[Between Felch and Crystal Falls, Michigan] #2: [specimens] 30086-100, 30701-715. No. 283 1891

Maurer, E. R.
[s.l.]: [s.n.], 1891

203

LAKE SUPERIOR SURVEY

Mauer

Instr.

LAKE SUPERIOR SURVEY.

INSTRUCTIONS.

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

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

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

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

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

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

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

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

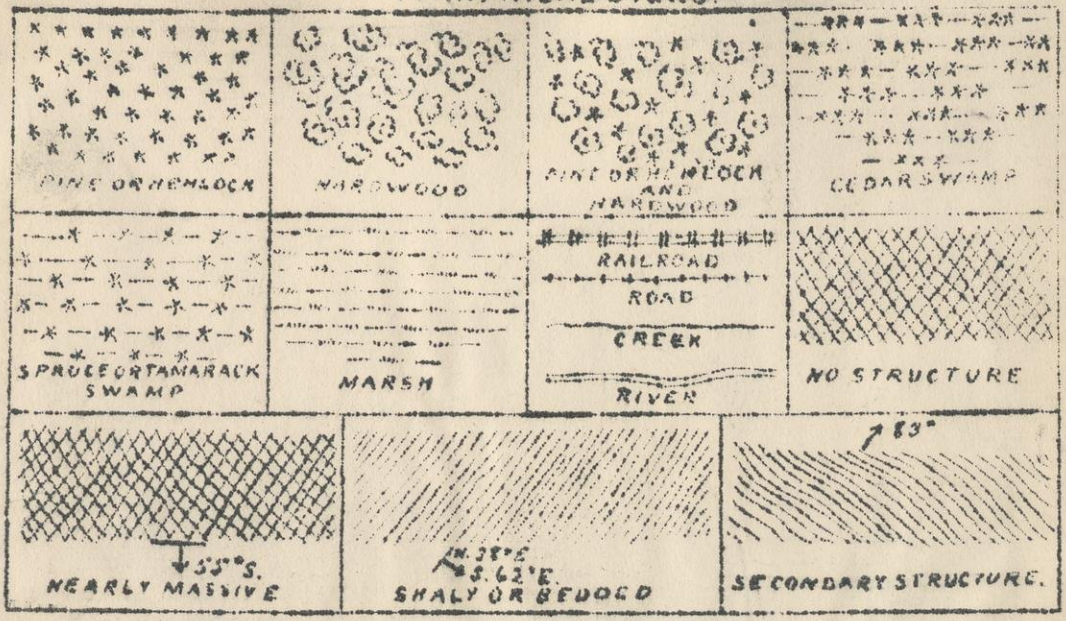
It will be the constant business of the geologist to search for outcrops. All hills within a reasonable distance of the course of travel will be examined. Oftentimes upon the steeper slopes of a hill a rock surface is covered with a coating a few inches thick of moss, leaves or vegetable mold and can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

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

To each exposure on the face of the map, attach the number of the specimens representing it. On the right hand page place the notes descriptive of the exposures. Begin in each case with the number of the specimen, placing the number on the left hand side of the red line, after which give in order on the right of the same red line, the position of the ledges as reckoned in paces from the southeast corner of the section, and the dip and strike when observable, for instance, *No.* 437, 1226, *N.*, 353 *W.*, *Strike*, *N.* 47° *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.



