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Township 47 north, ranges 35 and 36 west, specimens 31634-31654. No. 264 1891

Mathews, E. B.

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

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624

LAKE SUPERIOR SURVEY

Indst.

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.






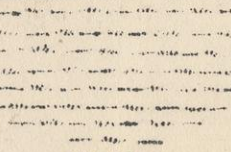
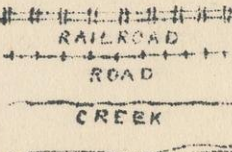

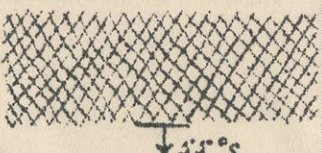


It will be the constant business of the geologist to search for outcrops. All hills within a reasonable distance of the course of travel will be examined. Oftentimes upon the steeper slopes of a hill a rock surface is covered with a coating a few inches thick of moss, leaves or vegetable mold and can 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° 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 $2x2\frac{1}{2}x\frac{3}{4}$ 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	 ↘ 38° E. ↘ 3.62° E. SHALY OR BEDDED	 ↗ 83° SECONDARY STRUCTURE.	

EQUATION OF TIME FOR 1891.

Day	Min.	Day	Min.	Day	Min.
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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				

TOPOGRAPHICAL SIGNS.

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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

Notebook # 2.
C. B. Matthews.
J. H. Macdonald, Compassman.

SPECIMENS: 1634-1654

TOWNS: 47-35
47-36

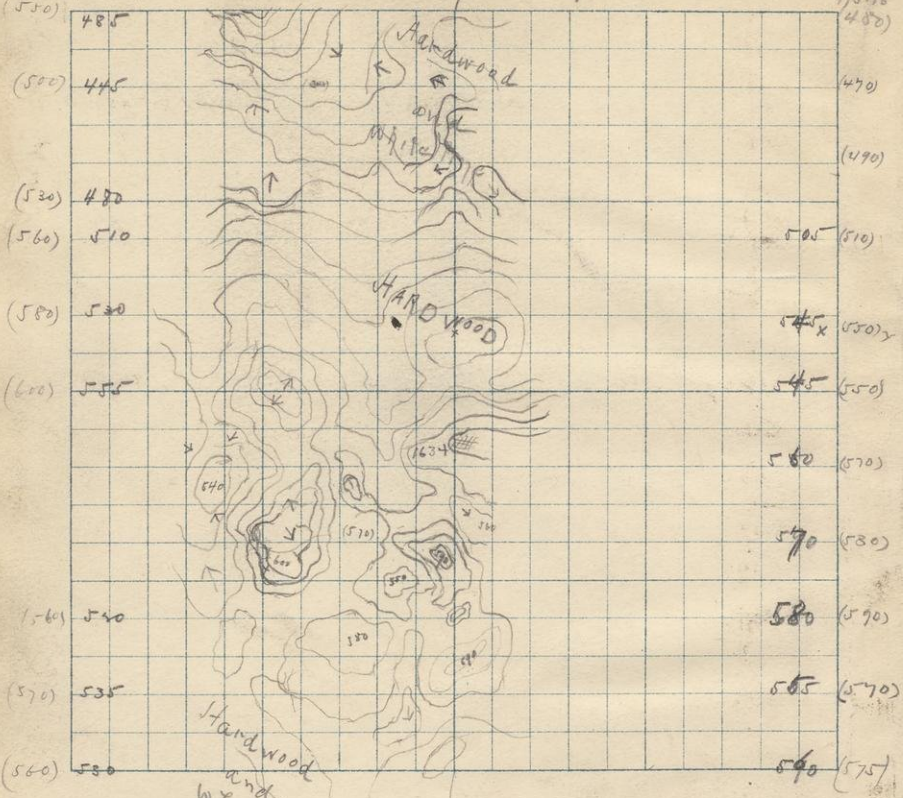
NB- also a 1654 in
box # 73

2

S. 18 T. 47 R. 35

485.87 m.l.
(550)

478.96
(480)



Hardwood
and
White Pine
w eight

quarter tree

Oct 13 '91

3

Runing south on quarter line of 18 (47-35)
Bill 478.96 Ameroid (480) 8.⁰⁰

Hardwood and pine good quality + size
8255 (550)

10005 (550) Hardwood, good. 8.²⁵

20055 (575) " " stuch intended

line 30 E of 1/4 stake. 9.¹⁵

Runing north on west eight of 18 (47-35)

Ameroid (500) Using 40% variation. 11.²⁵

10002 (500) Hardwood and pine good. 12.⁴⁵

15002 (530)

19972 stuch benchmark 43 W of 1/8

Bill 485.87 Ameroid (550) 1.¹⁵

1634

8202/10005 SE cor 18 small outcrop of quartz with
schistose rock included. The dip of the
lamination is 55° S strike about N90° E.

Running south on quarterline of 19
(47-35) Aneroid (575) $\sqrt{402}$ 9.15

Fair hardwood and hemlock.

5005 (570) Ridge of hemlock, good.

10000 (540) in small open work 9.45

7005 (575) Pine ridge homestead cabin. Pine
1st quality fair size. Also some hemlock of
the same description.

20003 struck benchline SE of $\frac{1}{4}$ stake.

Ball, 514.30 Aneroid (560) $\sqrt{402}$ 10.15

Running north on west eighth of 19 (47-35)

Ball 507.72 Aneroid (555) $\sqrt{402}$ 11.00

Poplar + jack pine second growth

The hemlock and white pine appear
to be very fair in quality + size.

10002 (590) ridge of pine + hemlock 11.35

19902 (580) struck benchline SE of $\frac{1}{4}$ stake 10.10

Hardwood with scattering pine, good

Oct 15th overcast. Rain, snow & hail.

7

Runny south on east section line
of 13 (47-36) E Range line of 36.

Bell. 437.60 Aceroid (430)

8.15

stake in pond.

2308 (470) 4008 (500) 6008 (500)

10008 (475) Fair hardwood.

8.50

11008 (500) 12008 (480)

15508 (500) abrupt knop on either side runny E 10° S.
knob rises about 35 feet.

