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Township 44 north, range 32 west, specimens 30225-30240. No. 209 1891

Allen, Andrew

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

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209

LAKE SUPERIOR SURVEY

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 fortifications. 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° E., Dip, 68° 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 3x4x1 inch. In case several specimens of the same ledge are necessary, and when ledges are numerous, specimens 2x2½x¾ 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.

 MAPLE OR HEMLOCK	 HARDWOOD	 PINE OR HEMLOCK AND HARDWOOD	 CEDAR SWAMP
 SPACE OR TAMARACK SWAMP	 MARSH	 RAILROAD ROAD CREEK RIVER	 NO STRUCTURE
 NEARLY MASSIVE	 SHALY OR BEDDED	 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				

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

L.S.S. Art Book No 3

Andrew Allen

Comptroller

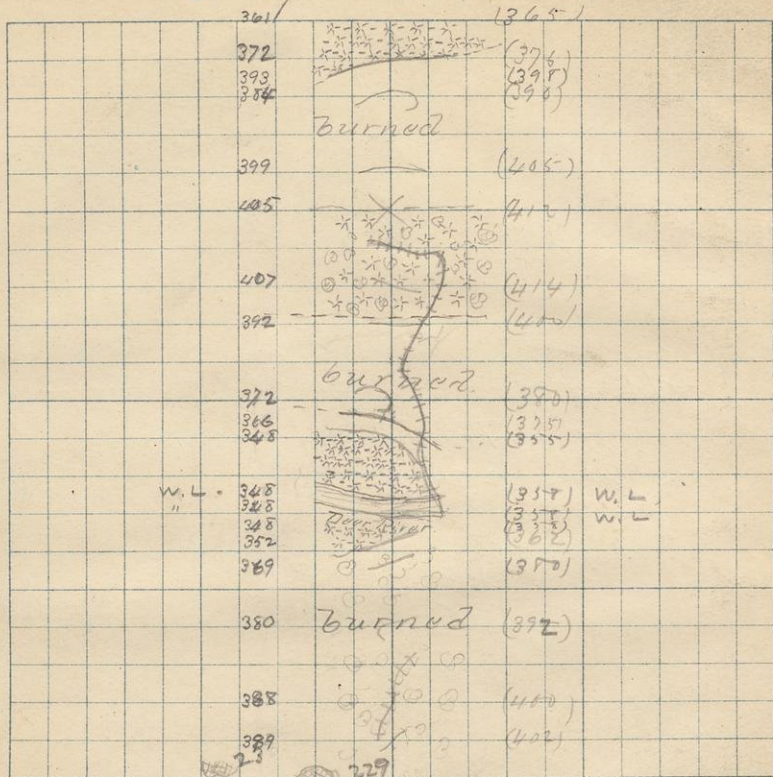
Aldis F. Parker

Specimens checked through
from 217 to 233 inclusive
on June 22.

SPECIMENS: 225-240

TOWNS 44 N.
RANGE 32 W.

NOTE Kelly in Book 25
has numbers
239 & 240



Lat June 20

No. 10 28.642

Camp 28.395

6

(600 - 28.40) (On Bench 7.50 AM (28.640)

361 (365)

Run for today South from ~~SEB~~ S $\frac{1}{4}$ part
of 22. 32. 44

tan arched cedar swamp

100 leave 372 (376)

132 burned country, poplar 393 (395)
undergrowth

200 mi 384 (390)

400 399 (405)

500 enter cedar, hemlock, maple 405 (412)
& Birch

600 wagon road

700 407 (414)

800 enter burning 392 (400)

poplar undergrowth

1000 372 (380)

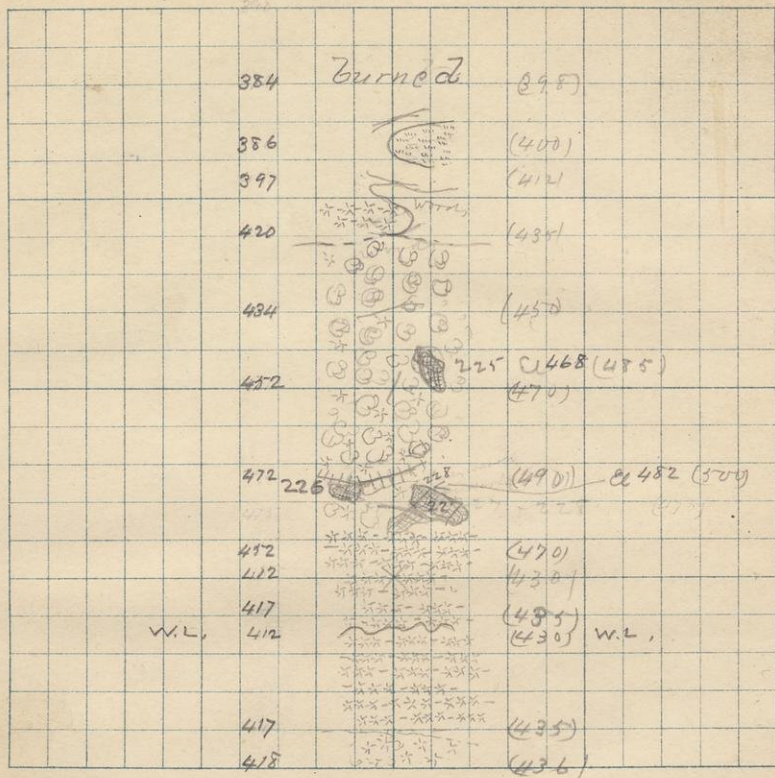
1060 top of tank 366 (375)

