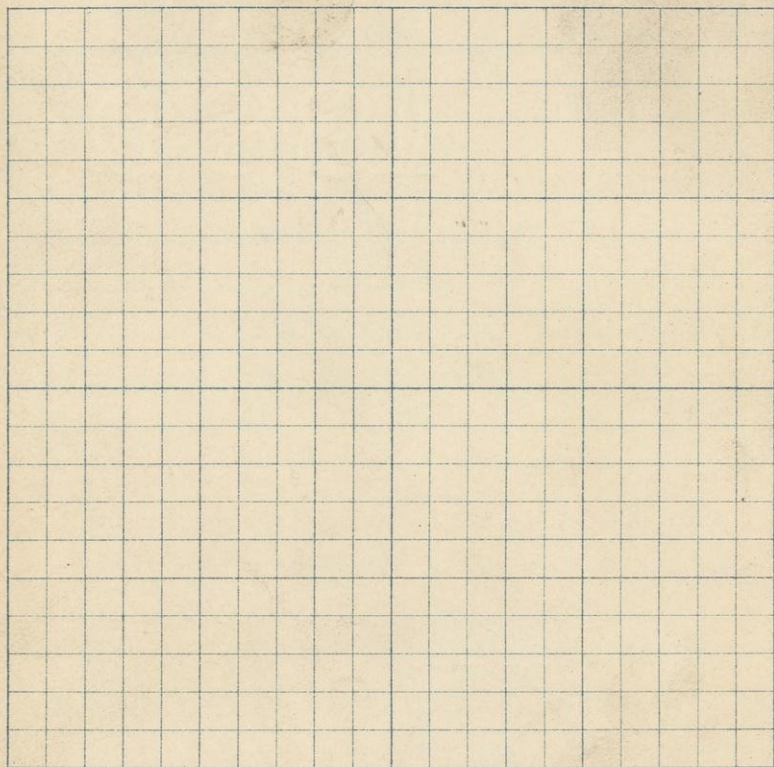
360 to min 430 (480)

460 439 (490)

S.

T.

R.



210 576. faces North and 21 faces West
of S.E. in Sec 27, Town 44, R. 31
good size ledge of
strike, N. dip East 70° .
about 100 ft long 20 ft wide
and 4 ft high. trend of axis
tends about North.

600

445 (495)

211 200 faces North and 20 faces West
of S.E. in Sec 27 T. 44, R. 31
Strike and dip as before
ledge about 50 ft long

700

2 P.M. 411 (465)

Turns pine, Hemlock and
hardwood

200 top of tower 389 (445)

940 bottom center 369 (426)

cedar swamp

1028

2.15 - 353 (412)

leave swamp and
enter burnings

1040 map

368 (425)

1080 creek

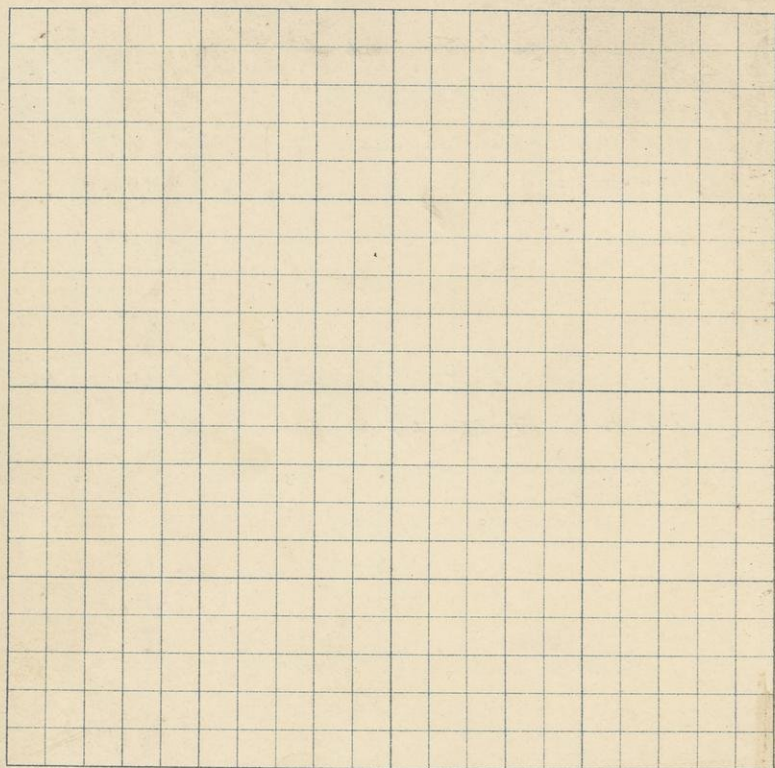
364 (425)

1162 reenter swamp

S.

T.

R.



1200

368 (430)

in tamarack swamp

1250

leave

enter bungs

1300

379 (443)

1400

max

383 (447)

partially burnt cedar and
hardwood & pine

1600

377 (443)

1800

log of tank

378 (445)

1849

enter cedar and

354 (423)

tamarack swamp

~~2000. struck E & W line~~

1980. leave tank swamp

2000. struck E & W. line

1st face West of corner

On B.M.

2.50. P.M. (430)

marked 364

360.

(28.848)

at camp

Camp Anroid

28.620

to 10

28.864

3.10

Sec
28-~~1~~-

33 (339)

215

360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000

342 \leftarrow (348)

一、二、三、四、五、六、七、八、九、十、十一、十二、十三、十四、十五、十六、十七、十八、十九、二十、二十一、二十二、二十三、二十四、二十五、二十六、二十七、二十八、二十九、三十、三十一、三十二、三十三、三十四、三十五、三十六、三十七、三十八、三十九、四十、四十一、四十二、四十三、四十四、四十五、四十六、四十七、四十八、四十九、五十、五十一、五十二、五十三、五十四、五十五、五十六、五十七、五十八、五十九、六十、六十一、六十二、六十三、六十四、六十五、六十六、六十七、六十八、六十九、七十、七十一、七十二、七十三、七十四、七十五、七十六、七十七、七十八、七十九、八十、八十一、八十二、八十三、八十四、八十五、八十六、八十七、八十八、八十九、九十、九十一、九十二、九十三、九十四、九十五、九十六、九十七、九十八、九十九、一百。

349 * 1356

$\frac{2}{7} - \frac{1}{7}$	(1)	(2)	(3)	(4)
	(5)	(6)	(7)	(8)

[illegible]

(Faint handwritten notes at the bottom of the page)

366 (37 2)



















66	66		
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367*	374
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$35 \frac{1}{2} - \frac{1}{2} = 35$ (360)

[illegible][illegible]

350	1	1	36
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六六六

[illegible]

363 打 一 打 一 打 一 (3/4)

五

$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

新-書-目-次

[illegible]

35-9	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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365

上

[illegible]

374 ~~1712~~ (3)

...

River South from N.E. corner Sec

28.

June 15. Monday 1891
Camp Ananda

7 A.M. No 10. 28,799

Camp Ananda. 28,565

Bench Marks

S.E. cr 21. 339.

" " 33. ~~318~~, 406

E $\frac{1}{8}$ Soud 21 358.

E $\frac{1}{8}$ " " 33 529.

On B. M. ^{SE} corner, 21 (28,816)

(300 - 28,861) 7.15 395 (339)

At tamarack swamp

100 leave swamp 360 (365)

134 max 365 (370)

200 recent tamarack 342 (348)

swamp (346)

360 leave swamp 349 (356)

into pine barrens

400 365 (372)

600 second growth 366 (372)

hardwood maple

rick & Elm

735 top of hill 367 (373)

hardwood and
hemlock

S. 37 T. 44 R. 31

378	392
379	393
380	394
381	395
382	396
383	397
384	398
385	399
386	400
387	401
388	402
389	403
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393	407
394	408
395	409
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483	497
484	498
485	499
486	500

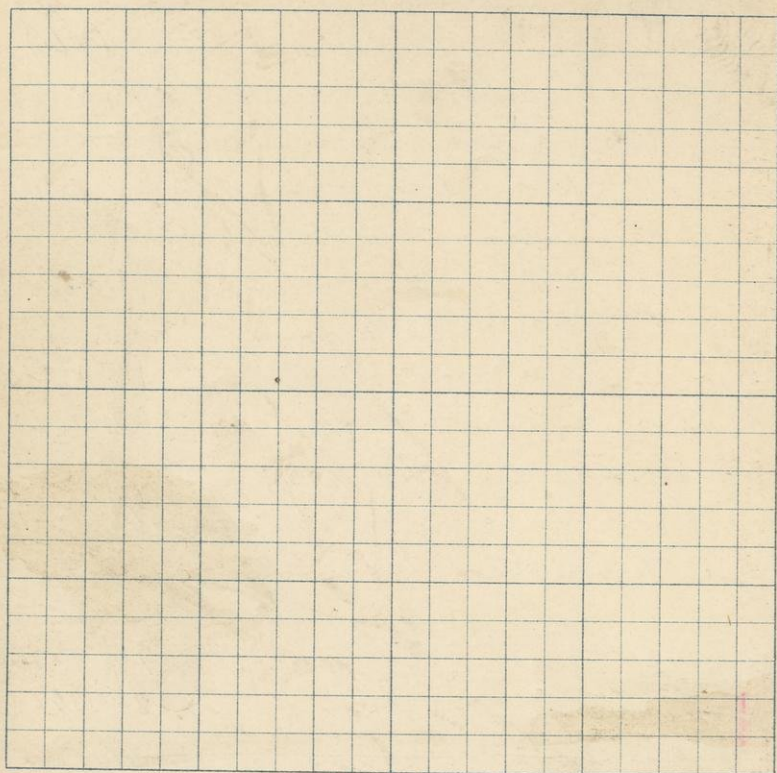
Run South of in continuation
of line on preceding page

- 700 in tamarack swamp ³⁵¹ (360)
 1000 ³⁵⁰ (360)
 1300 8. A.M. ³⁶³ (364)
 1336 creek flowing west
 above 1 ft wide
 1400 large creek or slough
 1512 other bank ³⁵⁸ (370)
 1554 leave swamp ³⁶⁰ (375)
 enter pine burning
 1650 max ³⁶⁹ (382)
 1670 enter swamp again
 1700 ³⁶⁵ (378)
 1859 leave "
 enter burning
 1900 in " ³⁷⁴ (388)
 1996 leave burning ³⁷⁵ (390)
~~enter tamarack swamp~~
 struck E & W line 38 paces
 West of post
 starts at post
 edge of swamp
 100 max ³⁷⁶ (392)
 in burning
 165 enter tam. swamp
 200 edge of swamp ³⁷¹ (387)

S.