17508 102 W, ⁽⁴⁶⁰⁾ small lake with steep banks no outlet instead

20008 (530) struck intermediate line at corner 9th

Runny north on east eighth of 13

10002 (490) swampy land

12.30

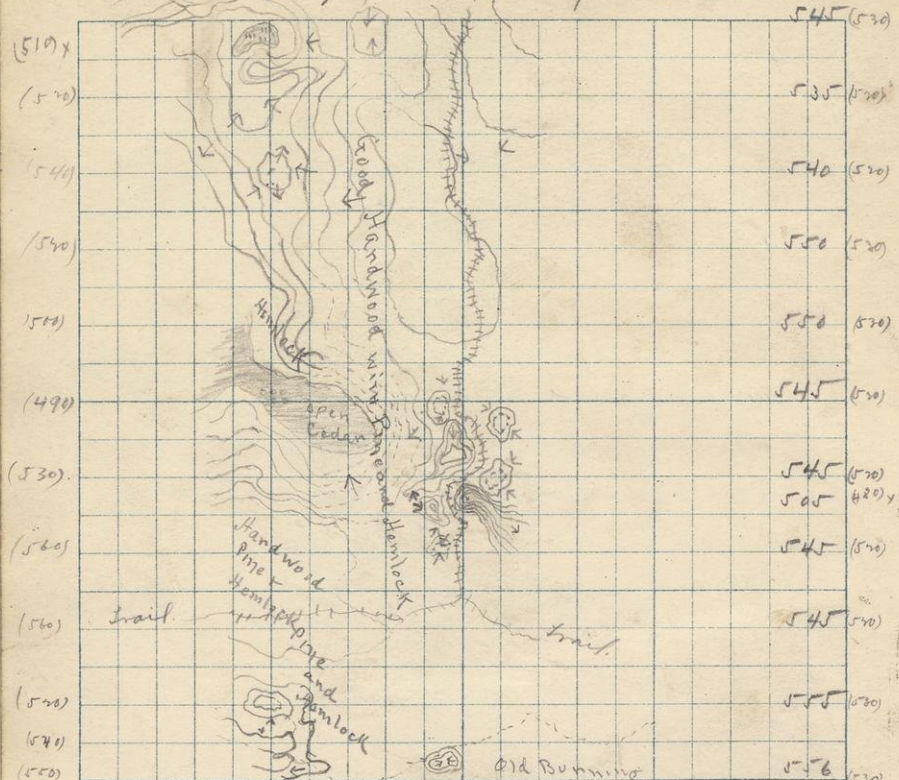
20042 struck knobline 20 W 1/2 stake

Bell. 457.20 Aceroid

14.50

1635

250 W NE cor of 13 outcrop of slate on
the side of hill. Lamination strike 77° 50' W
Dip 50°-70° S.



eight.

section line

Running south on east section line of 24
47-36 (E range line of 86) (530) 9.25

1000 s (520) entering moraine country covered with
good hardwood + scattering pine and hemlock 9.40
1115 s (490) pot-hole. 1170 s (540) Hardwood etc.
1270 s (480)

1400 s (520) some very fair pine and hemlock.
2000 s (520) struck benchmark at corner.

Bull. 556.86. Aneroid (530) 10.00

Running north on east eighth of 24 (47-36)

Bull. 547.48 Aneroid. (550) 10.20

Old burny soon changing into pine hemlock and
hardwood.

1000 72 (490) On the edge of an alder swamp 10.55
cedar swamp to the east, open, trees fair size.

2099 72 struck intermediate line and
found no stake. Later found stake
just where we struck the line

We left south benchmark 40 E of $\frac{1}{8}$
because according to our pacing the $\frac{1}{8}$
stake was 540 paces W of sec. cor.

10.

416.3 rim
(450), 416

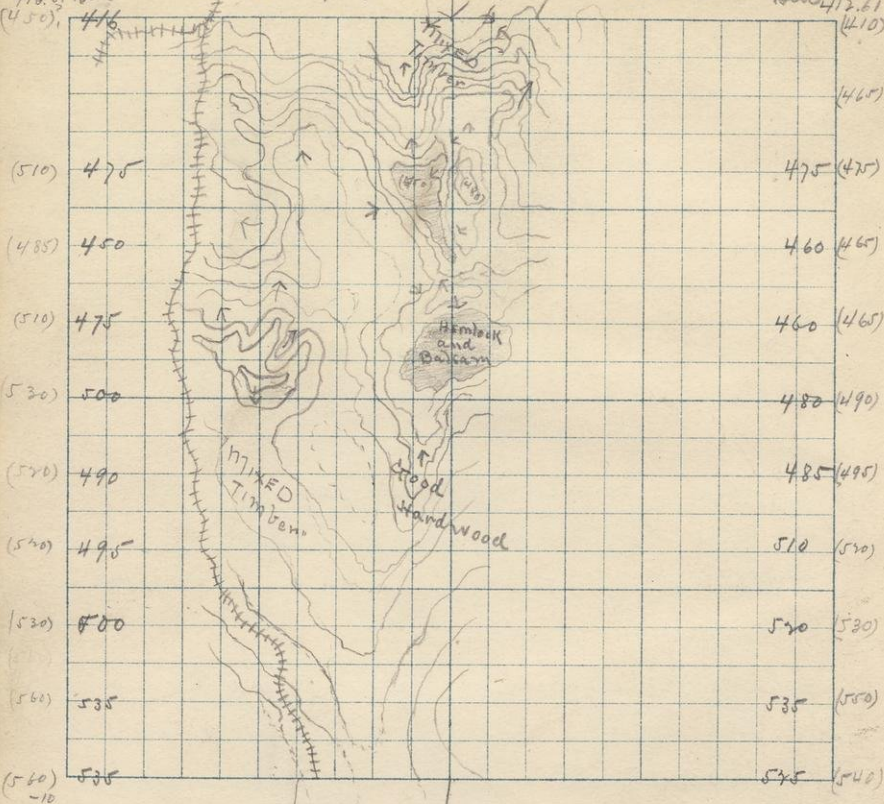
S.

14 T. 47

R.

36

417.61
(410)



weight.

quarter line

Oct. 16th Bright.

11

Running south on quarterline of 14
Bill. 416. 61 Acreoid (410) $\sqrt{3^{\circ}20'}$ 8. 45

Mixed first growth some hemlock.

8000s (465) dupich swamp, hemlock & balsam
fair size & quality no more,

1000s (490) mixed 1st growth with some hemlock 9. 25

30075 (540) Fair hardwood stunch intermediate
at quarter stake 9. 50

Running north on west eighth of 14

385 n Road to Homesteads

Mixed timber, first growth, a few hemlock.