1100 bottom enter cedar, tan swamp 348 (355)

1240 over river 8.30 W.L. 348 (355)

1310 South tank W.L. 348 (355)

enter tank & cedar



South in continuation of
line on preceding page

1395 bottom of bank 352 (362)

1425 top, enter tunnel, west 369 (370)

cherry undergrowth

1600 380 (392)

1800 wagon road 388- (400)

1900 strike E + W line. 10 paces west of 1/4 post

correction should be made in the
part of the run, west of the Deer Run

389 (402)

200

384 (393)
9 A.M.

320 small open marsh 386 (400)

467 397 (412)

500. enter ^{any of} ~~the~~ marsh of hardwood

600 enter hardwood, many hemlock 420 (431)

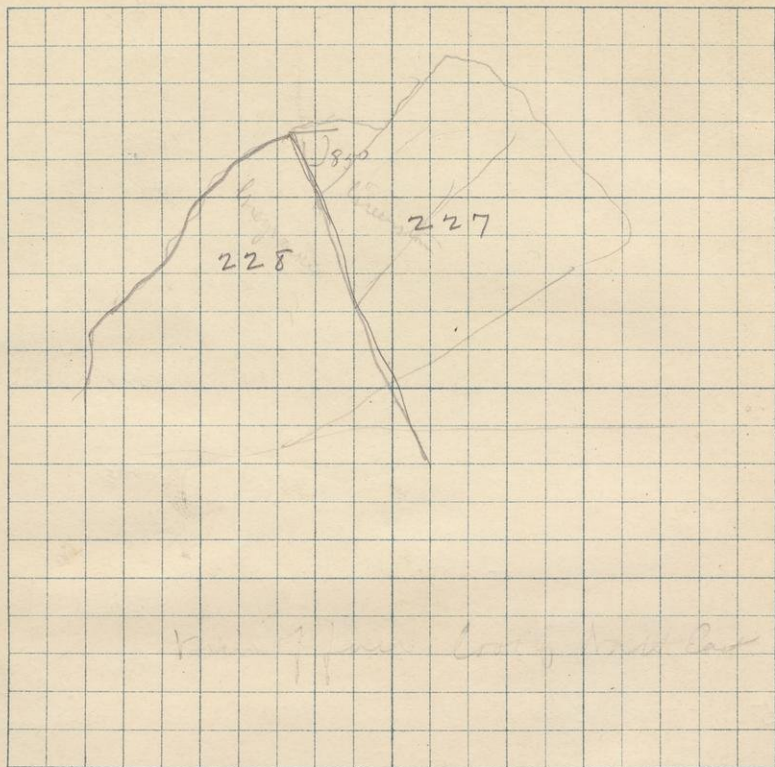
700 434 (450)

725 1080 paces North and 980 paces West of
S.E. cor sec 94. T 44. R 32.

Strike. N. 80° E. 70° (taken from above)
~~Diabase dyke~~. the only perfect plane
exposed. structure not at all plain.
probably no single direction of dip.
seem like an eruptive boss.

Granite. — about 100 ft N. + S. sides
and 100 to 150. C. + W. extent

El of summit 468 (485)



Contact of 228 & 227,
view of exposure looking North

1000

9.45 (470)

293?

850 faces North and 1000 faces West
of S.E. corner sec 34 T. 44 R. 32

Small exposure of Granite, E. of
~~N. 20 E. sig~~ no structure made
out - maybe a ~~float~~ float piece
1214. wagon road 472 (490)
entire partial turning, chert underground

228

720 faces North and 1060 faces West of S.E. corner
of sec 34. Town 44 R. 32.