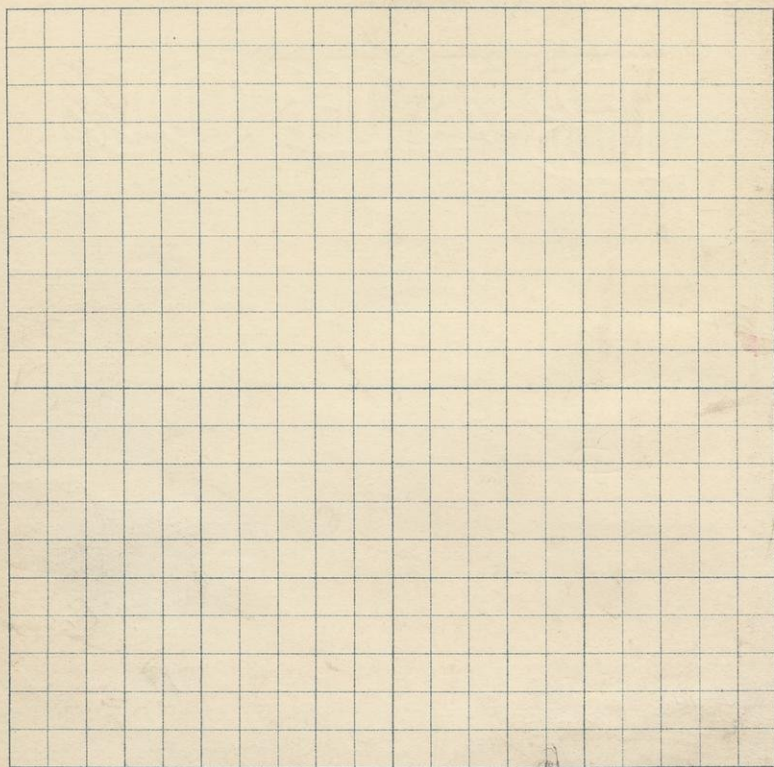
T.

R.



- 400 in swamp 374 (392)
 hemlock timber about 100
 paces to East
- 600 in swamp 8.45 372 (396)
 700 " " 371 (398)
 940 leave "
- 952 max high ground 380 (400)
 end of spur of dry lake
- 992 1/4 stake - Cedar swamp
 fine spring 10 paces east of
 post
 spiral post, displaying iron
 in good amount
- 1100 in high 389 (410)
 spring cedar swamp
- 1133 leave swamp
 enter tamarack cedar
 & hemlock & birch
- 1200 " 400 (422)
 1300
- 1337 min 392 (413)
 enter cedar swamp
- 1500 in " " 391
 2.30 (415)
- 1570 changing to tamarack
 1700 390 (414)
 a little maple and elm

S. 33 T. 44 R. 31



216
 Sec 4, Town 43, R. 31

Map of Outcrop

212 S. N. 27° E.
 213 S. N. 30° E.
 214 S. N. 35° E.
 215 S. N. 40° E.
 216 S. N. 45° E.
 217 S. N. 50° E.
 218 S. N. 55° E.
 219 S. N. 60° E.
 220 S. N. 65° E.

mingly with the tamarack
and cedar

1900 " 399 (426)

2030. struck E. W. line at post

On B.M. 10 A.M. 402 (431)

(28,713)

Marked. 406

1965 faces West & 250 faces W. of S.E. on Sec 4. T. 43. R 31 N.

212

ledge of slaty iron ore

dip 80° E. strike N. El. 450.

^{anyway}
~~on this line~~ not changed

250 faces ^{West} from corner (above) and

35 faces to South.

213

20 faces to South of previous one El. 456

strike dip

rock so piled in manner
that no distinctive strike or dip
could be observed

20 faces South W. of previous one

214

grey quartzite dip 360° E. 65° strike N. 30° E.

El. (506.)

215

Strike N. 45° E. dip S. 45° E. 60°

50 faces. South of line at 350.

S. 33 T. 44 R. 31

	377	(380)
	361	(388)
	353	(388)
	359	(382)
	368	(380)
	365	(385)
	366	(385)
	381	(398)
	394	(410)
	405	(420)
	420	(435)
	420	(432)
	411	(422)
	421	(420)
	432	(411)
	480	(484)
	575	(529)

Over 500 faces.

faris exposures on South side
of line as noted ^{marked} on previous
page

On B. M. 11. R.M. (520)

marked 529.

Rest at 525 (529)

(1000 - 29,070) (29,592)

Maple and other hardwood
timber.

Exposure of the strata noted
continues up to line and for
about 200 feet at this point.

216 100 faces West of S.E. cor Sec. 33. 1000.

216 granite & quartzite. On line 50 faces. West
dip about 70° ^{about East} Had no needles
so strike could not be obtained, about N.

11.25 On Bench Mark.

former reading OK.

a great many exploration pits
sink in the vicinity

150.

480 (2486)

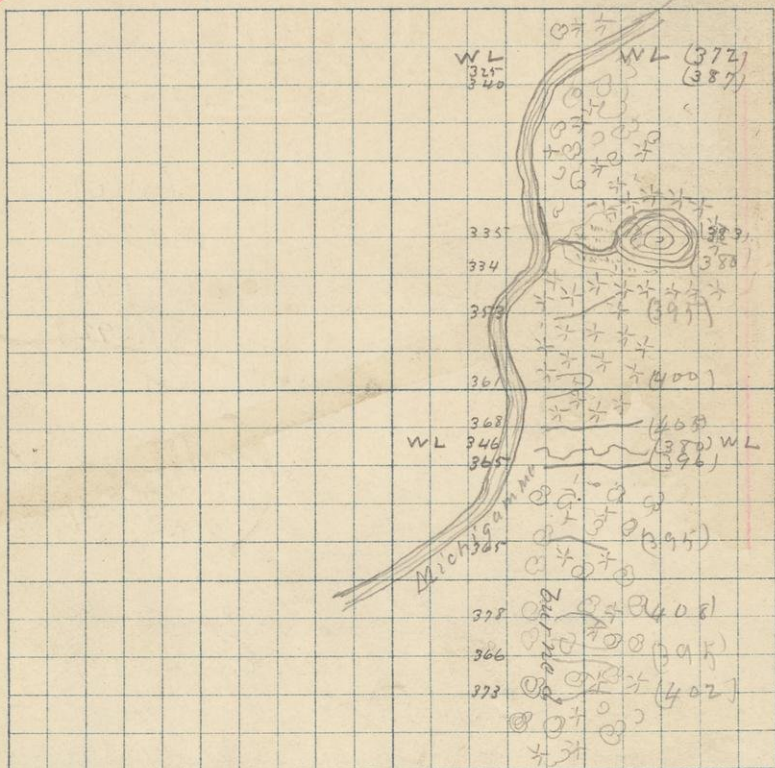
170. Wagon road.

432 (440)

foot of bank

a vacant mining shaft 10 feet

East

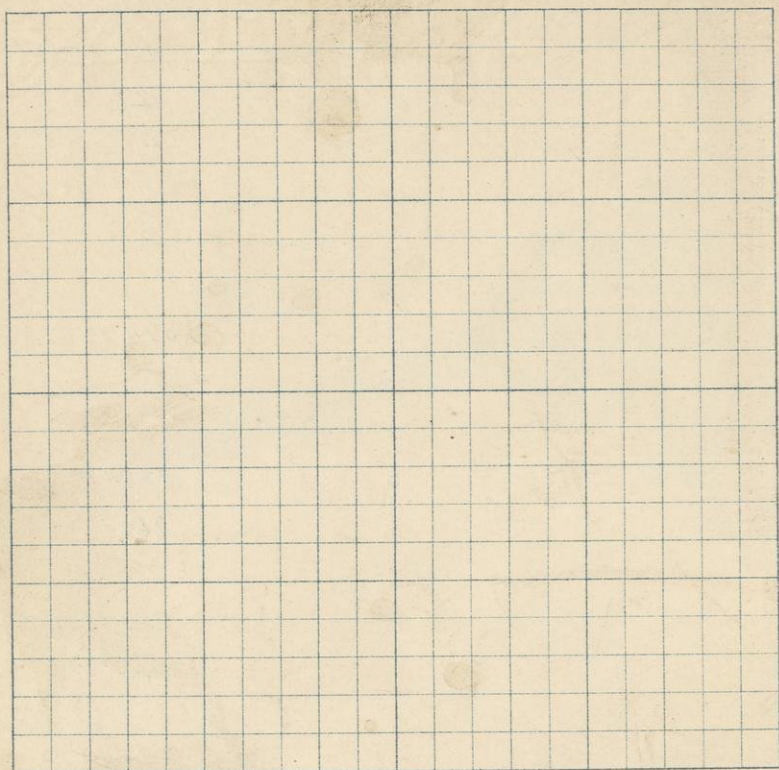


300.	top of tank.	421	(430)
400		411	(422)
500		420	(432)
700	timber as at first	421	(435)
736	" " " "	405	(420)
	with a little cedar, pine and Hemlock		
800	patch of burned timber	394	(410)
900	patch of burned timber		
1000	in " 11.55 "	381	(395)
1060	enter burned cedar and tamarack swamp	386	(385)
1200		365	(385)
1400	" "	368	(380)
1600	" "	359	(382)
1700		355	(380)
1900	leave swamp 12.35 enter burnt timber	361	(385)
2000	near in " "	377	(405)
2100		373	(402)
300	mi.	395	366 (395)
400		478	(408)
600		365	(395)
800		365	(396)

S.

T.

R.



top of bank
 825. bottom of bank, 12.55 346 (380)
 creek, 4 ft wide flows west
 same place 1.20 348 (380)
 900. top of next bar 368 (405)
 1036 river 361 (400)

burnt & partially burnt
 Hemlock, cedar, hardwood
 1172. enter unburned timber
 same as before

1200 383 (395)

1343. enter small open marsh 394 (380)

lake 200 yds in dia.

about 100 yds at East of 1400.

1370. outlet about 10 ft wide
 no perceptible current

1400 cedar and tamarack 395 1.50 (382)

timber fringing lake

outlet and marsh

scrub timber. Salix, cedar etc

1450 bank of river 346 (382)

W.L.