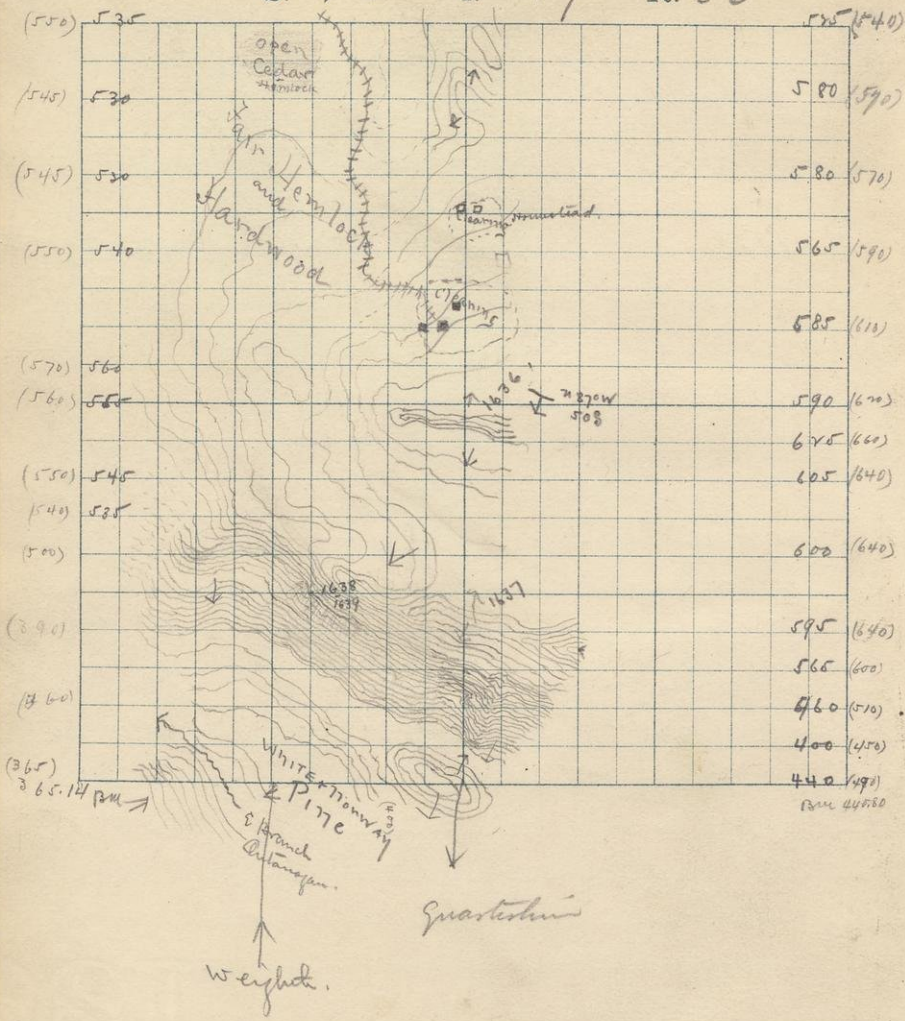
1000 n (520) mixed timber first growth 7. 00

200000 stunch benchline at 1/8 stake.

Bill. 416. 31 Acreoid (450)? $\sqrt{3^{\circ}20'2}$ 2. 30

12

S. 23 T. 47 R. 36



16

16

16

16

Running south on quarterline of 23,
 13°30' Emerald (540) hardwood 10.⁰⁰
 Good hardwood.

5000s (500) struck benchline at quarter stake
 B.M. 440.80 Emerald (1490) 11.³⁰

200

Running north on west eighth of 23.
 B.M. 365.14 Emerald ⁽³⁶⁵⁾ 18°30'E 14.⁰⁰ 14

Norway white pine grove. Good forming
 timber mostly white pine.

Fair hardwood + hemlock most of the
 way.

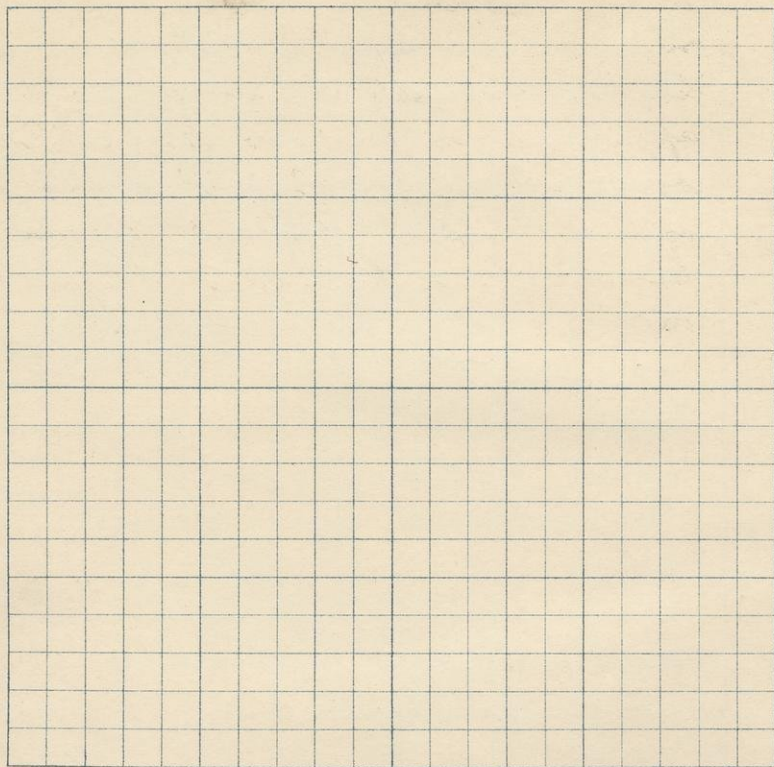
2000n (500) struck intermediate line at stake.
 Started 75 W of 1/2 stake on south bench line because
 according to our pacing it was 75 E of the true place.

1636. 940n1000 W SE cor 23 Large ridge of slate
 and greywacke. Strike 178°10'W dip 50°S.
 The slate lies north of the greywacke.
- 1637 460n1000 W SE cor 23 Outcrop of greywacke
 no contact nor slate found clearance the
 same as in 1636 (2+W±) This might be or might not
 be of the same bed as that of 1636.
- 1638 500n1400W SE cor 23. Dip and strike about
- 1639 The same as in 1636. No contacts could
 be found in place. The slate as is