Granite ledge on brow of hill.
strike N. 25 E. dip N 118 E. 70°.

to principle plane of rift,

T. 44. R. 32

227.

700 faces North and 940 faces West of S.E. corner sec 34.

227

Greenstone, mass of ledge

228

(Greenstone contact E. of everywhere)

probably dyke in contact with greenstone
dip of contact plane 85° S. 45° E.

2 strike N. 45° E. as in sketch

El. (500)

10.15

1425
1410 entry cedar swamp
cedar & hemlock.

452 (470)

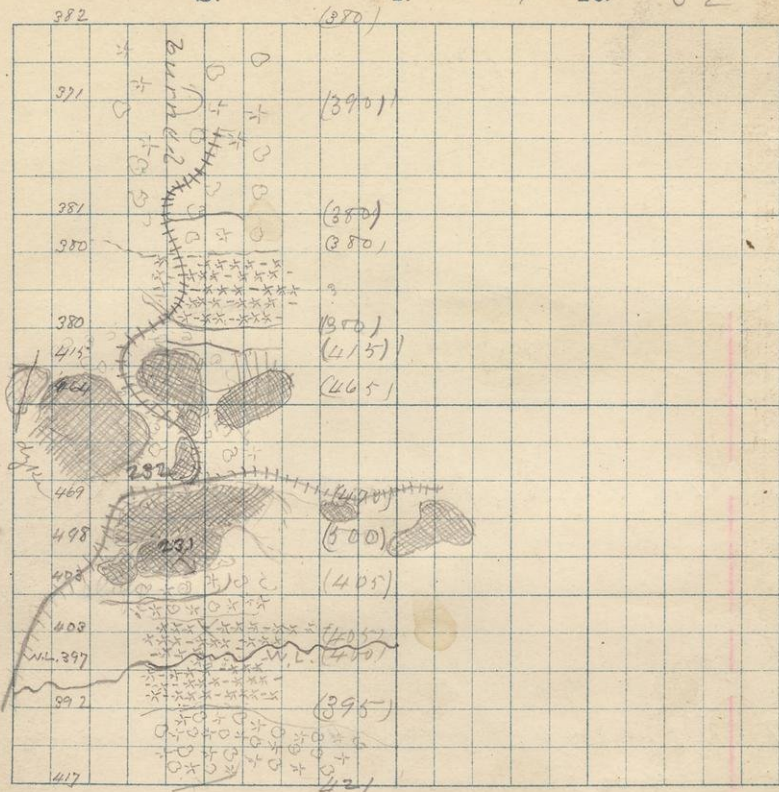
1500 cedar swamp

412 (430)

1600

417 (435)

S. 34 T. 44 R. 32



1625 creek flowing here WL (4301)
 1900 leave swamp 417 (435)

enter Hemlock habitat

2000 struck E + W line 50 paces
 west of B 1/4 road.
 marked (422).

On B.M. 10.50 418 (436)
 (28.580)

129 200 700 paces west of S.E. corner 34,
 mound of diorite, - no structure
 230. 1000 of greenstone 1472 paces west of
 S.E. corner, sec 34,
 no structure.

On B.M. 11.15 (27.570)
 (440-27.55) 417 (421)
 marked (421)

cedar, hemlock, hardwood

200 enter cedar swamp 392 (395)

334 creek 6' wide fl. W. 397. (400)
 (400) in swamp 403. (405)

430 leave 1/4
 cedar, hardwood
 hemlock its timber

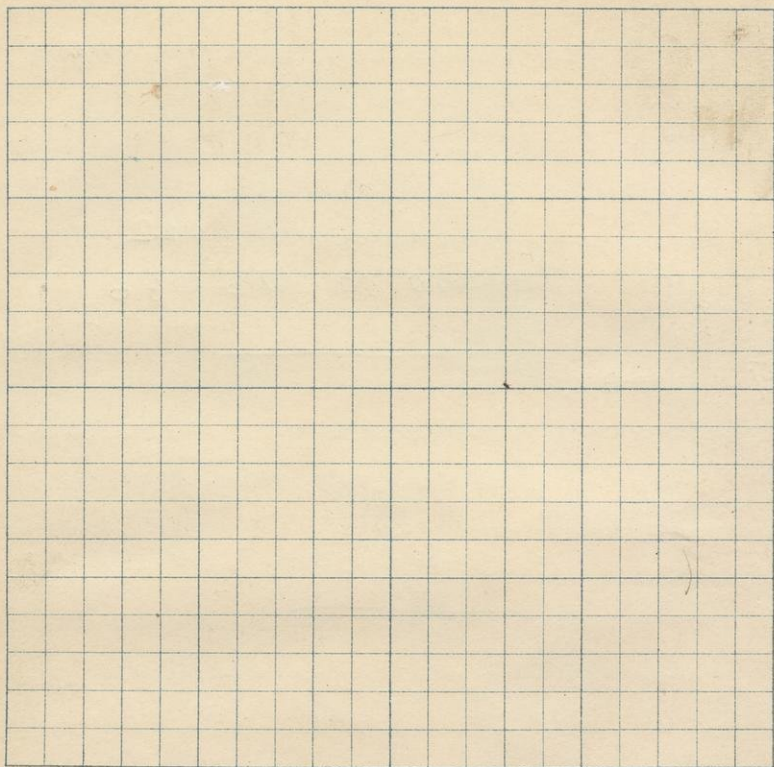
570. base of cliff 403. (405)
 677. 11.40