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

index

#2 1891

E. R. Maurer Geologist

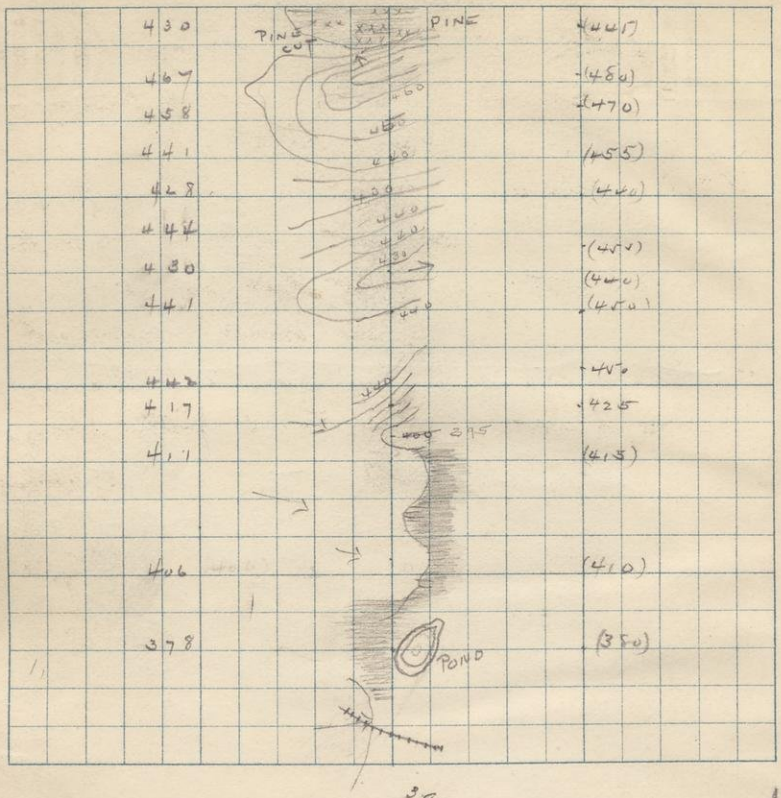
SPECIMEN NOS 86-100 INCLUSIVE
701-715 "

SPECIMENS - 86-100
701-715

42-31
43-30
43-31

2

S. 34 T. 43 R. 30



38073

Nov. 10 – 8:00 am.

380.73 BM. o' = 29.89 aneroid.

0 – 15.0 thick hemlock & maple

150 – 450 cedar swamp cedar medium size

450 – 1750 fine, hardwood maple birch basswood

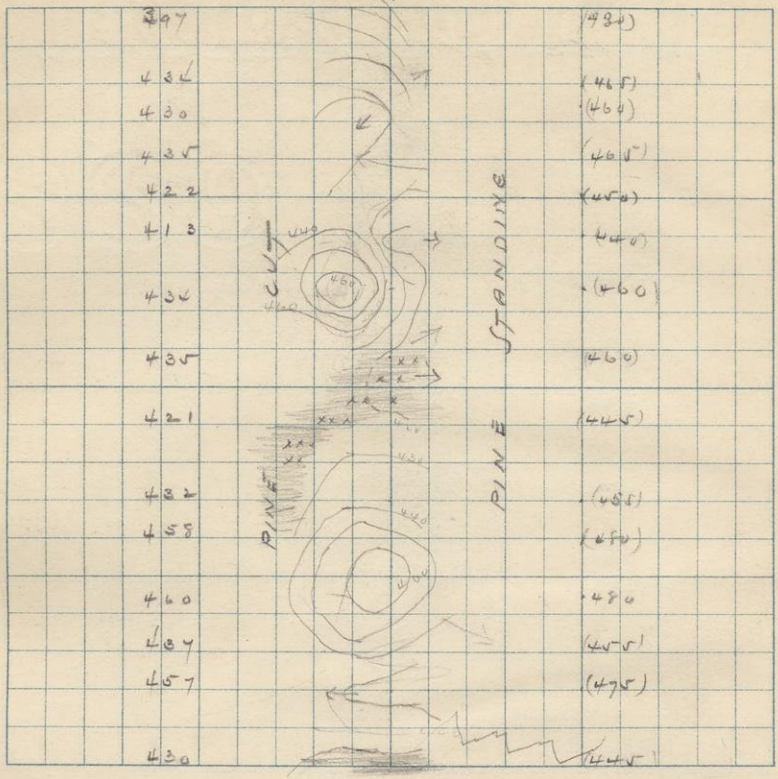
1700 – 1800 hemlock & balsam

1800 – 1950 hemlock with pine cut on 34 & standing on 35

9.00 am at corner

4

S. 27 T. 43 R. 30


397
432
430
435
422
413
432
435
421
432
458
460
457
430
(484)
(465)
(464)
(465)
(450)
(440)
(460)
(460)
(445)
(485)
(470)
(480)
(455)
(475)
445
PINE
PINE
STANDLINE