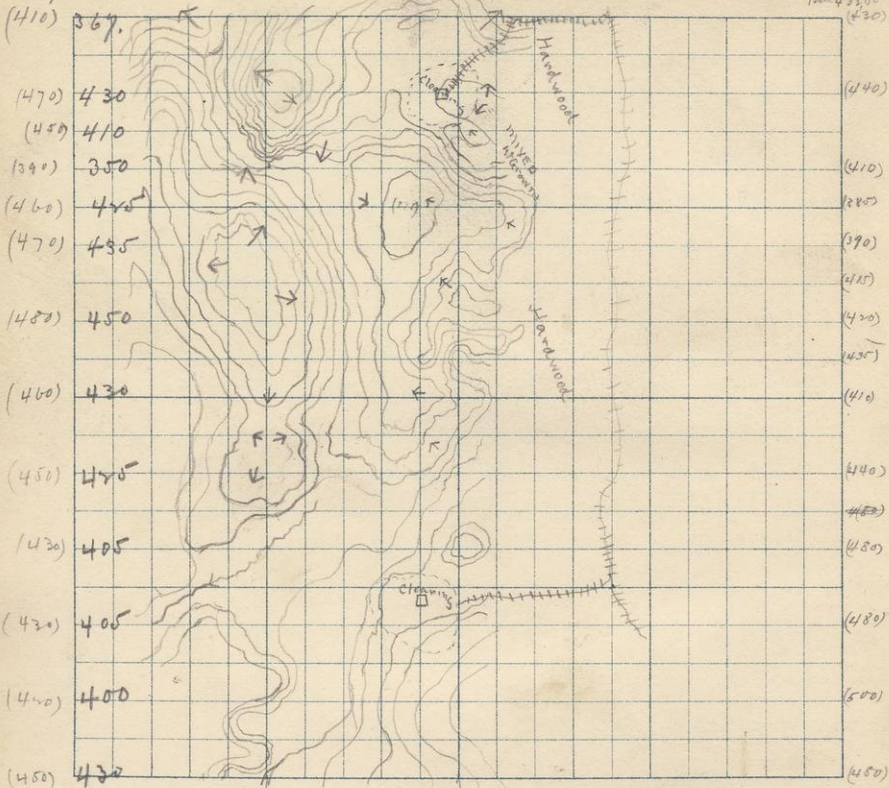
S.

T.

R.



shown by the specimen (4628) is very much crumpled. The greater part of the ledge is slate only a little graywacke appearing at the bottom of the south slope which is abrupt for 120 feet. The contact specimens were obtained from large fragments in the debris at the foot of the ledge.



sight.

s section line

Oct. 19th Fair.

17

Running south on east limb of 15.
B.M. 432.05 Aneroid (430) $\sqrt{3}^{\circ}$ 8.00

Hardwood.

1000 s (410) Hardwood fair, some hemlock. 8.20

2000 s (480) " " " " 9.00

Running north on east eighth of 15
Aneroid (450) fair hardwood. 11.40

1000 n (460) mixed hardwood. 17.15

2000 n (410) struck benchline at $\frac{1}{2}$ stake 1.00

B.M. 367.87 Aneroid (410) $\sqrt{3}^{\circ} 20' E$

1640 1750 n 500 W secor 15 small outcrop? of
greywacke + slate. Nothing was made
out on acct of breaking hammer.
Should say the strike was about E+W.

(450) 430

(450)

420

(425)

355

(370)

340

(350)

320

(330)

415

(410)

420

(425)

400

(400)

410

(410)

(470)

(460)

(420)

(410)

(380)

(360)

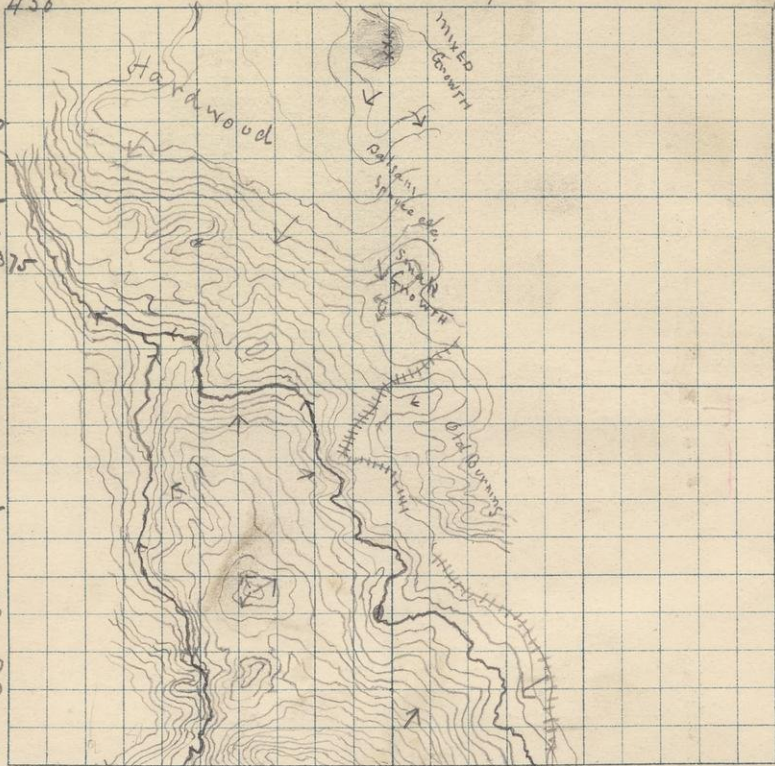
(340)

(340)

(400)

(460)

Bar 464.98



no Bl. found

isight

is section land.

Running south on east line of 72.
 Ameroid (480) hardwood with some hickory. 9.50
 10205 (380) Old bunny (partial) 9.20
 14405 (340) 15008 + crossed the
 east branch of the Antanogaw R.
 20008 (460) struck benchmark at corner
 Bell. 464.98. Ameroid (460) $\sqrt{2} \approx 30^\circ E$ 9.50

Running north on east eighth of 72
 Bell. not found. Ameroid (410) 10.15
 Partially burnt hardwood and white pine,
 creek 30 W / stake (400) 20N (400) creek.
 200N (400) 205N (300) creek.
 950N (320) bed of Antanogaw E branch. 11.50
 1980N (450) struck intermediate line 15 E
 of stake. Hardwood, fair. 11.40

20

S. 16 T. 47 R. 36

371.67
(300)

371.83
(310)

(350)

(300)

(360)?

(300)

(350)

(290)

(360)

(310)

(380)

(370)

(400)

(400)

(420)

(400)

(430)

(420)

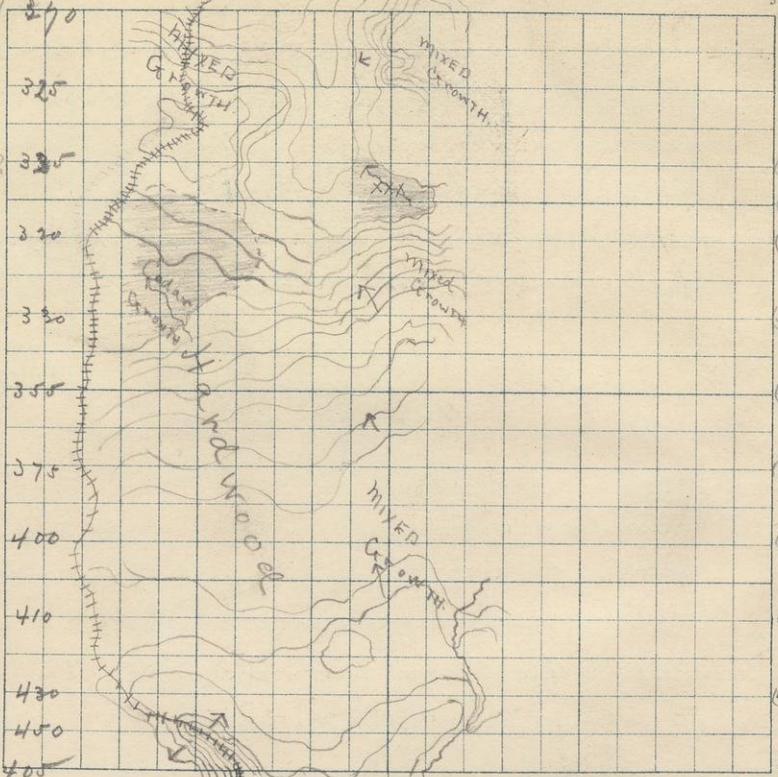
(450)

(420)

(470)

(420)

420



weylite
quartzite

Oct. 20th Fair.