325 (372)

~~Opposite~~ bank - W.L. same

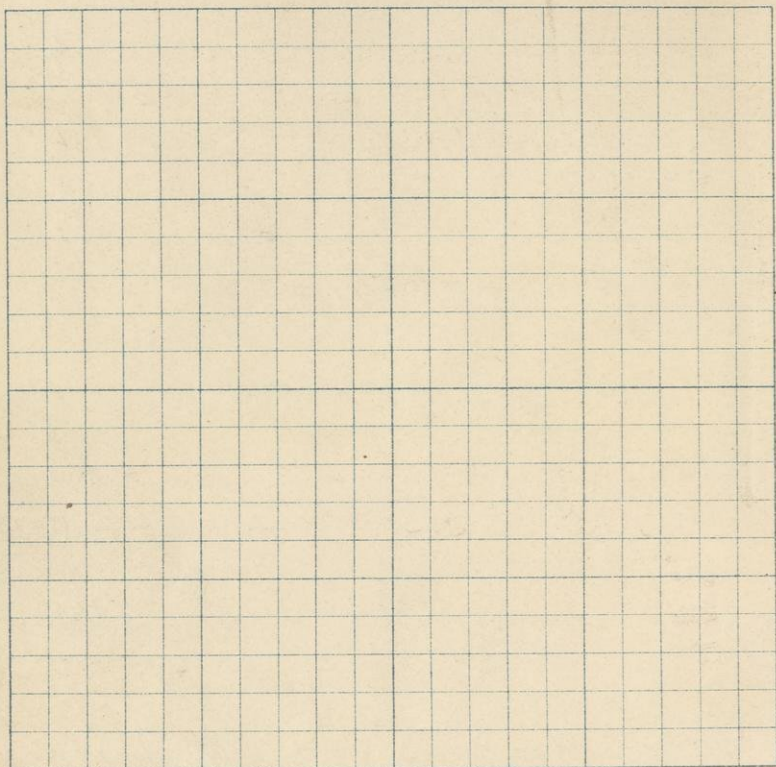
next reading on level marsh

since slope was very uniform between

S.

T.

R.



On B. M. 2.35 (405). (28.730)
 marked 347 (351)
 took the pencil on the post
 because could not find 1/8

At camp. 28.695

Camp Anand, 28.430

4.P.M.

Specimens sent in
 up to 216 inclusive.

S.

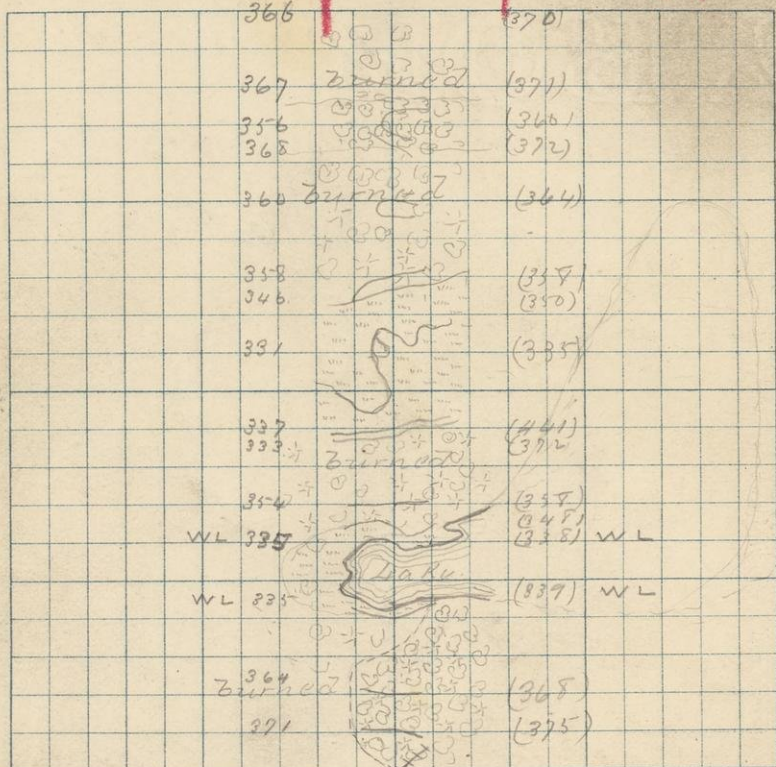
29

T.

44

R.

31



Tuesday June 16, 1891
 Bench marks for today

$S\frac{1}{4}$ 20	44	81		370
$W\frac{1}{8}$ S. side	"	"	slut	369
$S\frac{1}{4}$ 32	"	"	10" thick, 70' East of	370
$W\frac{1}{8}$ Side	"	"	10" cedar, 25' East of	383

Anchors

No 10. 28800

Camp Anchor 28.562

Run for today. South from $S\frac{1}{4}$ 20 - 2 miles, then West 300 paces, then East 2 miles to the West $\frac{1}{8}$ post South side of 20,

On B. M. 9.25 (28.81)

(28.50 - 650) 366 (370)

Burnt timber

200 " 367 (371)

250 leave " "

into hemlock and

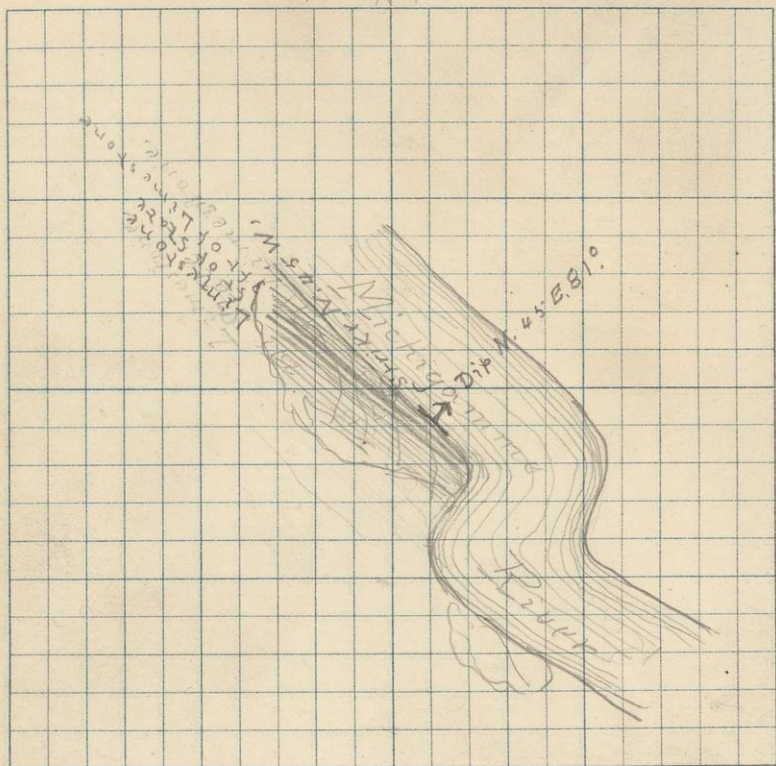
hardwood

300 min 356 (360)

55

T.

R.



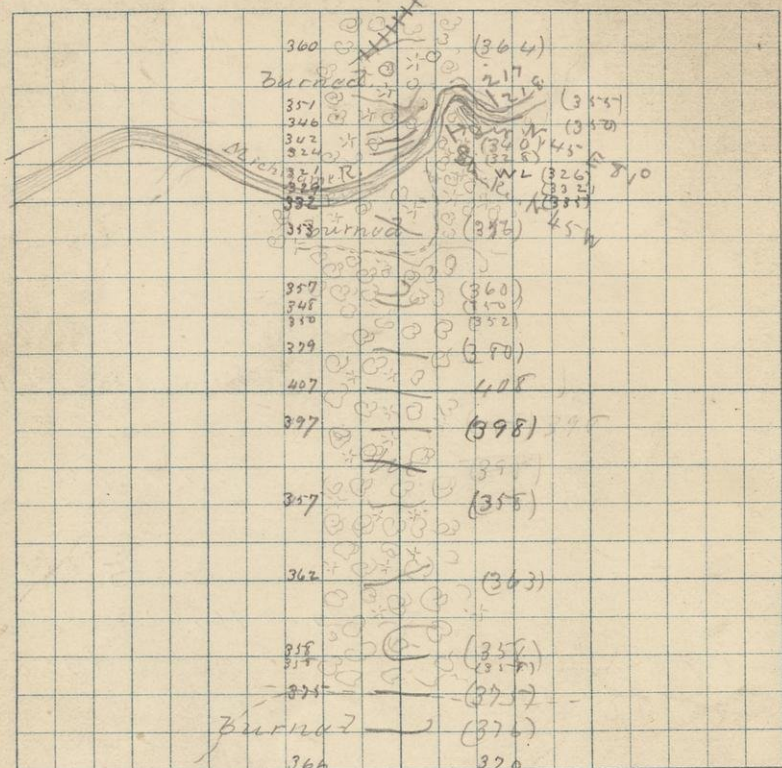
S

Map of Outcrop. Specimens 217 & 218

1750 paces N. & 800 W. of S.E. cor 52.

Scale. small square = 10 ft

350. enter from timber 368 (372)
300. 360 (364)
- 710 354 (358)
- 725 enter swampy open 346 (350)
~~marshy open~~
868. creek flowing west
- 900 331 (335)
- 1100 bottom of tank 337 (341)
- 1125 by hemlock, "hardwood", enter for 333 (372)
- 1300 354 (358)
- 1375 by of tank leads to lake 344 (347)
- 1400 water level 335 (338)
1575. South Shore W.L. 10,20 335 (339)
- 1600 by of tank 354 (358)
same time as before
- 1700 enter cut through
maple and hemlock
- 1800 364 (368)
- 1900 371 (375)
- 1990 struck E of W. line 13 paces
of stake, marked "about the 1/4 stake"
The correction as to distance
should be applied at the lake,
as the distance across was
estimated by the compassman



Ran South in continuation
of line on preceding page

45 West

at stake center turns timber

30	Wagner road to Crystal Falls	
700		360 (364)
250		351 (355)
300		346 (350)
325	min.	342 (346)
386	top of bank of	324 (328)
11	Michigan river	
	Water level 10.45	321 (324)

217. Crystalline limestone.
1750 faces Nott, and 700 face
west of S.E. Co 32

strike N. 45 W.

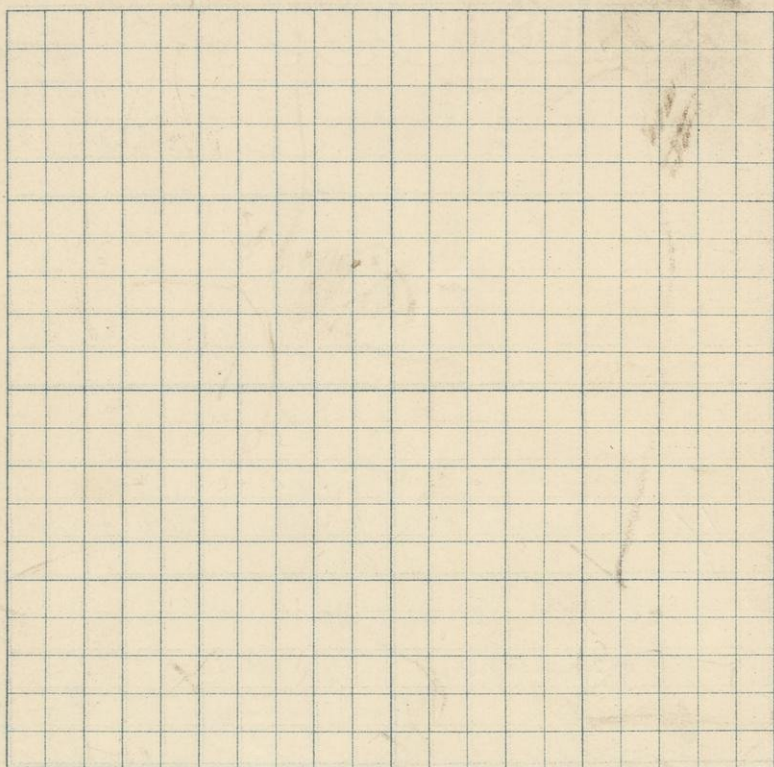
dip N. 45 E. 81°.