0 - 950 maple birch + basswood
fair cut in 27 +
standing in 26

950 - 1100 dry swamp
hemlock + cedar

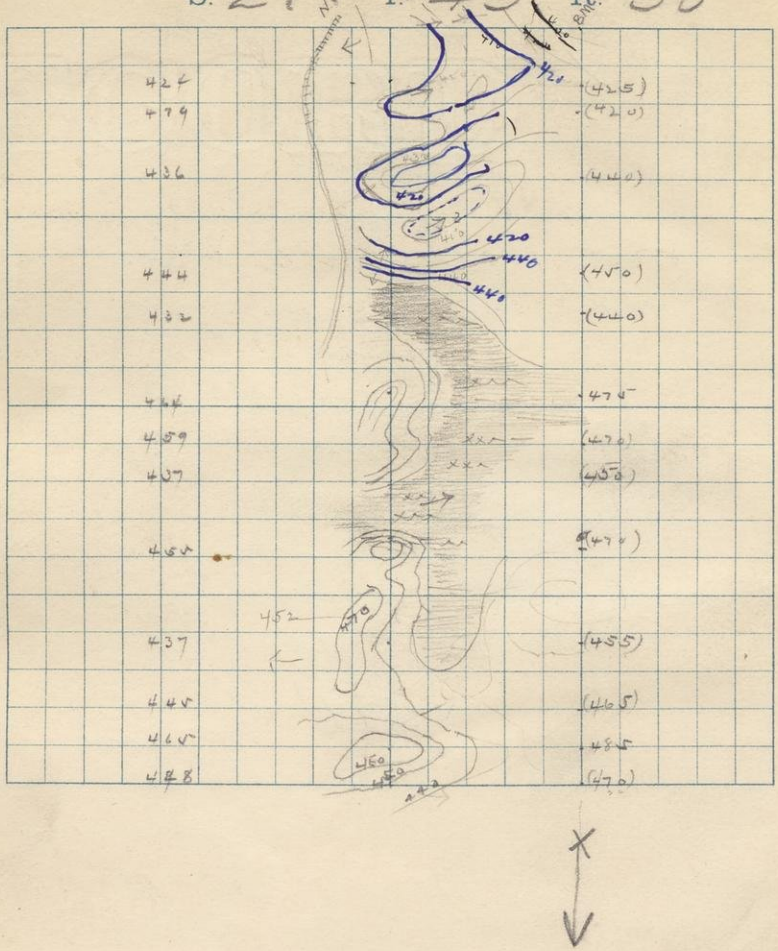
1100 - 2000 cut + large
hardwood.
. Poor cut in 27 standing
in 26.

at corner O.K. 10: am
BM = 396.50
Aneroid 430.00 very bad

33

6

S. 27 NOR. T. 43 R. 30



Nov 10 10:15 AM.