21

Running south on quarterline of 16.

B.M. 311.83 Aneroid (310) $\bar{v} 30.24 \sqrt{30.24} \approx 5.5$ 8.00

Mixed first growth mostly small hemlock & balsam.

4658 (290) small creek flowing NW.

10000 (370) mixed growth (fruit) 8.20

10260 (440) struck intermediate line 20 W of stake

Ran on 30E which is probably correct. 8.45

Running north on west eighth of 16.

Aneroid (420) (in hollow)

13000 470 Road.

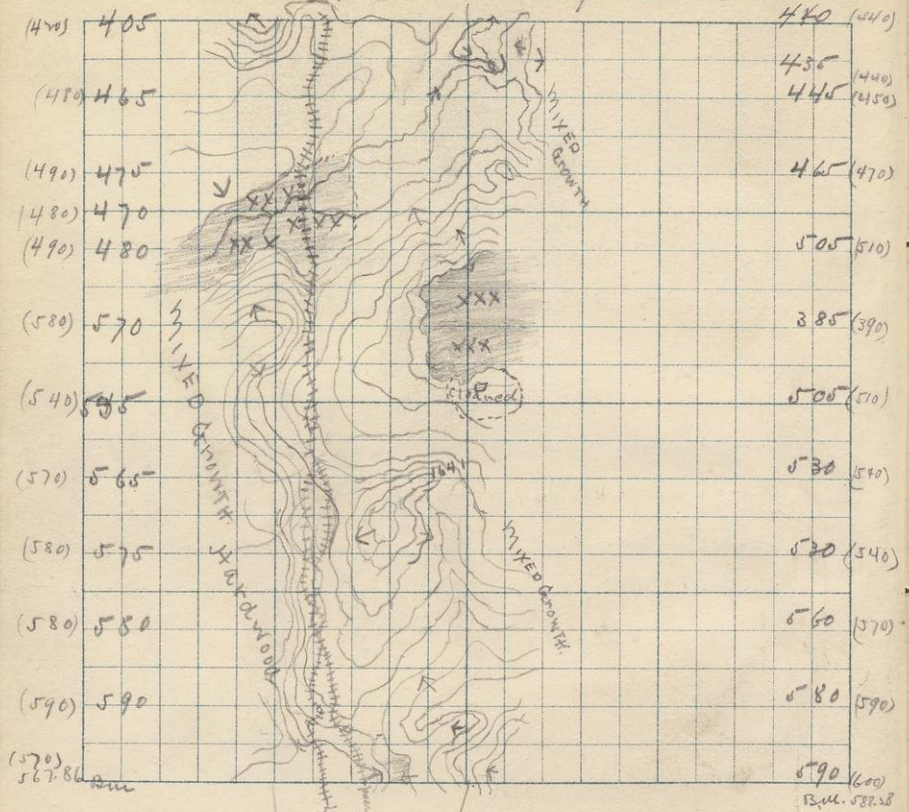
10000 (380) Poor-fair hardwood. 12.12

16700 Road.

~~B.M.~~ struck benchline 150 of 1/8 station

B.M. 271.67 Aneroid. (340) $\bar{v} 30.2 \sqrt{30.2} \approx 5.5$ 12.45

Road crosses NW line at benchline.



weight

quarter line

Running south on quarterline of 21
 Aneroid (440) 53°E mixed growth with a
 few hemlock.

1255 (440) crossed small creek.

6505 (390) cedar swamp, good sized growth

1993 S (600) struck benchline at 1/4 stake.

Bell. 588.88 Aneroid (600) 53°E 10.15

Running north on west eighth of 21

Bell. 567.86. Aneroid (570) 10.30

1000N (540) mixed growth. Road 100 E. 11.10

1100N struck intermediate line at 1/8 stake.

Road 135 E. 11.45

1641 800N 1075W SE cor. N long ridge with small
 outcrop of massive - actinolite graywacke
 No structure made out.

24

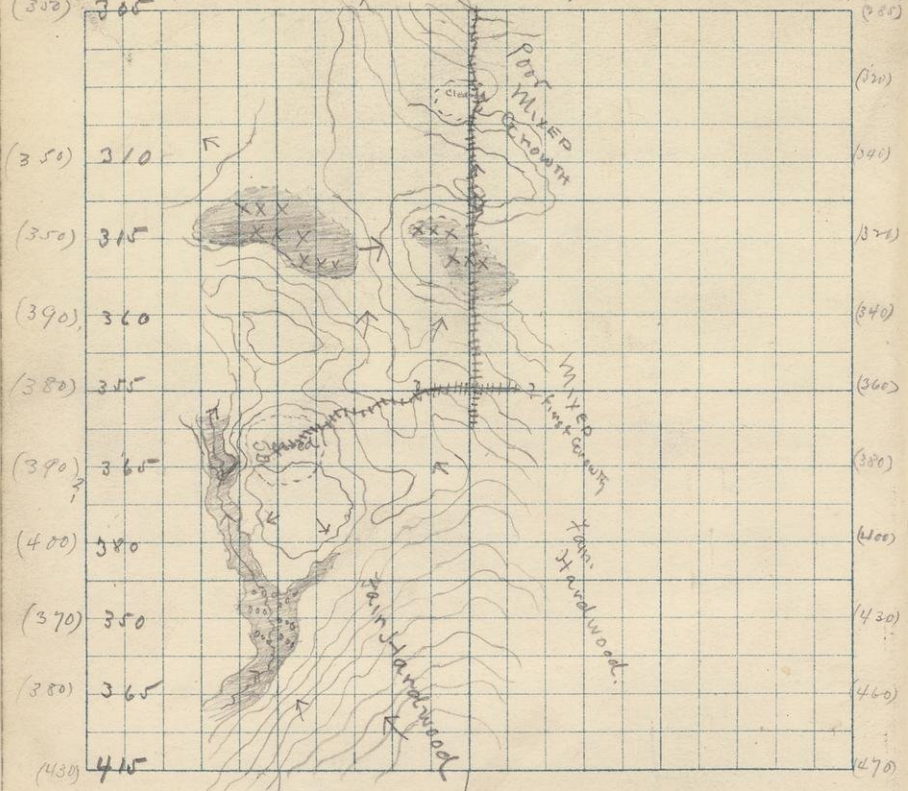
404.38' Bull
(300) 305

S. 17

T. 47

R. 36

Bull 2503
(250)



right

section line

Running south on east line of 17.
 Bill. 285.03. Acreoid (285) $\delta = 20.9$

Poor mixed growth. 7.45

The ^(down) supply road is on section line but is
 sketched a little to the east so as to appear
 1000 s (360) supply roads etc.