218 Shale. ~~underlying~~ ~~limestone~~
interbedded with limestone
as shown in ~~set~~ drawing on
previous page. dip & strike
same as limestone.
total exposure about 100 ft
long and 20 ft wide.
trend N.W.

S.

T.

R.



426 W.L., Summit house, 321 (326)
 by st house 329 (332)
 500 12.M 332 (335)
 576 max, 353 (356)

Summit timber line

6.37 enter maple timber
 rather heavy

725 max 357 (360)
 789 min 348 (350)
 800 — 350 (352)
 900 379 (380)
 1000 407 (408)

219.

no faces west of line
 could not make out
 direction of bedding
 pieces with delatetes
 very little
 get ~~so~~ doubt of true outcrop

1100 12.30³⁹² (397)
 1300 some hemlock 357 (358)

mixed with hardwood as
 before

1500 362 (363)

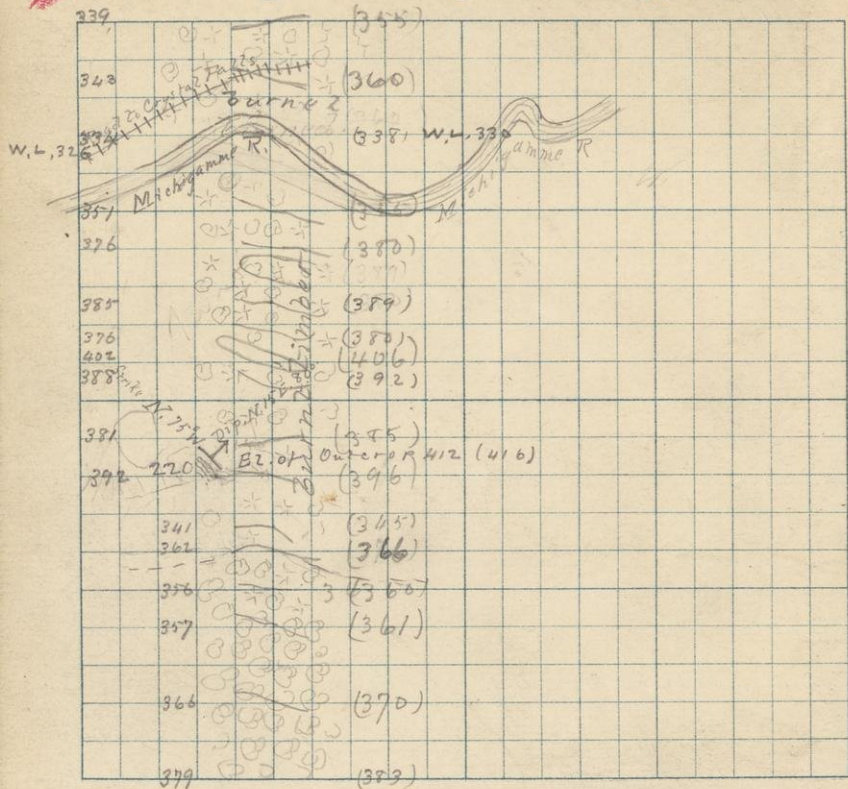
timber becoming thinner

1666 min 358 (358)
 1700 " 358 "

S. 32

T. 44

R. 31



Run back from W. 1/4 to S side
Sec 32.

1500 enter burnt timber 375 (375)

1900 max 376 (376)

1996 hit 44 post. E + W line

at 1/4 post.

12.50 On Bench (28,826) 366 (365)

Marked 966 (370)

800 face to west.

On Bench 1.P.M. 379 (383)

(28,780-400) (28,799)

Run North.

Post on edge of maple timber
enter good maple timber
200 " " 366 (378)

with a few hemlocks

400 357 (361)

500 356 (360)

600 enter burnt timber 362 (366)

670 min. 341 (345)

800 max 392 (396)

220. 800 face North and 11650 west of S.E. in sec 32.

Large exposure of gravel
entrained and twisted.

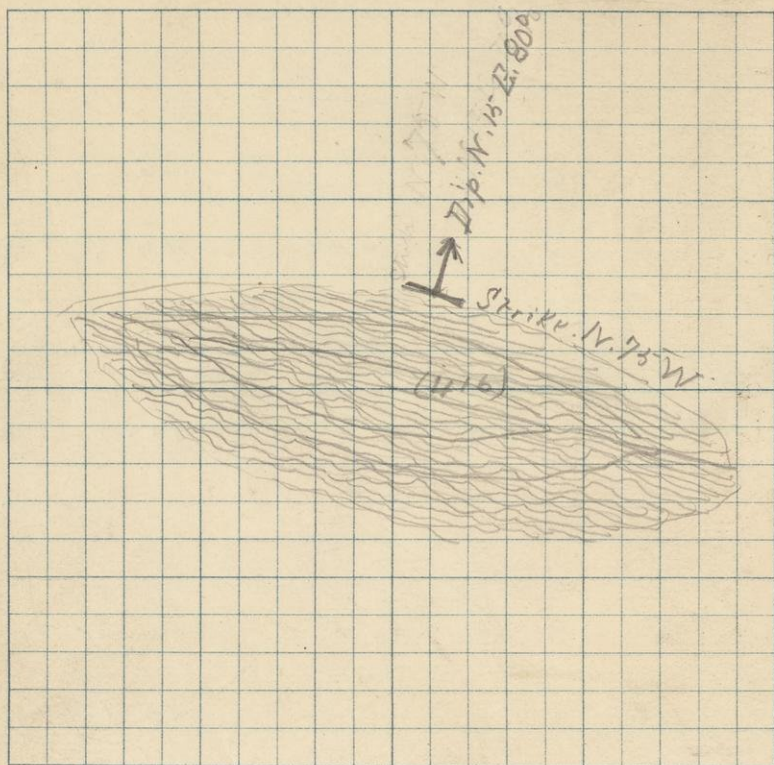
No original bedding could be
made out, but in general
the planes of foliation had
strike N. 75. W. dip ~~50~~ N. 15 E 80°

Dana

S. 32

T. 44

R. 27



Map of Outcrop, Specimen 220.

800 paces N., 1650 W. of S.E. Cor. 32. 44. 31

Scale, Small Square = 40 ft.

|||||

elevation (416) 412

situated on the top of a bluff
running almost in the direction of
its foliation

21. taken from test pit. 800 feet
North and 1530 feet west of B.E. cor
See 32. T40. 1231 Ele (390) 386
900 381 (385)

Many test pits in vicinity

1074 388 (392)

enter turned, bluff country

1100 Bluff. rising E. W 202 (406)

1157 376 (380)

1256 max. 385 (389)

~~1350~~
1400 376 (380)

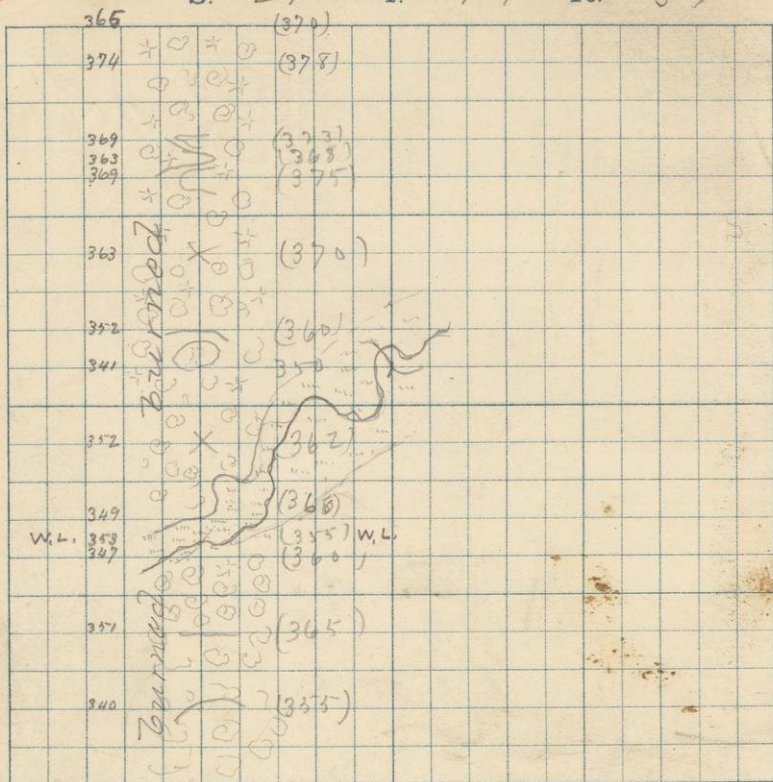
1500 351 (355)

1700 bank of Michigan 334 (338)

Water level 2.5 P.M. 326 (330)

~~1740. bluff bank~~
~~by of bank~~
~~2.45 PM (337)~~
~~(340)~~
1740 3 P.M. 326 (345)
by of bank 349 (367)

S. 29 T. 44 R. 37



Run North in continuation
of line on preceding page

1872

343 (360)

Wagon Road (to Crystal Falls)

2000

339 (355)

first country with poplar
and cherry undergrowth

200

340 (355)

400

351 (365)

600

347 (360)

625 creek flowing west 353 (355)

and small open marsh

700 leave marsh

349 (364)

900

352 (362)

1100 a small open
marsh

341 (350)

1200 leave same

same

1200

352 (360)

1400

363 (370)

1600

marsh

369 (375)

1630

363 (368)

1700

369 (373)

1900

374 (378)

On B. M. 3.50

365 (370)

(28,815)

marked

(369)

2000 struck E. W. line at 4.20
at Camp N. 10.