S.

T.

λ

R.



231 650 faces North and 1530 faces
west of S.E. cor sec 34.

Strike N. 37° E. Dip N. 127° E

431 65° Outcrops on face of cliff
extends discontinuously for a long
distance east way El. (4450) 450.
extending ^{from} the cliff to 768 face

677. crest 498. (480)

768. hardwood & birch 469. (470)

794 wagon road

232 700 faces North. 1550 faces West of S.E.
cor 34.

Outcrop of limestone as per map
entirely hardwood & hemlock most latter

700 wagon road 25 faces west

1051. top of cliff 464 (465)

232 Outcrops of solid or greenstone
like 232, as shown on map

1120. 415 (415)

1200 enter cedar swamp 380 (380)

1400 380 (380)

enter basin of windfall.
cherry undergrowth

1500 387 (387)

1642. wagon road

one of same

1000 371 (320)
 2000 gentle rolls count 12.35 382 (380)

100 374 (372)

300 min 344 (342)

320 max 353 (350)

360 onto cedar way 341 (338)

400 835 (335)

614 Deer river WL 12.55 338 (335)

634 " " to Base WL 12.25 338 (335)

enter turned count

700 353 (350)

764 min 352 (348)

800 top of house 376 (372)

1000 386 (382)

1067 min 346 (342)

1150 top of house 384 (380)

1300 385 (380)

1500 383 (378)

1643 hazy road

1700 385 (381)

1800 365 (360)

1915 enter open tamarack 350 (345)