1100 s end of town road (in construction) 8.05

2000 s (470) stunch intermediate at corner. 8.15

Running north on east eighth of 17.
 Acreoid (470) $\sqrt{30} - 3030' E.$ 11.00

300-400 x along side of swift creek.

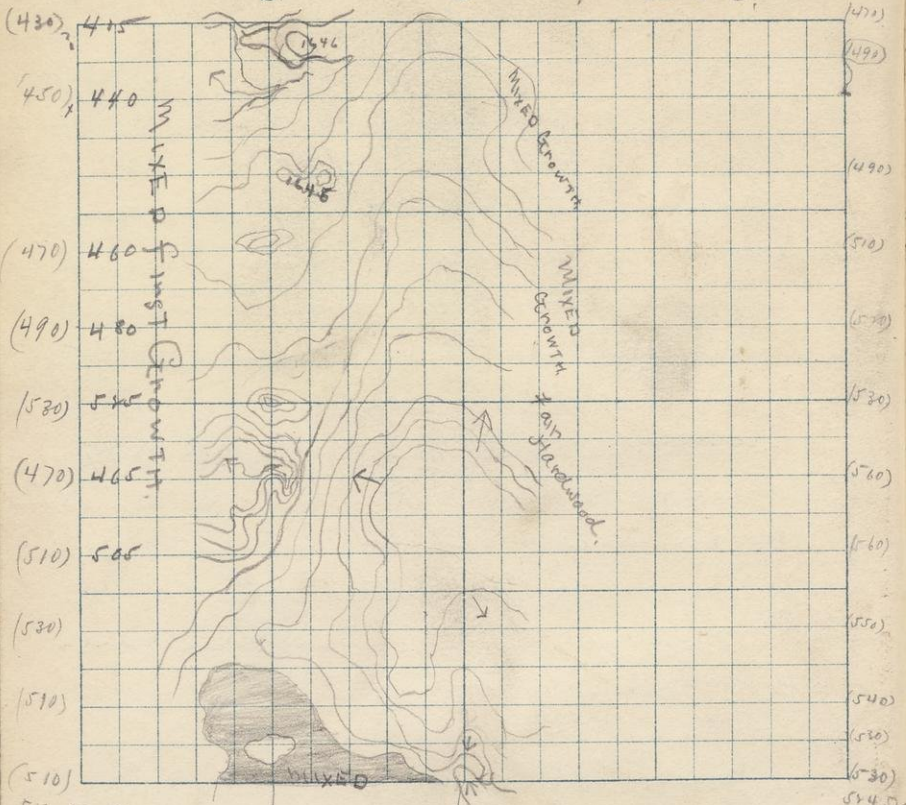
1000 n (380) mixed timber 11.30

2000 n (350) " " stunch perch

line 30 of $\frac{1}{8}$ stake 11.20

Bill. 404.38? Acreoid (350)

I believe Bill. to be 304.38 and have so
 interpolated. Only 475 paces between
 $\frac{1}{8}$ stake and original of $\frac{1}{4}$ stake.



511.50 BM
↑
eighth

↓
sectionline

16
16
16

Running south on east line of 20.
 Ameroid (470) $\sqrt{50^{\circ}E}$ Fair hardwood 8. 20
 Fair hardwood passing into mixed first growth.
 10000 (530) Fair mixed first growth. 8. 35
 20000 (520) struck benchline at corner,
 B.M. 584.52 Ameroid (520) 8. 50

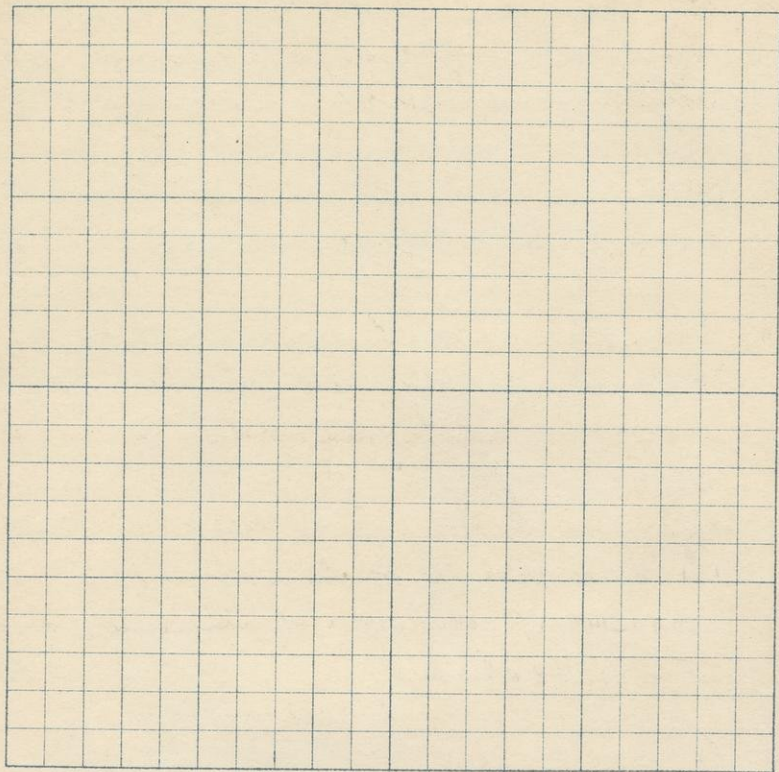
Running north on east right of 20.
 B.M. 511.50 Ameroid (510) $\theta = 3.59$ 9. 10
 swamp
 2000 (470) creek
 10000 (530) on top of small knob. 9. 55
 18100 (450) small creek in gully.
 20000 (430)? struck intermediate line
 15 \circ E of $\frac{1}{8}$ stake. 10. 55

A few subangular large more covered boulders
 of graywacke on benchline 15' W of corner.
 1643 600 x 500 W S.E. Cor 20 low outcrop of graywacke
 1643. with altered sidents. No contact specimen
 could be obtained strike of line of contact
 E+W ($\approx 90^{\circ}E$) dip almost perpendicular.
 1644 1460 x 520 W strike $\approx 60^{\circ}E$ dip $75^{\circ}N$. This may

S.