28,835

Camp Aurora

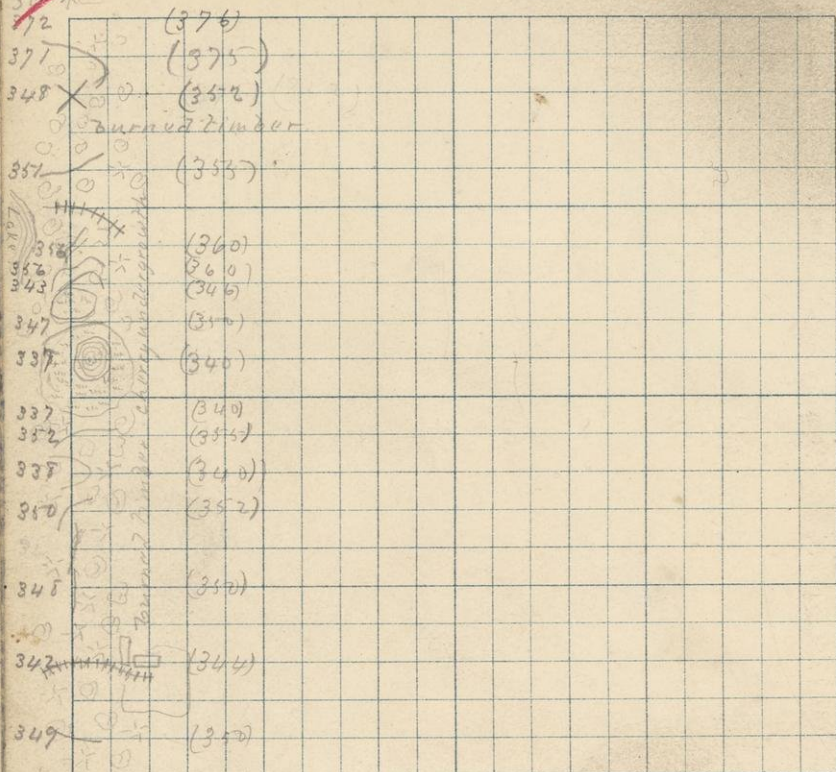
28,605

64

S. 29

T. 44

R. 31



Wednesday June 17.

Bench Marks

S.E. cr 19.	376.
E $\frac{1}{4}$ S. side 19	392.
S.E. cr 31	347.
E $\frac{1}{4}$ S. side 31.	346.

7.15. Camp Aneroia 28,650.
No 10. 28,850

Run South from N.E. cr Sec 30
2 miles thence $\frac{1}{4}$ mile west &
E $\frac{1}{8}$ S. side of 31. thence 2 miles N.W.
& E $\frac{1}{8}$ S. side of 30. -

On 18. M. (28,839)
(550-28,65) 372 (376) 7.45 AM
marked 376.

Burned pine and hardwood

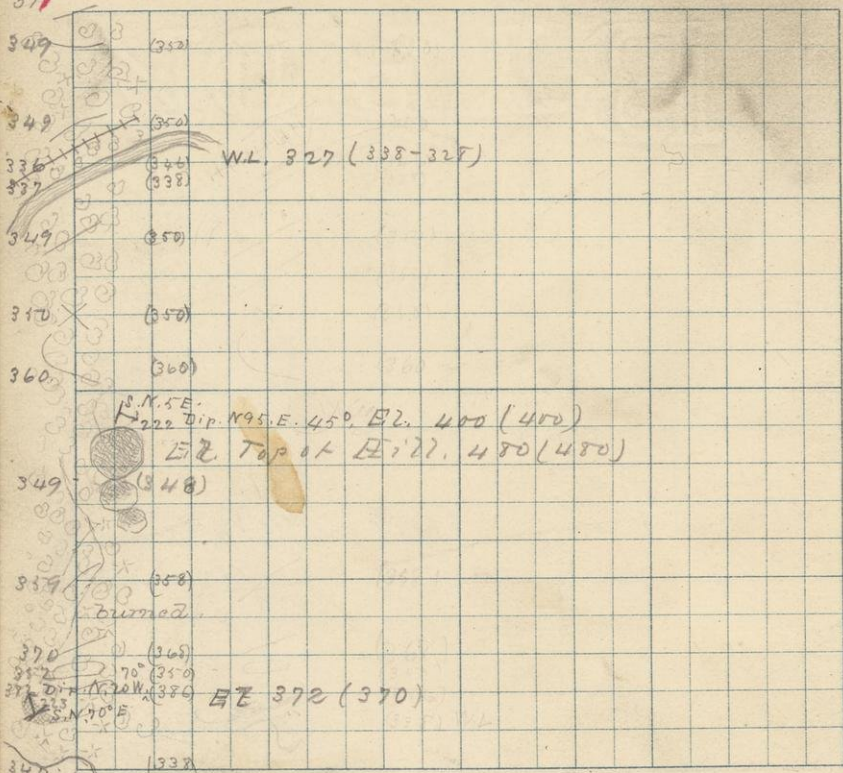
100	max,	371 (373)
200		348 (352)
400		351 (355)
500	wagon road (farm road)	
600	lake to west	356 (360)
650	max	356 (368)
700	entr small marsh	343 (346)

Sec
31

S. 32

T. 44

R. 3/



EL 377(375)

224

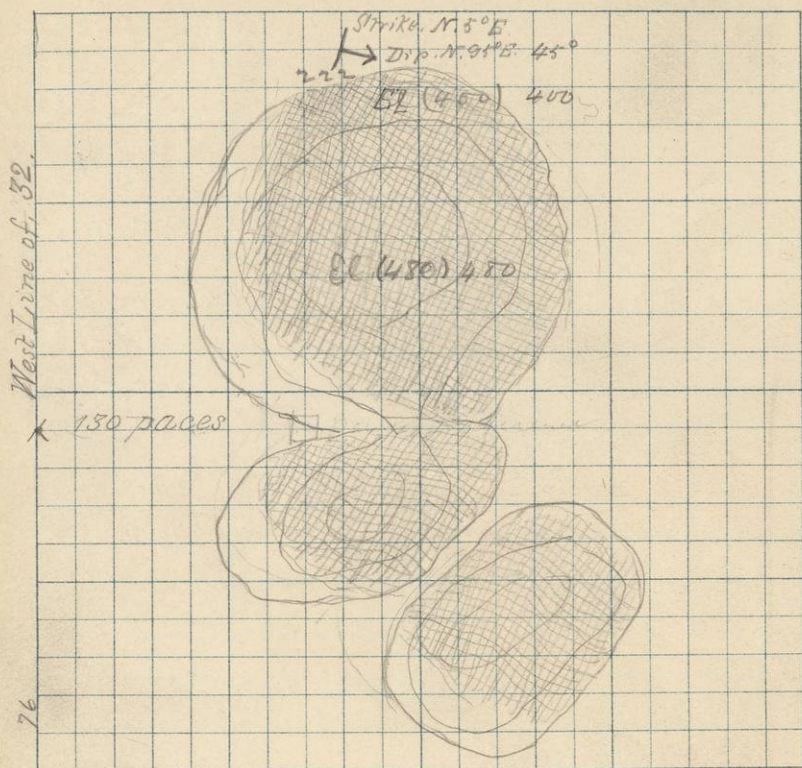
Run South in continuation
of line on preceding page.

800	max	347 (352)
720	enter small marsh and pond to east	
900	in marsh. edge of pond. Also W.L.	337 (340)
1100	struck quater post	
1040	leave marsh	337 (340)
1100		352 (355)
1200	min.	338 (340)
1300	cherry undergrowth	350 (352)
1500		348 (350)
1700	road to farm. farm house. 150 feet to east	342 (344)
1900		349 (350)
2000		
100		349 (350)
300		349 (350)
365	Wagon Road (Crystal Falls). enter foglar undergrowth	
420	base of Michigan L. W.L. 8.45	336 (346) 327 (338)
460	South Side W.L.	327 (328)
	by of house 9.A.M.	337 (338)
	turned Sandwood. cherry undergrowth	

Part of
S. 32

T. 44

R. 31



Point of reference 762 paces North
of and 1870 paces East of S.E. cor-
ner Sec 32. T. 44. R. 31.

Scale Small Square = 20 paces

600.	349 (350)
800	350 (350)
930.	360 (360)

High hill surrounded by
outcrops 760 paces N. & 1770 paces East
of S.E. cor Sec 32. 44. 31.

222, Strike N. 5° E. Dip N. 95° E 43-
ex gabbro El. 400.

found all over the West
face of bluff. strike and dip
practically the same, up to the
top at an elevation of (400)
lowest sure outcrop, at an
elevation of (400) 401

hill appears to be a solid
mass of gabbro, outcrop as
flattened

1235 10. A.M. 349 (345)

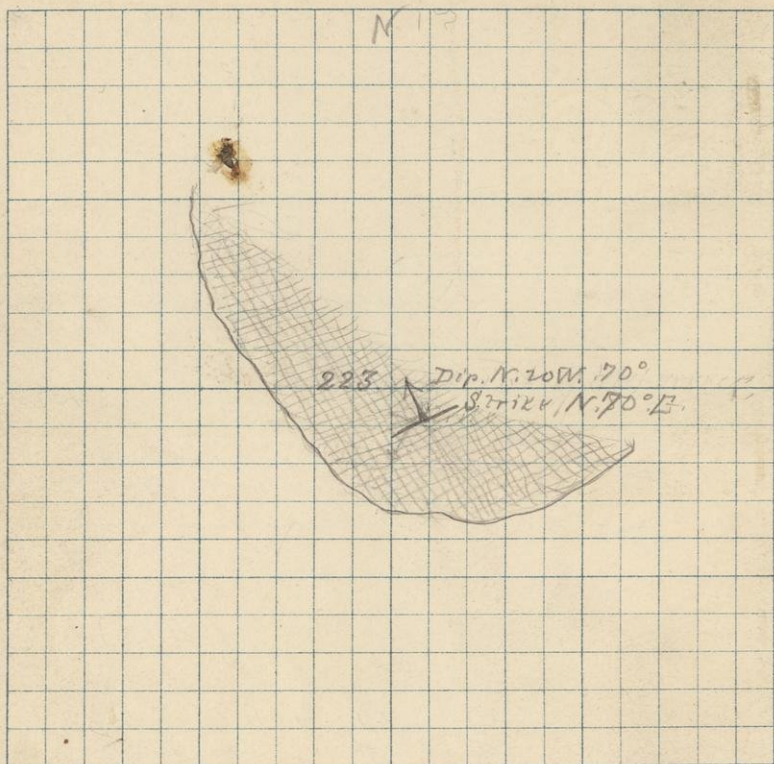
1300 enter hardwood
maple and elm

1300 359 (335)

recent burrings

1700 370 (360)

1725 min 352 (350)



Scale, small sq = 10 paces
 Outcrop - 50 paces North & 40 paces West
 of S.E. Cor. 31. Scale, small sq = 10 paces

Q. 14

10.50

11

1900 max

388 (386)

223

of 150 paces North, + 240 paces West
of S.E. cor Sec 31, T. 44, R. 31
gabbro, large exposure on crest
of hill

as far as could be obtained
the principal direction of rift
had strike N. 70° E.

Dip. N. 20° W 70° El. 372 (370)

hill has the appearance of
an eruptive boss.

1900. creek ^{10 ft. wide} flowy west

W.L.