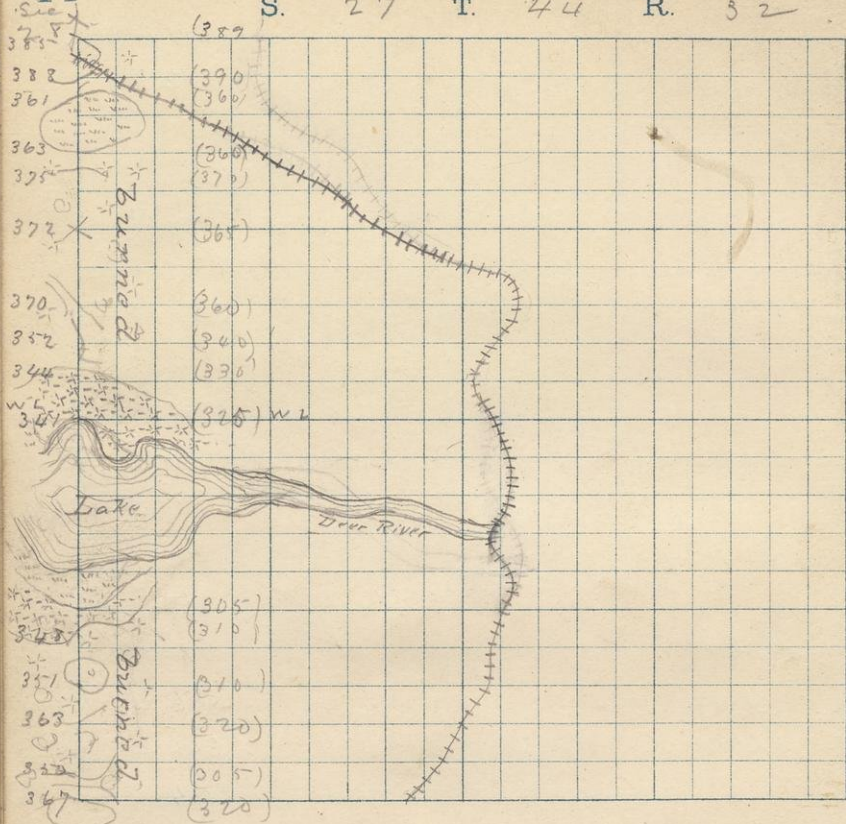
crabbing marsh

2000 strike E + W line ⁸⁰ ~~100~~ feet

East of $\frac{1}{4}$ post

14

S. 27 T. 44 R. 32



Run South from S.E. cor 21

Monday June 22 1891
Run for today. South for

7.45 AM No 10 28.635
Camp. An. 28.420

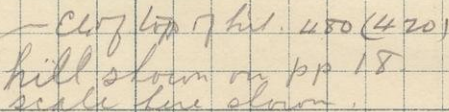
Start from S.E. on 21.
run on E. line of 25 & 33 (44.32)
back on E. 1/8 line of 33 & 25.

On Bench 8.20 AM. (28.550)
(400 - 28.570) 385 (389)
marked 389.

Turns into

45	wagon road (Coyote falls)	
100	top of bank	388 (390)
160	bottom, center open marsh	361 (360)
160		36
300	leave " "	363 (360)
350	top of bank	375 (370)
300	burnt timber with scant poplar	372 (365)
	undergrowth	
200		370 (360)
750		332 (340)
870	enter Tamarack swamp	344 (330)
1000	edge of open marsh and low ^{W.L.}	341 (325)
	8.45	

R. 32



Run South in continuation
of line on preceding page

1500. Side of Lake 341 (305) W.L.
in marsh 9.50.

in tamarack swamp
1570. leave swamp. 348 (316)
enter burnt timber

1700 351 (310)

1750 363 (320)

1955 river 350 (305)

2000 362 (320)

200 375 (325)

322. max 397 (345)

500. glacial Kettle on West. side 390 (335)

750 393 (335)

800 390 (330)

900 foot of rocky bluff

235. General material of cliff
cut by dykes. of - No. 234

234. Strike, N. 85° E 9 ft N. 105° E 150. (the dyke from which specimen came)

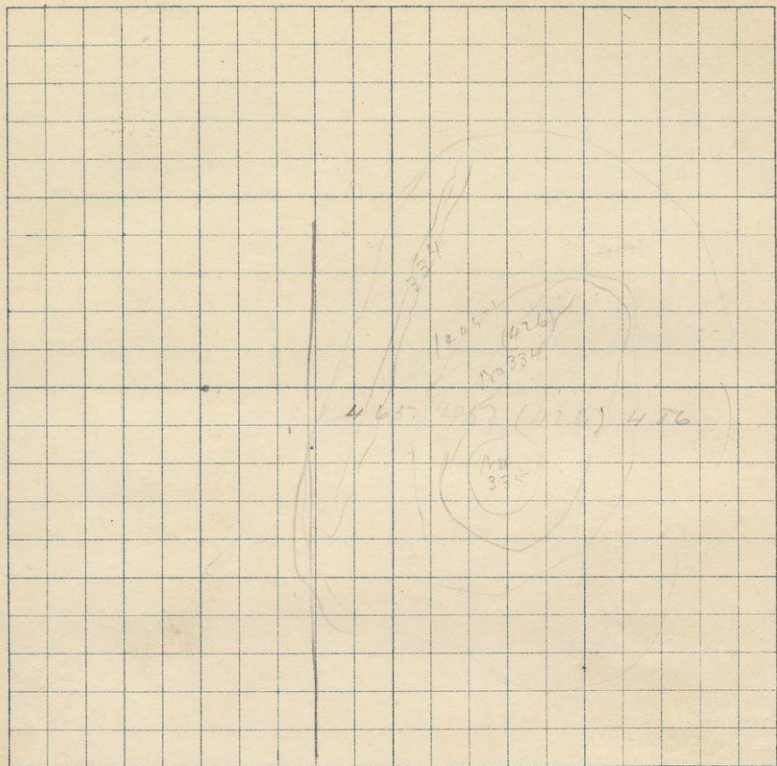
Whole surface contrasted and
folded and cracked, but no
general direction of rift.

Dyke material comes to the surface
sometimes in great amount, at
it (405), there is a band of it as on
map, p. 18, and again on the 67.

S. 34

T. 44

R. 32



C

El. 420. the original material
reappears.

1460 465 (395)

1300 in 422 (358)

1360 max. top of rock bluff 448 (374)
material same as the one
described.

enter turn of half two
cedar spruce etc.

1400 11.25-437 (360)

1438 839 (360)

1500 wind fall 426 (345)

1541 423 (340)

1600 410 (325)

1640 enter cedar swampy 387 (300)

1713 wagon road (Crystal falls) 396 (305)

1755 creek 6' wide flowing west 394 (303)

W.L.