BM = 430.25 Aneroid = 29.85

0 - 650 Hardwood but burnt

650 - 800 tamarack swamp

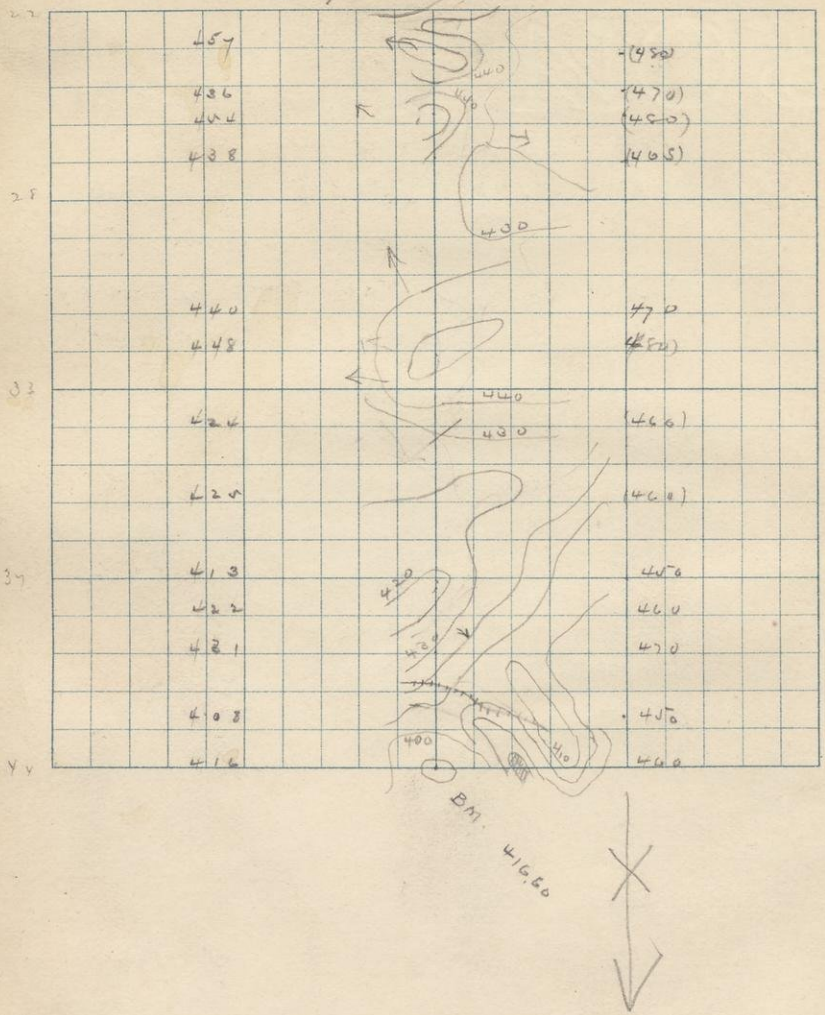
800 - 1200 Maple birch basswood

1200 1340 dry swamp cedar birch hemlock

1340 - 2000 - maple birch basswood ash Hemlock - birch do not stand very thick

8

S. 34 T. 43 R. 30

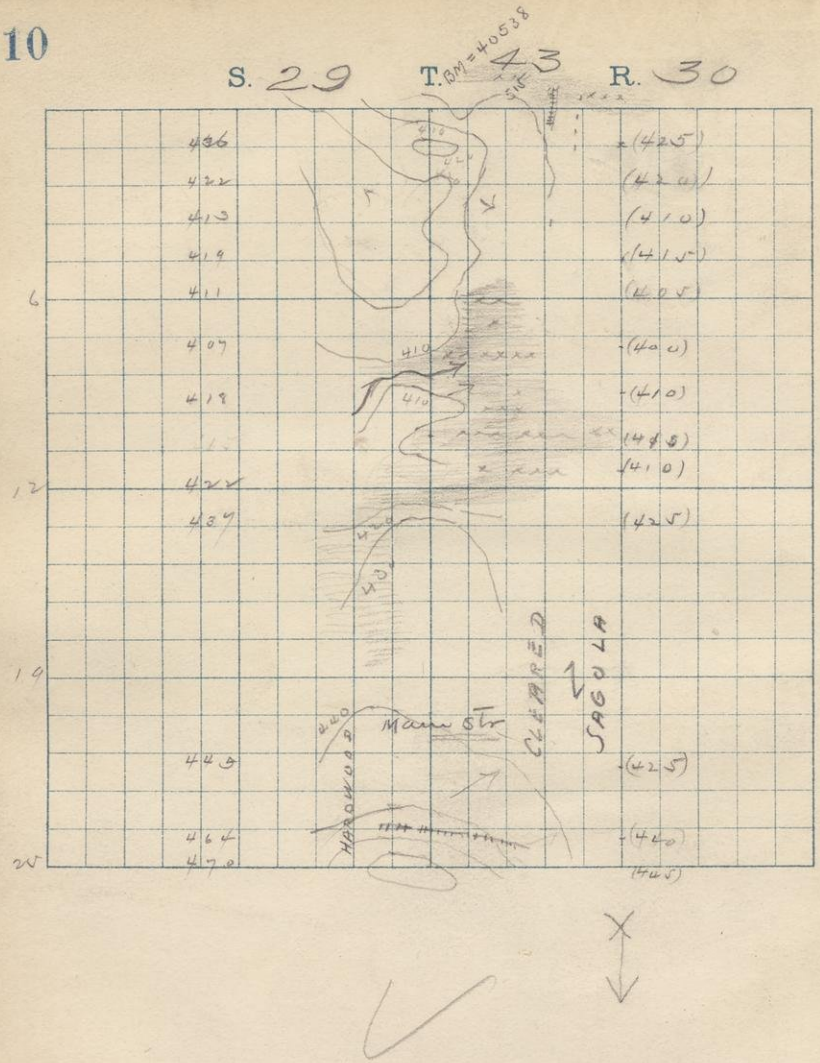

454
436
444
438
440
448
424
425
413
422
421
408
416
(458)
(470)
(450)
(465)
430
470
(474)
440
430
(466)
(460)
450
460
470
450
460
420
410
400
BM. 416.60

Hardwood of maple, birch & basswood.
Pine all cut.
at 1500 - 1700 is fine growth of solid hemlock
1700 - 2000 hemlock mixed with hardwood.

At 1/8 76 f. East.
Ran this mile with V = 1/2° W.
12:00 M.
B.M. = 416.60 Amend = 460.00
Diff 44'

10

S. 29 T. 43 R. 30



Nov 11 '91 11-50 am

Bill Nov. 58 Bar. 0 = 29.70

Pine maple birch hemlock

Pine gets scarcer as you

go S.

Maple birch hemlock

and cedar scattering

to 100

W½ SE ¼ Wand.