342 (340)

2019. top of bank

357 (355)

2075. top of ridge

382 (380)

223

— small exposure of same,

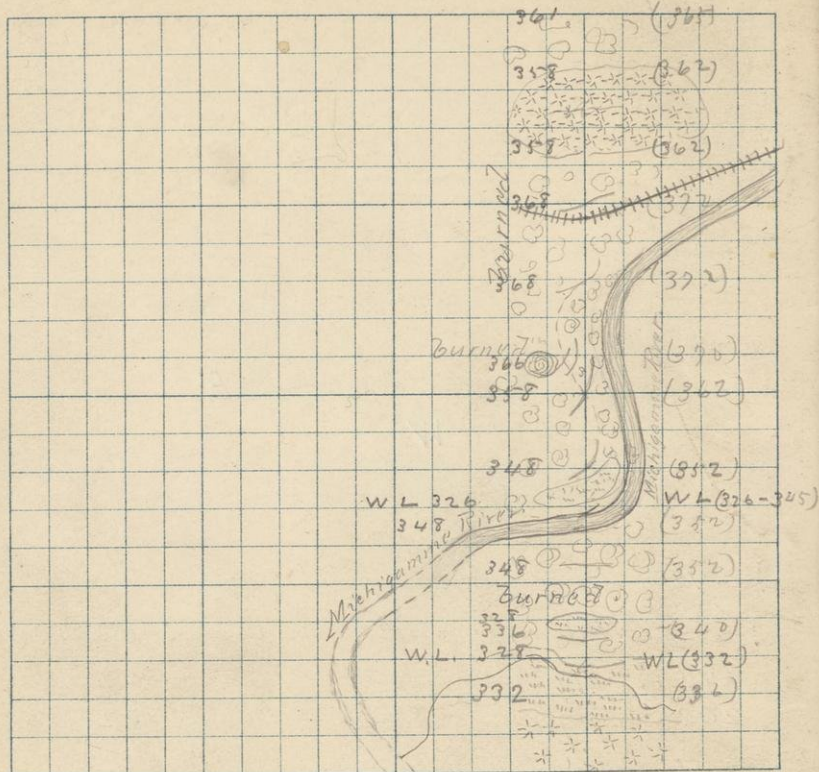
10 paces East of line, no specimen taken
Location: 1925 paces North and 1990 paces West of S.E. cor
same as above Sec. 5, T. 43, R. 31

224

~~ridge El. 4~~

~~(475)~~

~~crest is almost continuous~~
~~exposure of fine grained gabbro~~
~~over~~



Run North from 1/8 stake

31, 44, 31

creek should be 15 feet
south of line.

line turned out and not
visible at $\frac{1}{4}$ post.

Struck line as near as could

be determined at 1920. No post

El at 1920 11.40 339 (337)

11.30. check on creek. (338)

224

1700 feet N.W. of S.E. cor Sec. 6. Town 43
Range 31

bluff of diorite

as specimen, no structure indicated.

500 feet East to $\frac{1}{4}$ stake.

12. M

372 (375)

(27.60 - 600) 12. M. (28,880)

rest at 342 (346)

Run N.W. from $\frac{1}{4}$ stake.

glacier. Hemlock timber

155 enter open swamp

200

332 (336)

225 creek, flowing west

about 6 feet wide WL 328 (332)

enter burn timber west

roughly underground

330

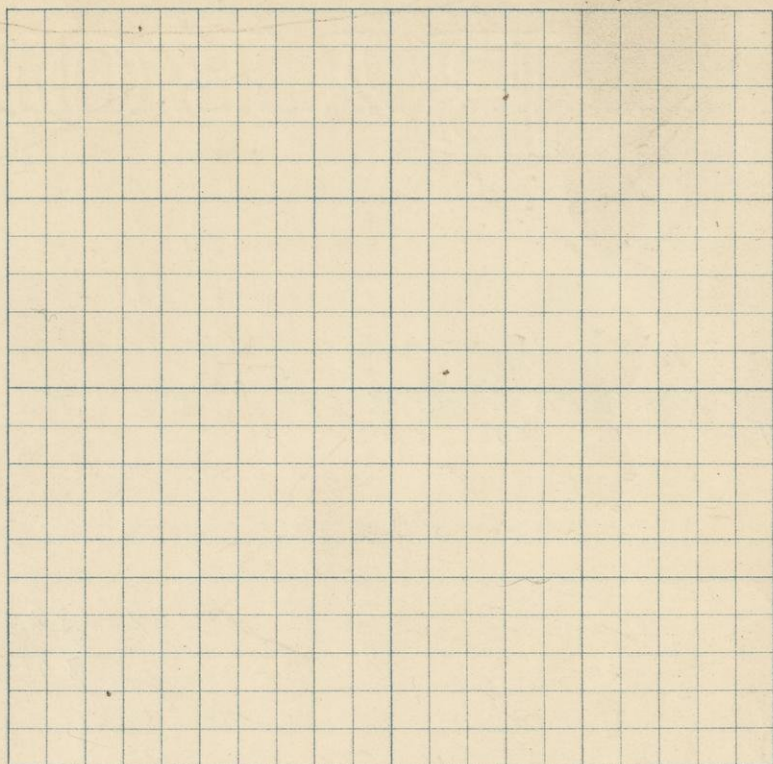
mud

336 (340)

S.

T.

R.

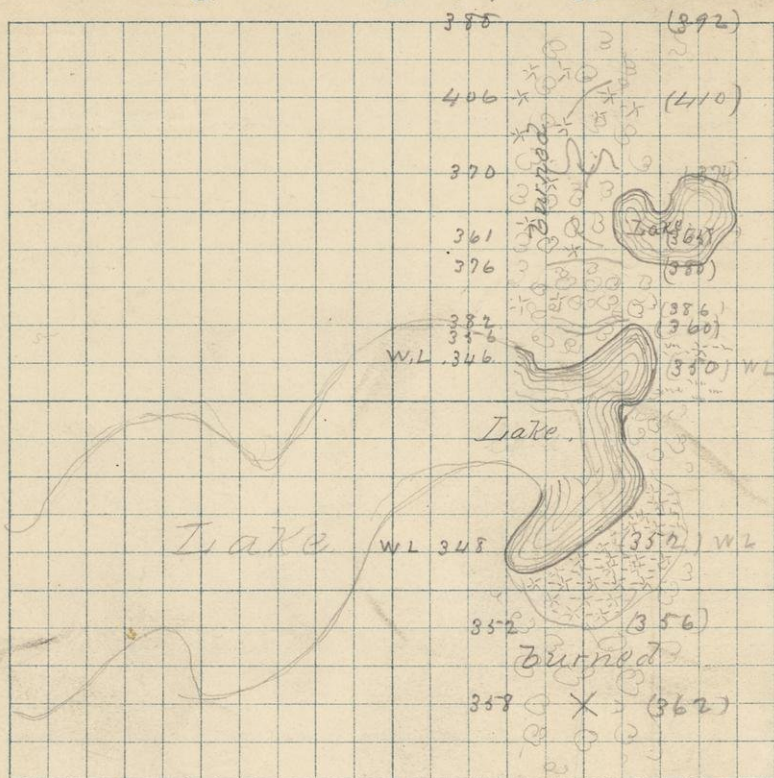


388	open mud hole	
400	" " " W.L.	328 (332)
548	hardwood & pine	348 (352)
	burnings	
620	top of bank of Michigamme	348 (352)
625	W.L. 12.15	326 (326)
640	N. Bank W.L. 1. P.M.	326 (345)
	top of bank	346 (350)
700	enter marsh	
700		348 (352)
	enter burnings with	
	cherry mangrove	
1100	(enter hardwood)	358 (362)
1100	maple & hemlock	366 (370)
	pond and swamp	
	to join West	
1300	burning with cherry	368 (372)
	mangrove	
1470	Wagon road (Cypress Falls)	
1501		368 (372)
1650	enter tamarack swamp	358 (362)
1820	leave	358 (362)
1850	enter burnings. poplar & cherry mangrove	366
	max.	
2000		361 (365)

S. 30

T. 44

R. 31



Run North in
Continuation of line of preceding
page

200

358 (362)

400

352 (356)

enter dam area swamp

610 - edge of lake W.L. 2.00 ³⁴⁷ (352)1100 knot edge of lake 2.20 ³⁴⁷ (350)

skated over thick, balsam

turner wholly or partially

1170 foot of bank 356 (360)

1200 382 (386)

1371 376 (380)

1441 min 361 (365)

Lake 75 feet East

1400 370 (374)

1700 in turning 206 (410)

1994 streamer Ex W line

Ori Bench 2.50 388 (392)

The marked (28.830)

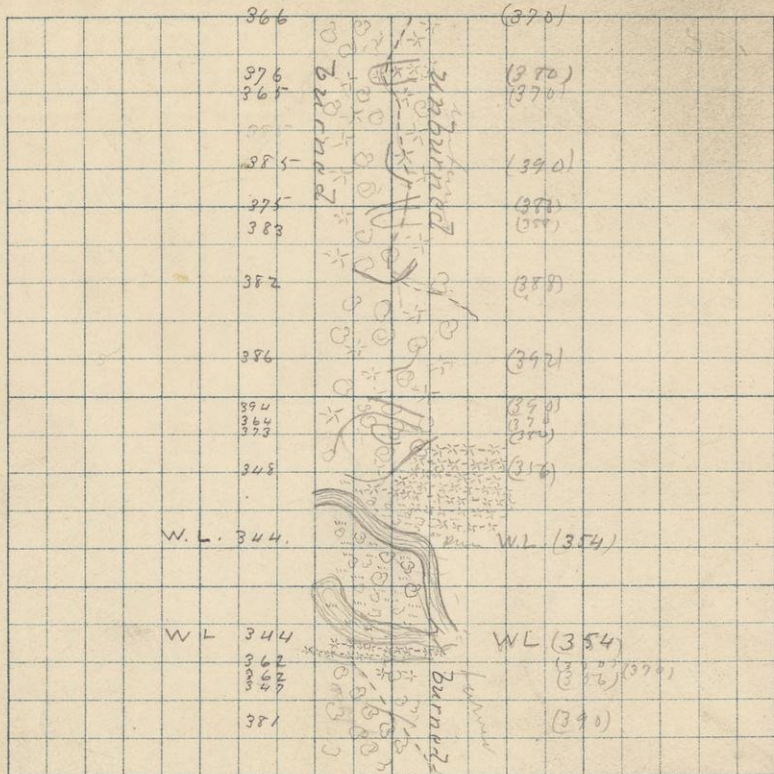
should be marked 392

as the ~~streamer was~~ ^{streamer was} ~~in turning~~

the streamer was very small and mark

on ground of an ^{old} ~~new~~ ^{old} ~~new~~

S. 25 T. 44 R. 32



Run South from $N\frac{1}{4}$ 25, 44, 32

Thursday June 19. 1891
 Run for today. South from S $\frac{1}{4}$
 Sec 24. R 44. R. 32.

B. M. S $\frac{1}{4}$ 24. 370.

W $\frac{1}{8}$ S side 24. 358.

S $\frac{1}{4}$ 36 —

W $\frac{1}{8}$ S side 36. 353.