1700 402 (310)

1720 ~~large dry ground~~
~~large swampy~~

enter balsam, hemlock, cedar
& fir in swampy

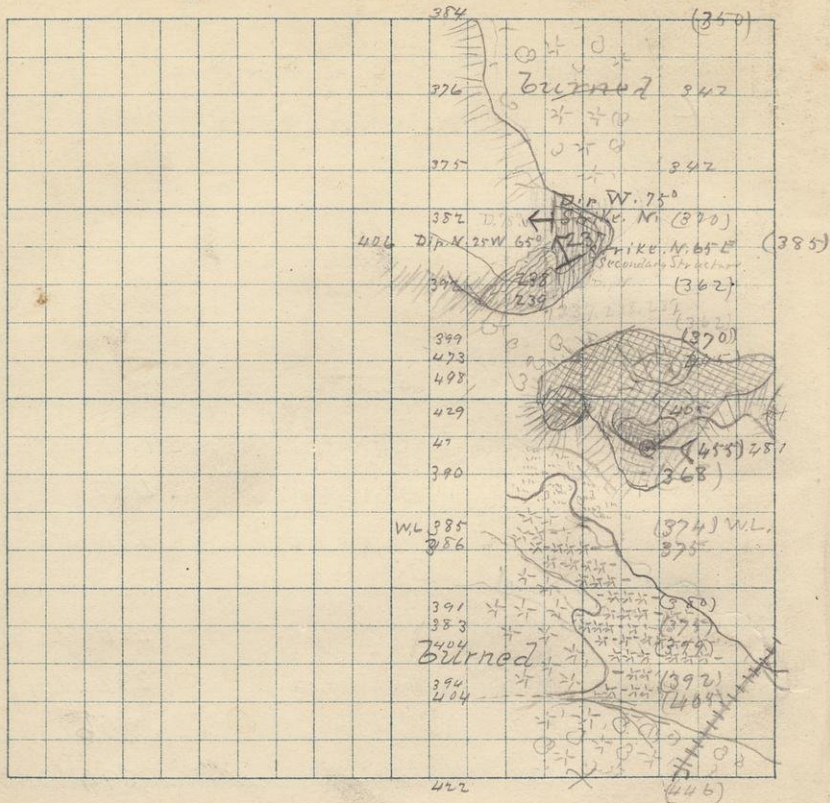
2065 struck by W. line at post (332)

On B M 12.5 417 (322)

28.654

marked

4421



500 faces West. Slope from $E\frac{1}{2}$ past to in line

On B.M. 12.15 (28,614)

set at. 442 (446)

(550 - 28,50)

Maple, Birch & a few Hemlock

200 about $\frac{1}{2}$ good hemlock 404 (405)

237. ~~cut~~ ^{min} cedar swamp 394 (392)

cedar & hemlock

374 turn 404 (399)

swamp at East

400 enter swamp (cedar) 983 (375)

500 spin of turn country 991 (380)

600 in swamp 386 (375)

620 wind fall

670 creek 6' wide flows West 985 (374) W.L. 12.45

same

1.P.M. 385 (365) W.L.

alder along creek

700 390 (368)

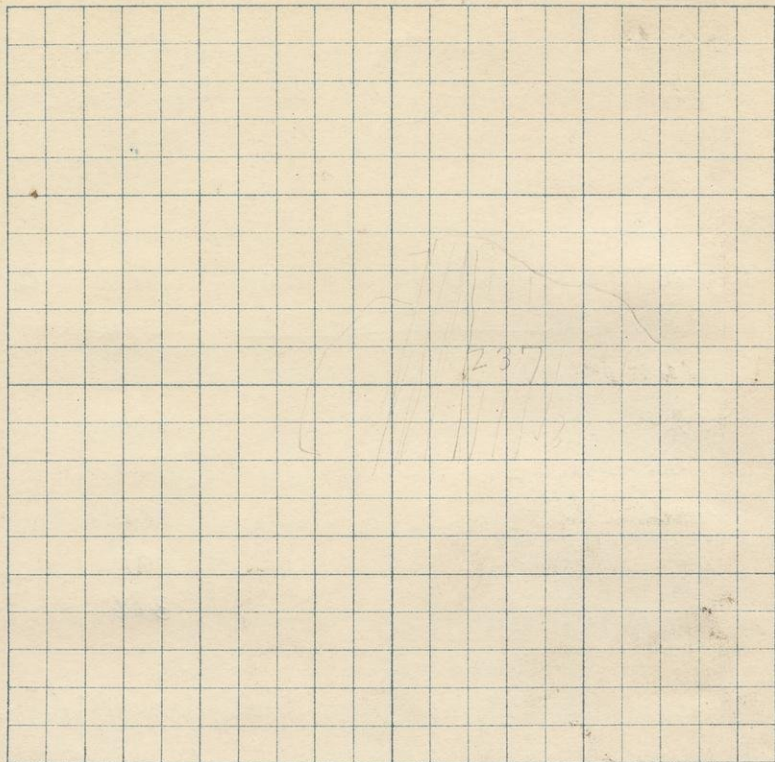
850 leave marsh

973 base of rock exposure 429 (404)