T.

R.



/6

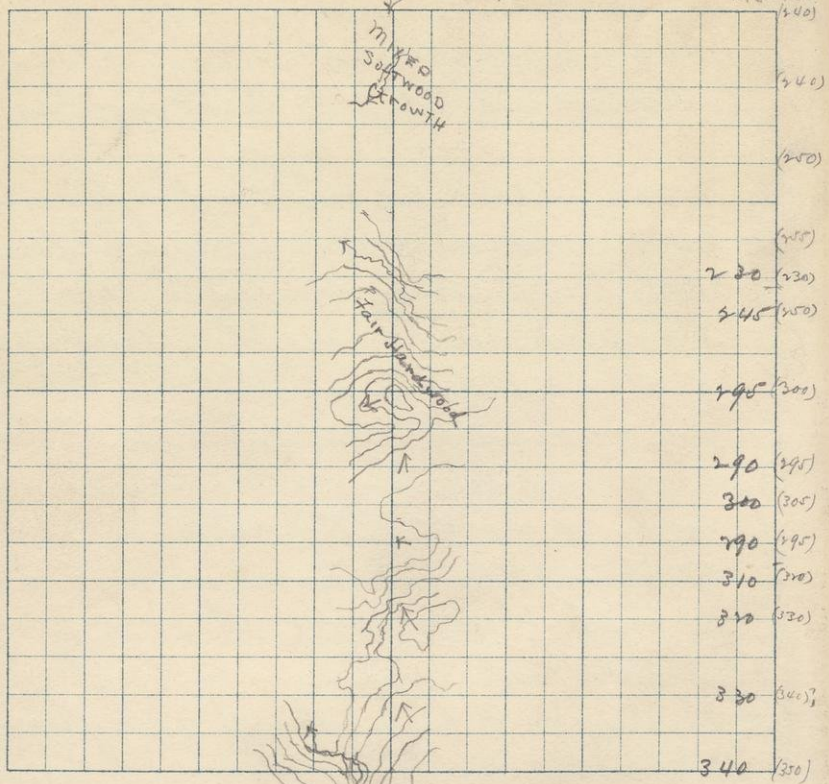
16

16

16

- 1645 not be the true bedding but if 1645 + 1644 are different then it is the strike and dip of their contact.
- 1646 1600N 480 W sscor 20. large outcrop of sedimentary graywacke with outth any contacts visible. What appears to be the cleavage is what I gave as bedding in the previous description. If it were not for the former description I would call this cleavage but as it is I call it the same as in 1644.5. If that is cleavage this is if not this is not.
- 1646 1850N 500 W high outcrop of graywacke.
- 1648 1950 N 500 W " " " "

1844, 39.64.
(40)



Running south on quarterline of 18.

Bill 739.64 Acrewood (240) 0 = 20.5. 1.00

Partially burnt small-pine plain,

1500s. Spring creek. (235) flowing SW.

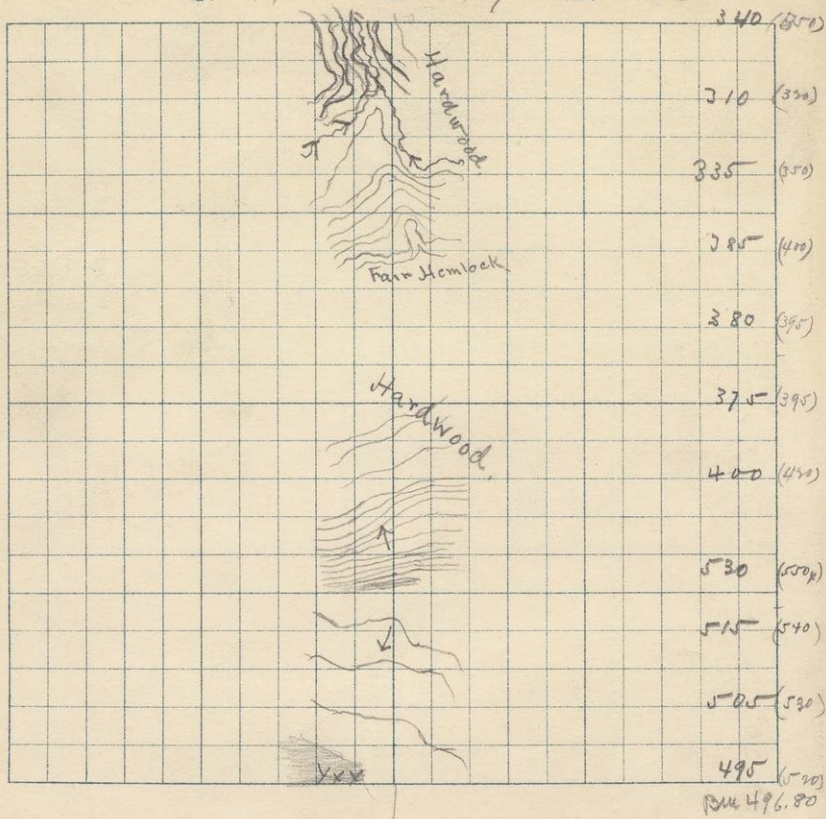
some fair white pine on this section

700s. (230) small creek flowing NW.

1000s (300) Hardwood with a few white pine 1.30

4999s (350) stretch intermediate here at 1/4 2.00

S. 19 T. 47 R. 36



Quarterline

Running south on quarter of 19.
 1000 s (395) Good hardwood and hemlock, 2.²⁰
 1400 s (550)
 2000 s struck benchline at 1/4 stake
 Bill, 496.80 Auroid (520) 3.⁵⁰

1649 540 W 1000 W SE cor 19, long high ridge
 of slate, strike N 80° W dip about 20-30 North
 Charage N 50° W dip almost \perp a little to the
south.

34

776.96 BM
(270)

S. 18 T. 47 R. 36

277.15
285

(250)

200

(290)

240

(290)

240

(290)

240

(290)

250

(310)

370

(300)

365

(340)
(310)

260
380

(350)

325

(340)

325

(270)

(215)

(240)

(280)

(340)

(365)

(290)

(305)

(330)

(290)
285

(330)

MIXED GROWTH

SWAMPY
MIXED
SECOND
GROWTH

Hardwood
and
stemless

Fair Hardwood

W. myrtle

weights.

Oct 23rd Fair.

35

Running south on west eighth
of 18 (47-36)

B.M. 237.15 Aneroid (735) 0 = 30. 29 7.30

300 s. (315) creek flowing NW.

1000 s. (365) mixed swampy growth all the way with a
few scattering white pine. 8.00

1400 s. (305) a mixture of hardwood + hemlock.