Amurids

No 10 8. AM (28,240)

Camp 28,474

On B. M. S $\frac{1}{4}$ (24) 236

(600 - 28,45) 8:15 AM (28,706)

366 (370)

burned hardwood and pine

150. max 376 (380)

Cedar and Balsam, small.

200 burned country 365 (371)

400 chert & chert underground 385 (390)

400 375 (380)

530. max 353 (358)

700 382 (388)

900 386 (392)

1010 by of base 394 (390)

1067 bottom 364 (370)

chert

1100

8,45 373 (380)

1100

enter cedar swamp 348 (356)

1300

enter Alder swamp

1381. River flowing East W.L. 9 AM 344 (354)

1444

opposite tank W.L. 9.7 AM ³⁴⁴ (354)

1600

enter slough W.L. 344 (354)

1647

leave

enter cedar swamp

1770

leave "

1720

max.

362 (376)

turns cedar + balsam

1750

min

347 (356)

1840

top of tank

381 (390)

enter maple timber

1976

max

379 (388)

125

min

350 (360)

total of hemlock + cedar

200

fine cedar etc windfall
, living

375 (385)

367

untanned hemlock balsam
+ hardwood

2400

375 (385)

1150

enter ^{arm of} tamarack swamp 349 (360)

400

max. cedar timber

364 (375)

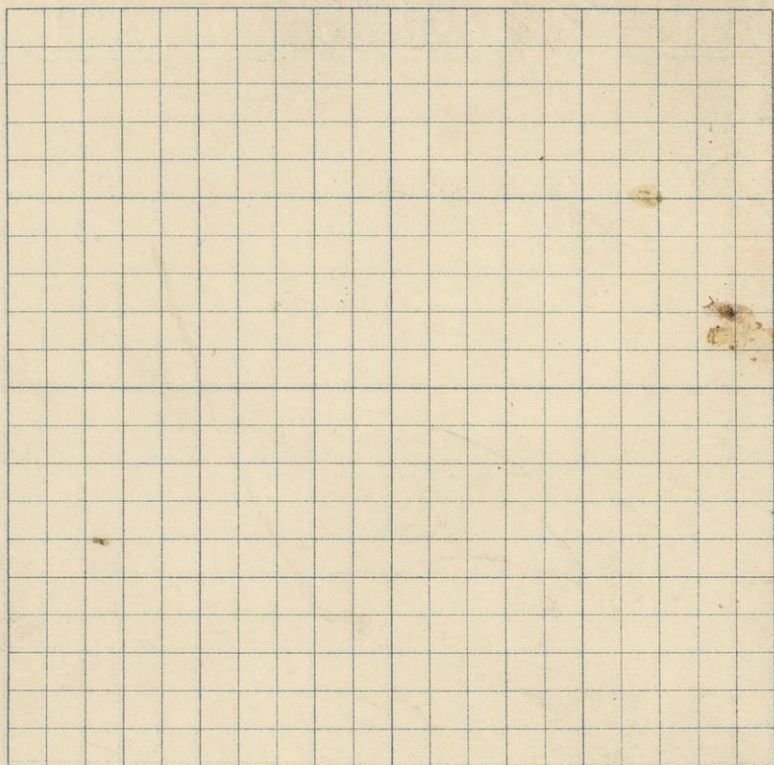
450

recent swamp

S.

T.

R.



- 625 leave swamp 369
 700. wagon road to (Cryder fall) (380)
 enter hemlock cedar and
 hardwood
 780 max 388 (400)
 911 hardwood (Maple & elm) predominates 366 (379)
 1015 364 (376)
 1100 heavy maple timber at west
 1115 min 359 (372)
 1200 369 (372)
 1250 min 359 (372)
 1400? hemlock & maple 367 (380)
 1440 min 351 (365)
 1480 376 (390)
 1575- log of bank 371 (385)
 1600 355 (370)
 1613 creek flowing, Case WL 353 (365)
 1644 log of bank 375 (390)
 1700 359 (375)
 1739 edge of lake swamp 352 (368)
 1800 fore of hill
 1885 to 10 45 384 (400)
 2230 stream by W. line 11.15 385 (405)
 50 feet West of 1/4 post
 11.20 A.M. 384 (405)
 (28665)
 March 388

S. 36 T. 44 R. 32

375		(407)
375		(406)
362	Burned	(392)
377	Wing	(400)
406		(430) (429)
406		(420)
393		(405)
384		(395)
360		(370)
359		(368)
357		(365)
382		(379)
394		(400)
413		(418)
473		(427)

Run North from $W \frac{1}{2}$ post.
S' side of 36. T44 R32

500 feet West
On Bench. (28.620)

(400 - 28.65) 11.35 423 (427.1)

Maple Timber

200 413 (415)

300 394 (400)

400 by 7 house 382 (389)

mount baldern

500 enter tamarack swamp ³⁵⁷ (365)

700 full of springs 359 (368)

800 ^{possible source of stream} leave swamp 360 (370)

900 hardwood & hemlock 384 (395)

1000 12.M. 393 (405)

maple timber

1200 406 (420)

1350 wind fall

1400 wagon road ^{12.20} (Cystert Falls) 406 (430)

" maple lands 12.40 406 (428)

1550 387 (410)

1600 enter wind fall area 368 (392)

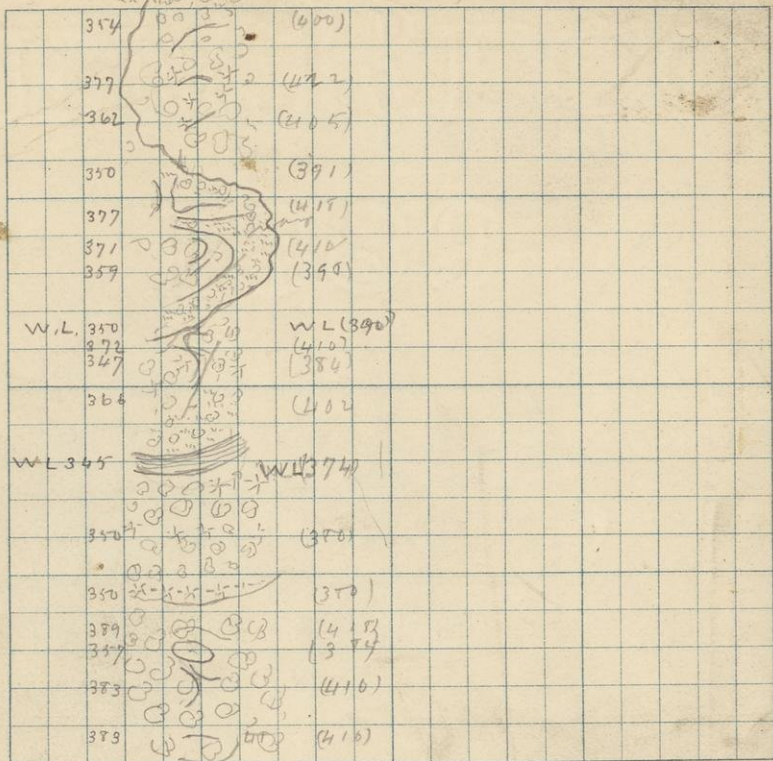
birch Hazel underbrush

1700 375 (400)

1975 375 (410)

2000 enter small open marsh ³⁶⁴ (390)

350 S. 25 T. 44 R. 32



Run Batt on $1/8$ line as
continuation of line on
preceding page

25 leave mound.
 turning & windfall on
 before

75. some maple & hemlock standing 383 (410)

200 383 (410)

225- top of bank. same El. 383

300. " 357 (385)

375 389 (415)

462 enter lake swamp 350 (370)

600 enter low turnings cherry bush 349 (370)

788 1.20 W L 345 (374) 3

813. Next house 1.30 W L 345 (380)

900 into alder swamp

974 talson max 366 (402)

1020 max El same

1062 min (turning area) 347 (384)

1100 max (talson) 372 (416)

1141. creek flowing West W.L 350 (390)

15 ft wide 1.45

enter alder swamp

1242 leave

1305 (359) (398)

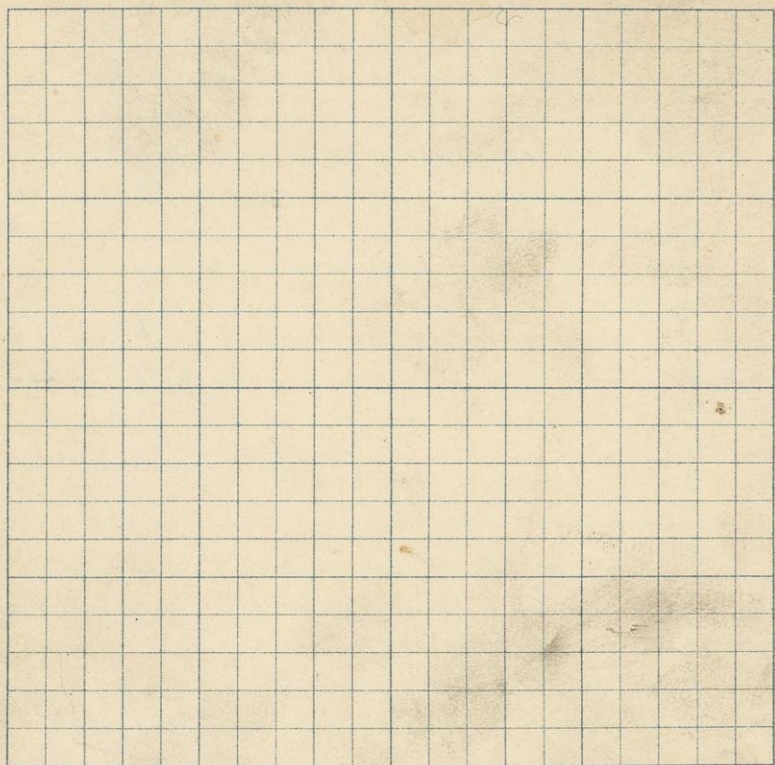
1349. max (371) (416)

crest of hill is just to west
 about 20 ft above fens

S.

T.

R.



1400	reuter alder swamp	350 (390)
1434	leave " "	" "
1493	mat	377 (415)
1570	reuter swamp	
1580	reuter creek WL	350 (391)
1700		362 (405)
1751	enter clear burning	
1800		377 (422)
2950	enter alder and tam. swamp	^{2.20} 354 (400)
2115	stump E & W line 12 paces west of 1/2 pt	
	On B.M. 2.25	354 (410)
	marked 358.	(28,639)
	At Camp 3 P.M.	
	No 10.	28,620
	Camp Ancestral	28,350
		<hr/> 1,270

37

Run South from N.W. cor 25.
in 44 Range 32

Friday, June 19, 1891

Ran for today. South from
South east on Sec 28. T. 44 R. (31)

Amoria No 10

6.35

28592

Camp Amoria

28.07

On R. M., 7. A.M. (28.575)

(330 - 2840

386

(390)

maple hick ~~and~~ pine & cedar

240

387 (390)

300

enter burning and windfall

383 (385)

400

364 (365)

475

Norway & white pine

380 (380)

rather light.