1051 top of bluff 1.30 498 (472)

236 100 faces East and 500 faces West of
S.E. cor of 33, 44, 32

hatter cut by dykes like other end
of ridge



238
239.

Bruciated Character most plain on
weathered surface, The face of the
exposure shows is very distinctly, much
more so than the specimens collected

dykes of 234 running about Strike N. 20 E
 Dip. N. 110 E. 65°, at some points
 seeming as if ~~and~~ the gabbro and diorite
 lay in almost equal layers. These latter
 being in general as above

1100

473 (4457)

1150

399 (3701)

1300

392 (3621)

237. 1400 faces East and 500 faces West of S.E. cor
 of Sec 33. Town 44 Range 32.

(Greywacke) Primary and secondary
 structure both easily made out.
 primary bedding planes, which show plainly on
 the specimen, have a strike of East
 and a dip W. 75°.

principal cleavage planes

(secondary structure have strike
 N. 65 E. dip. N. 25° W. 65°

238 1300 faces N. + 600 faces West of S.E. cor Sec 33 T 44 R 32

239 Breccia lying to the West of greywacke
 and found as far as the exposure
 could be traced, no primary structure
 visible

1410

2.30 P.M. 406 (3857)

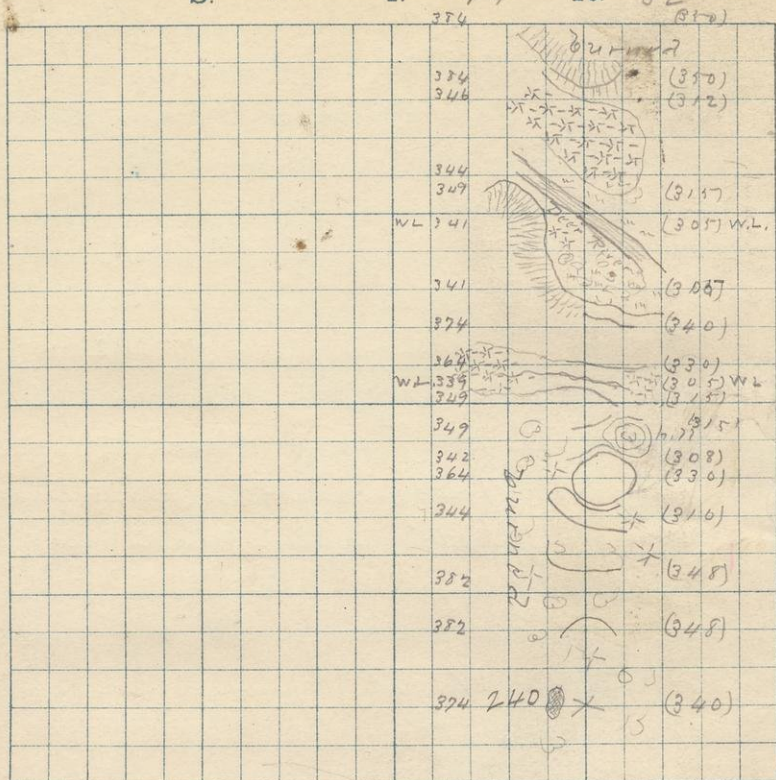
1470 bottom of cliff cuts turning 382 (380)

1600

375 (3421)

1800

376 (3421)



On B, m 3.50 p.m. (330) 384
(26,72)

Marked 388.