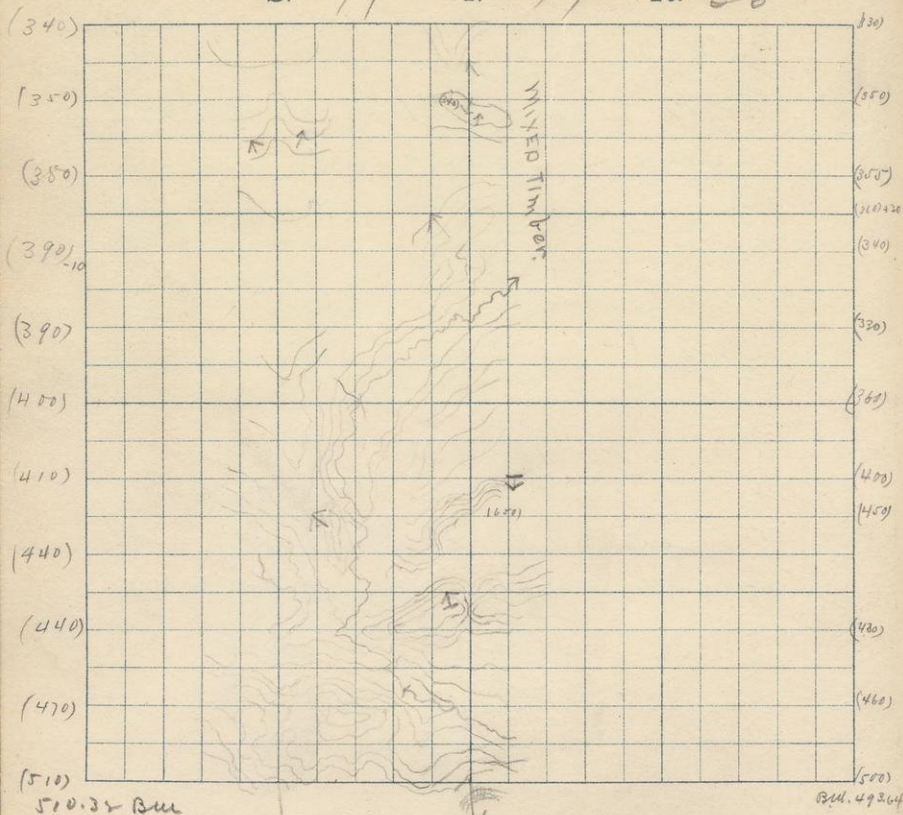
1745 s. creek (390) flowing NW.

2004 s. ⁽³⁸⁰⁾ struck intermediate line at 1/8 statute 8.30

Running north on west section line of 18,
Aneroid (340) mixed 1st + 2nd growth.

476 n (390) crossed creek flowing WNW.

1000 n (390) mixed growth 11.45



S — 25' — 20' — h

For correct sketch see page 38.

Running south on west eighth of 19.
 Acreoid (330) Fair hardwood. $\sqrt{30} \times 8.30$
 780 S (320) crossed creek flowing NE.
 1000 S (360) mixed timber, little value, 8.55
 1860 S (460) crossed creek flowing NW.

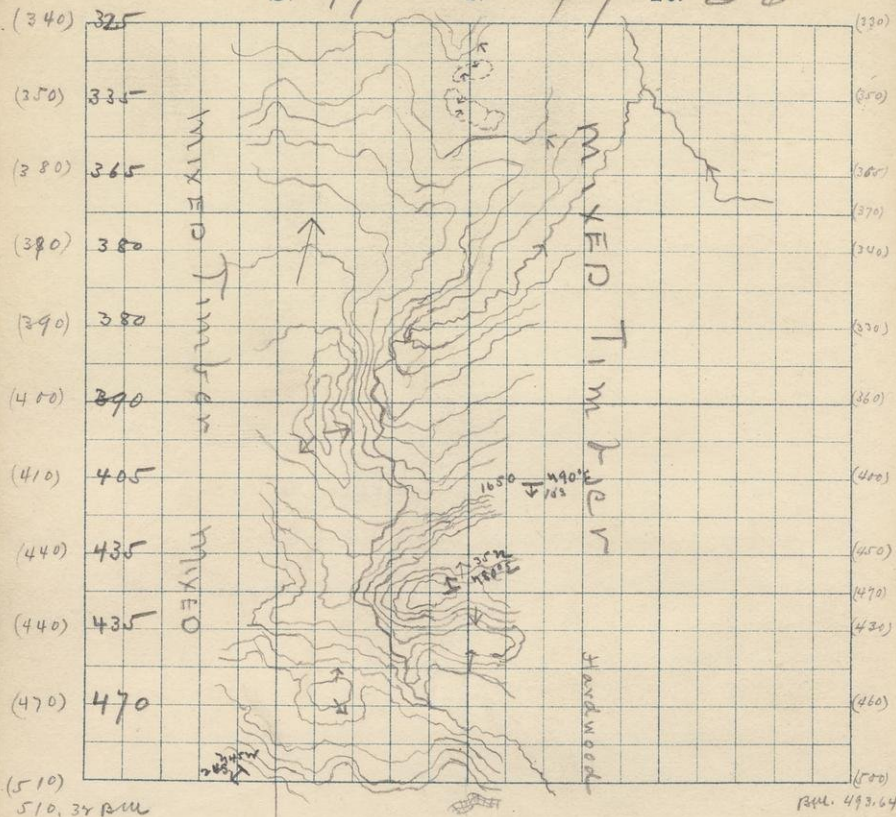
1998 S (500) struck benchline at $\frac{1}{2}$ stake.
 Bull. 493.64 Acreoid (500)

Running north on west section line of 19
 Bull. 510.34 Acreoid (510) $0 = 20.3'$ 10.30
 1000 N (400) mixed 1st and growth 11.00
 2000 N (340) " " " " 11.15

- 1650 750 1500W long ridge of slate and greywacke strike of both bedding + cleavage E+W dip of bedding about $10^{\circ}S$; of cleavage $80^{\circ}S$.
- 1651 470N 1510W long ridge of banded slates. Strike $N 80^{\circ}E$ dip $35^{\circ}N$ cleavage E+W strike $80^{\circ}S$ dip.
- 1652 400N 1510W outer side of above mentioned outcrop greywacke.

High outcrop of siliceous greywacke just south of benchline (did not examine carefully)

S. 19 T. 47 R. 36



↑
west range timber weight.

- 1653 1800w sec cor 19 outcrop of sidentie
greywacke.
1860 w outcrop of sidentie greywacke
2980 w " " " "
1654. Just west of rangeline outcrop of slate.
Strike N45W Dip 24° SW. and

600
50