500

struck 1/2 stake. 50 paces E of lumber

600

mini enter windfall

353 (352)

640

enter pine and mixed hard wood

700

382 (388)

820

flow of hill

365 (362)

916

bottom "

354 (350)

hick and cherry underground

950

top of river bank ^{find chopping} ^{at no more}

361 (355)

980

deer river ^{flowing East}

WL

7.45

343

(336)

1000

South fork, WL

8.45

343

(336)

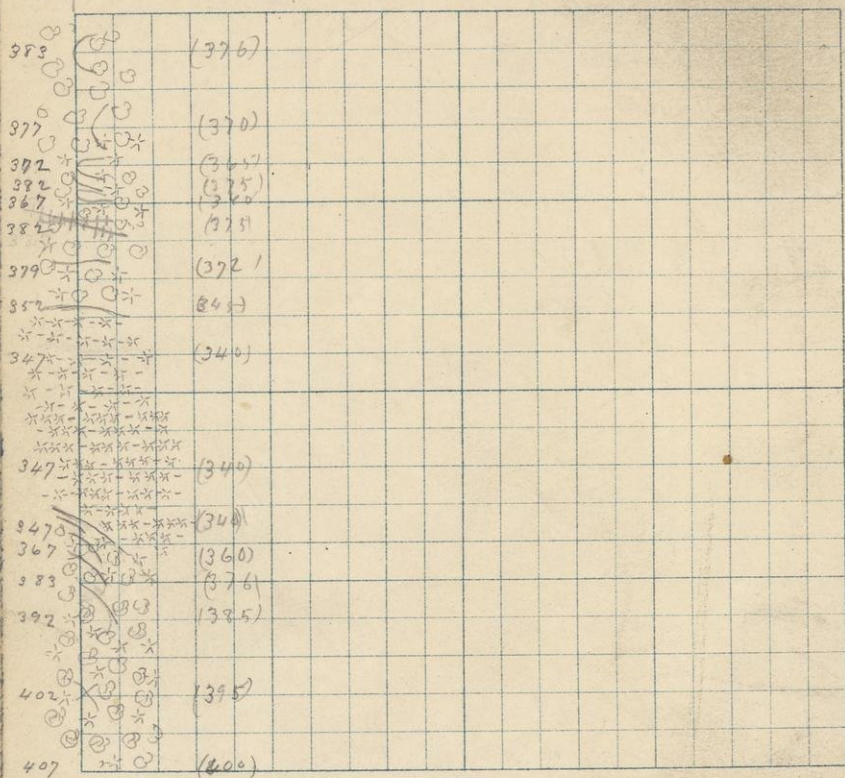
struck 1/4 post

Sec.
35 *

S. 36

T. 44

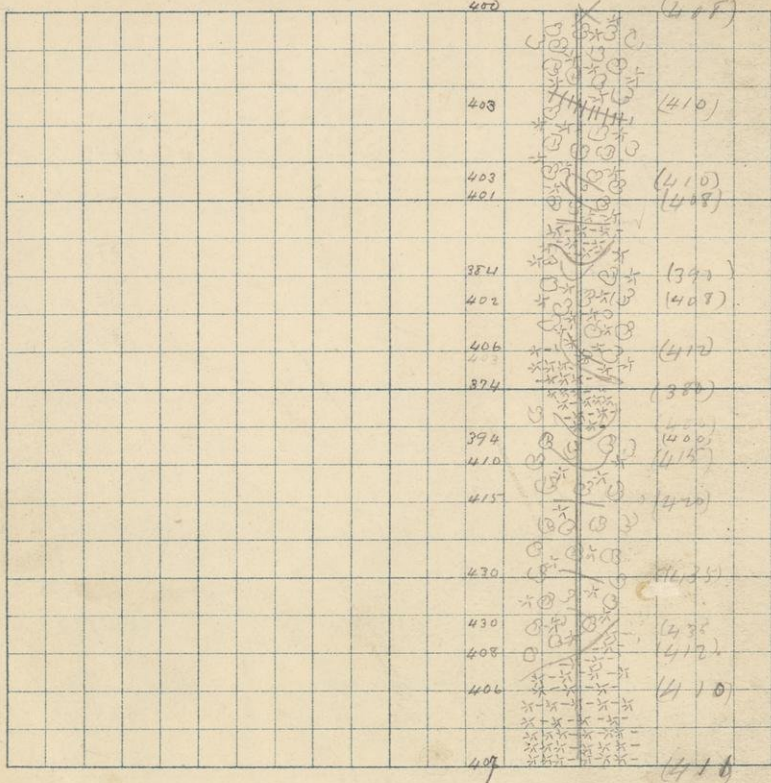
R. 32



Run South on section line in
continuation of line on preceding page

- enter tamarack swamp
 1172. leave " " 347 (340)
 enter balsam cedar + hardwood
 1236. top of bank. enter windfall turn 377 (370)
 1377. max 382 (375)
 1400 min 369 (362)
 1450 max ^{first fine out} 382 (375)
 1500 min ^{handwood} 359 (352)
 1600 387 (380)
 1738 enter good hardwood (maple)
 1700 377 (370)
 2000 struts 2 + west line at 367 (360)
 corner post 8.35
 100 partly wind fall 383 (376)
 300 hemlock mixed with maple 377 (370)
 400 min maple poor. 372 (365)
 425 max 382 (375)
 455 min 367 (360)
 570 wagon road (cypress falls) 382 (375)
 east and west wind fall
 enter cedar, ^{hemlock} and hardwood
 680. by of tank a few large 379 (372)
 white pine
 773. enter tamarack swamp 352 (345)
 905 347 (340)

R. 32



Run North from $N\frac{1}{8}$ post
South side of Sec 35

995 has 1/4 stake.

change to cedar swamp

1200 in . 347 (340)

1340. leave swamp enter 347 (340)

1400 ^{mostly} hemlock, cedar, hardwood, balsam 367 (360)

1500 ^{more} 388 (376)

1600 392 (385)

1000 402 (395)

2000 strike E & W line at same

On Bench 9.45. 407 (400)

(28.564)

marked

411

500 face West.

On Bench 10. A.M. 407 (411)

(700-28.25) (28.568)

marked (411)

cedar and tamarack swamp

200 406 (410)

248. leave "

enter hardwood hemlock & cedar

300 some very good maple 408 (412)

390 ^{more} 430 (435)

400 430 (435)

700 415 (420)

800 top of bank 410 (415)

S. 26

T.

44

R.

32

Hand-drawn map of a field area on grid paper. The map includes a vertical line labeled "DRAINING" and a horizontal line labeled "W.L. 304". Plots are marked with numbers and some are circled. A large area is labeled "POPULATION growth".

Plot Number	Measurement
376	(418)
371	(420)
391	(425)
385	(415)
385	(413)
368	(395)
383	(410)
373	(400)
370	(390)
378	(388)
372	(392)
371	(380)
376	(385)
356	(365)
389	(398)
352	(390)
370	(395)
372	(360)
392	(400)

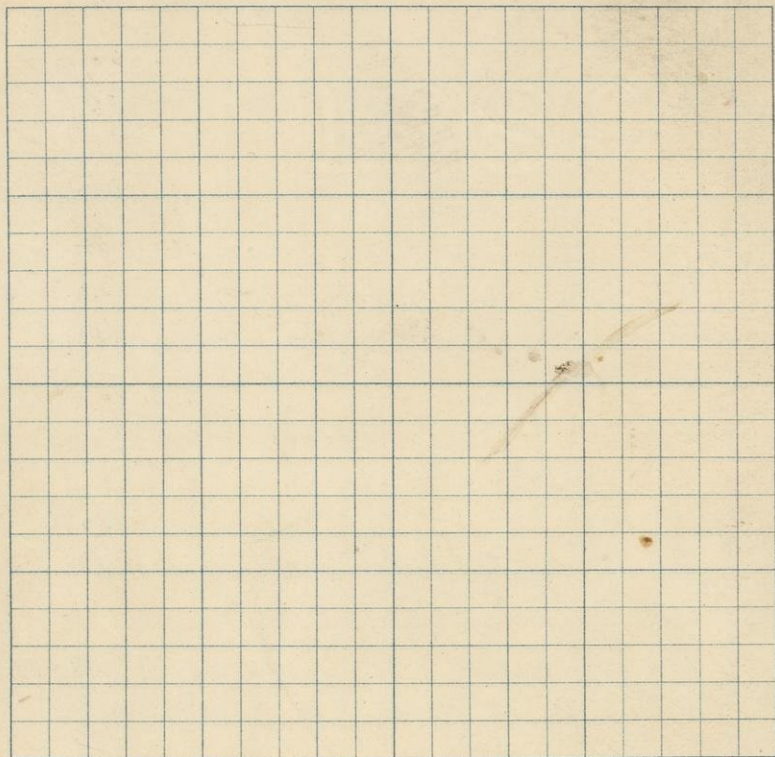
Run North in continuation
of line on preceding page.

- 865 enter balsam cedar 394 (460)
swamp
- 6000 cedar + tamarack swamp 374 (380)
- 1020 enter mixed grove
- 1000 hemlock, cedar, maple 406 (412)
- 1233 402 (408)
- 1300 10.45 384 (390)
- 1320 enter tamarack swamp 378 (385)
- 1420 leave
enter hemlock pine and
larch
- 1400 401 (407)
- 1575 good hardwood, mostly maple (410).
403
with a few pine & hemlock
- 1760 wagon road (Crystal Falls) 403 (410)
turning about 50 paces from wagon
road
- 2000 good maple 400 (405)
- 865 enter thick balsam woods
a few large Norway, white
pine
- 176 392 (400)
- 214 enter open Lam. swamp 382 (360)
- 270 leave " "
- 300 ^{turning with} enter poplar undergrowth 370 (378)
- 320 382 (390)

S.

T.

R.



At camp
No. 11.
Canyon

28,390
28,270

4, P. M.

500		389	(398)
550	mi	386	(365)
600	raspberry indigo	376	(385)
700	along edge of house	371	(380)
900		11.40 372	(382)
972	enter balsam cedar	378	(388)
1000	+ pine	370	(380)
1095	deer river W.L.	12. M. 344	(354)
1150	pasture W.L.	12. 50. 344	(370)
	enter cedar, hemlock, and mixed hardwood		
1300	turned into Leary road	373	(400)
1350	max	383	(410)
1400	mi	368	(395)
1500	enter returned balsam and hemlock	385	(412)
	1. P.M.		
1500	same	1.15	385 (415)
1635	shadewood cedar	385	(415)
1720	and hemlock	391	(425)
1770	me	371	(405)
1720	max	386	(420)
1775	enter low cedar and hemlock	376	(410)
2018	stump E of W line	17 stop W of 1/2, same	
	On B.M.	1.35	375 (410)
			(28.571)
	Married		379