At camp 4.25 No. 10,
Camp America

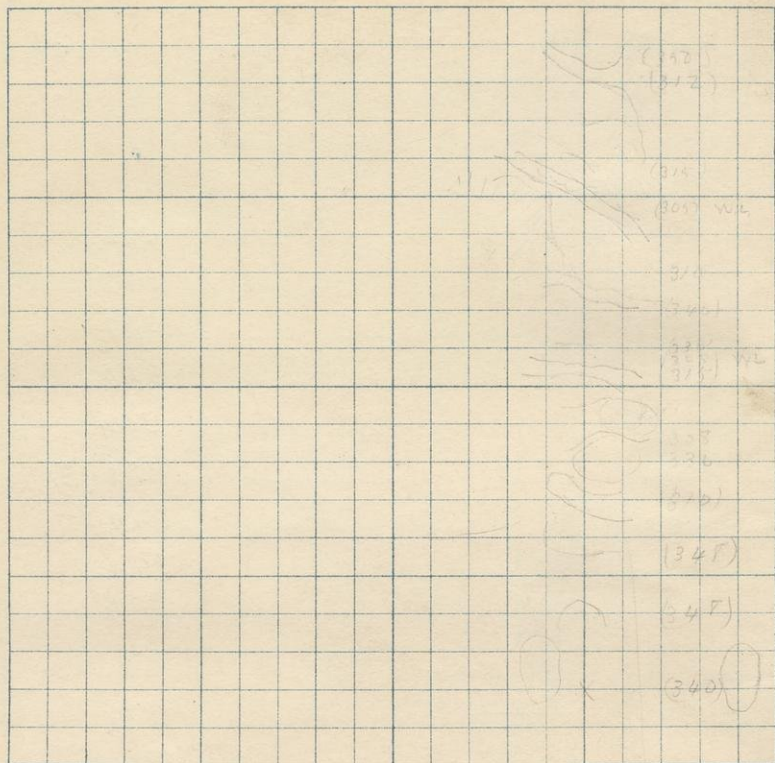
28.760
28.485

2000,		384 (350)
239	200. face N. 20° W. ⁵⁵⁰ 30 face West of S. E. cor 28.44.32.	
240.	top of gathro.	
	clearage quite regular	
	dip. N. 20° W. 50°; strike N. 30. W.	
200		2.53. 374 (340)
400		382 (345)
670	top of bank.	382 (345)
700	min	344 (310)
700		364 (334)
780	min.	342 (308)
950		349 (315)
1020	top of bank.	349 (315)
1050.	small creek flowing E. cor. W.L.	339 (305)
1100		364 (330)
1200	road	374 (340)
1225	top of bank.	384 (350)
1270.	good " "	
1325	enter alder brush	341 (305)
1494.	Deer River, W.L.	3.25. 340 (305)
75-15-1	North bank " W.L.	3.30. 341 (308)
1540	max. turning as before	349 (315)
1600	enter tamarack swamp	344 (310)
1700	leave " "	346 (312)
1750	top of bank	384 (350)
1998.	struck E. & W. line at. 1/4 stroke	

S.

T.

R.



2

Specimens handed in and
checked through to 240,

Blank Pages

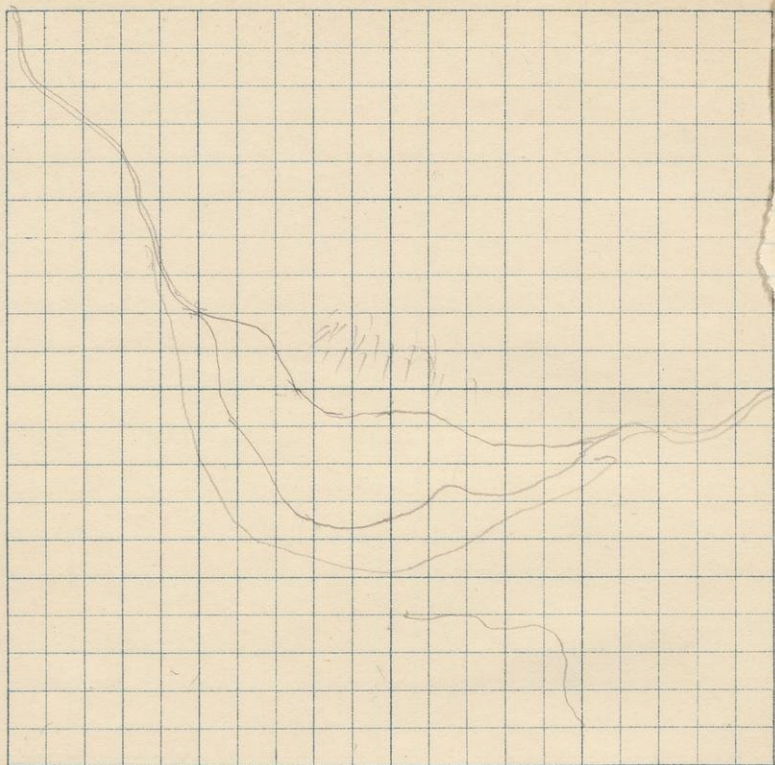
28-103

Skipped

S.

T.

R.



Pages

105-106

Not present in original

6 5 4 3 2 1
7 8 9 10 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