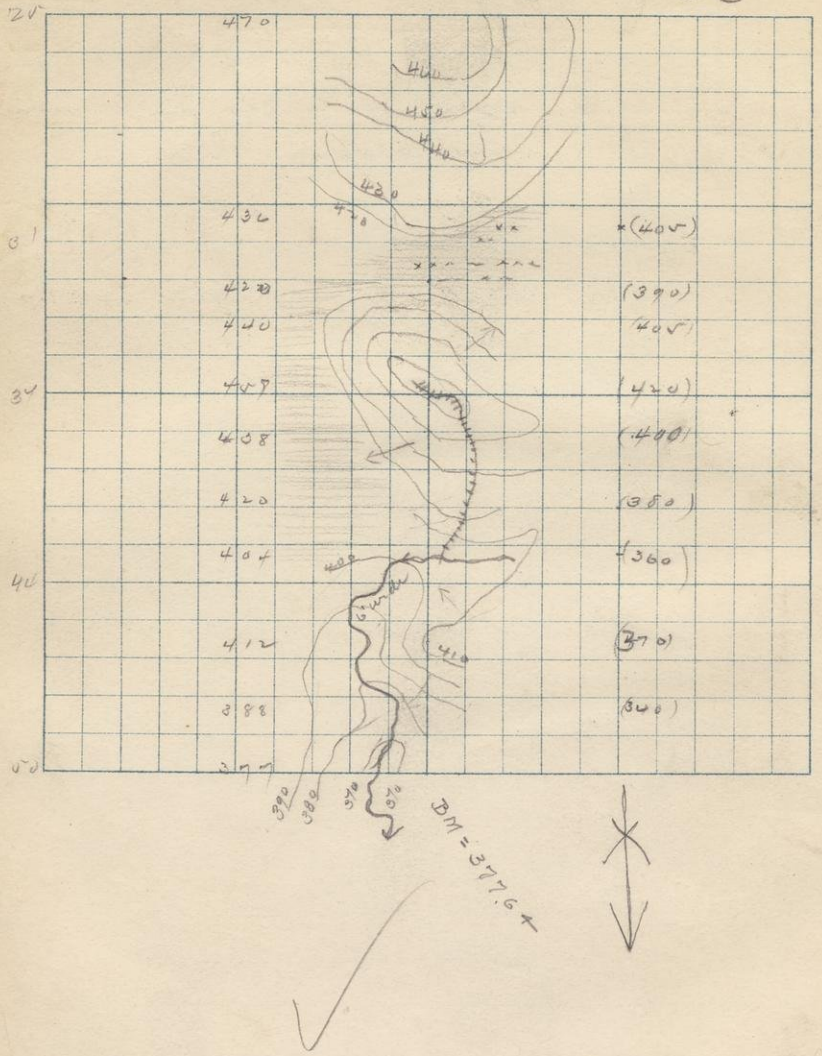
Sagola location

700 small Cr 2½ wide

flows E.

12

S. 32 T. 43 R. 30



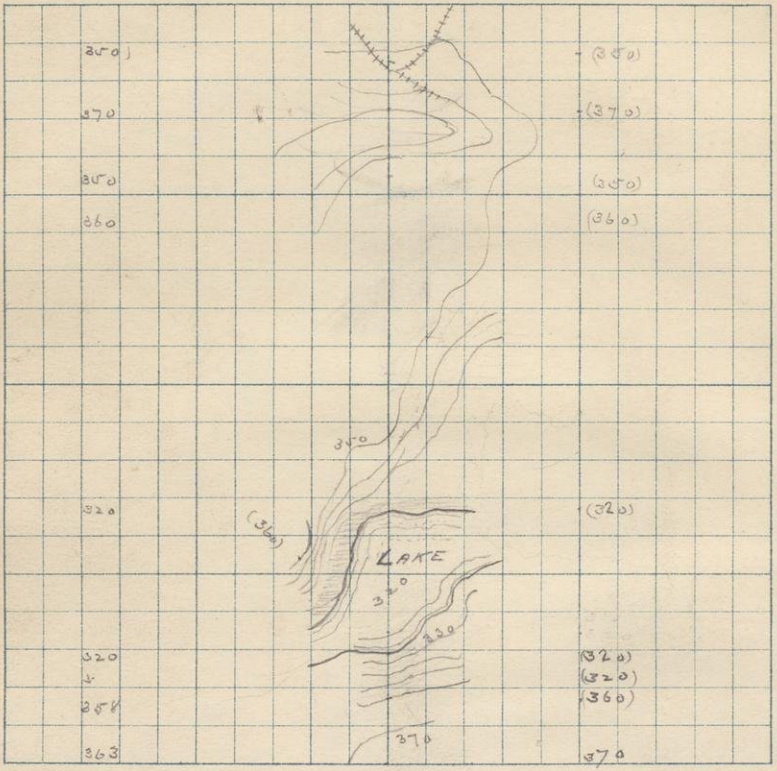
0 - 400 Good hardwood
maple birch basswood

400 - 550 Timber grades into
550 Bgins cedar swamp
to 750

750 - 2000 Hardwood - maple birch
basswood and some
cedar & pine

B.M. 37764
aneroid 327.
50 ft.
Line spacing 0.16.

S. 3 T. 42 R. 31


BM. 357.5
(350)
370
(370)
350
(350)
360
(360)
350
320
(320)
(360)
LAKE
320
330
320
(320)
(320)
360
354
363
370
370

Nov 15) 8-20 am

BM = 367.03 Aneroid 0' = 30.36

Plains all round corner

Timber all cut. Nothing

but burnt stubs standing

This open country continues

to 1000

1000 begins some hardwood

hemlock cedar spruce

and rounds to lake

Aneroid at n. side of

lake = 310 at South

side minutes later

= 350 I set it back

to 310 and continued

to 5 bench line 0' = 30.32

at ~~corner~~ line 42 paces W.

Road V = 2 1/4° E

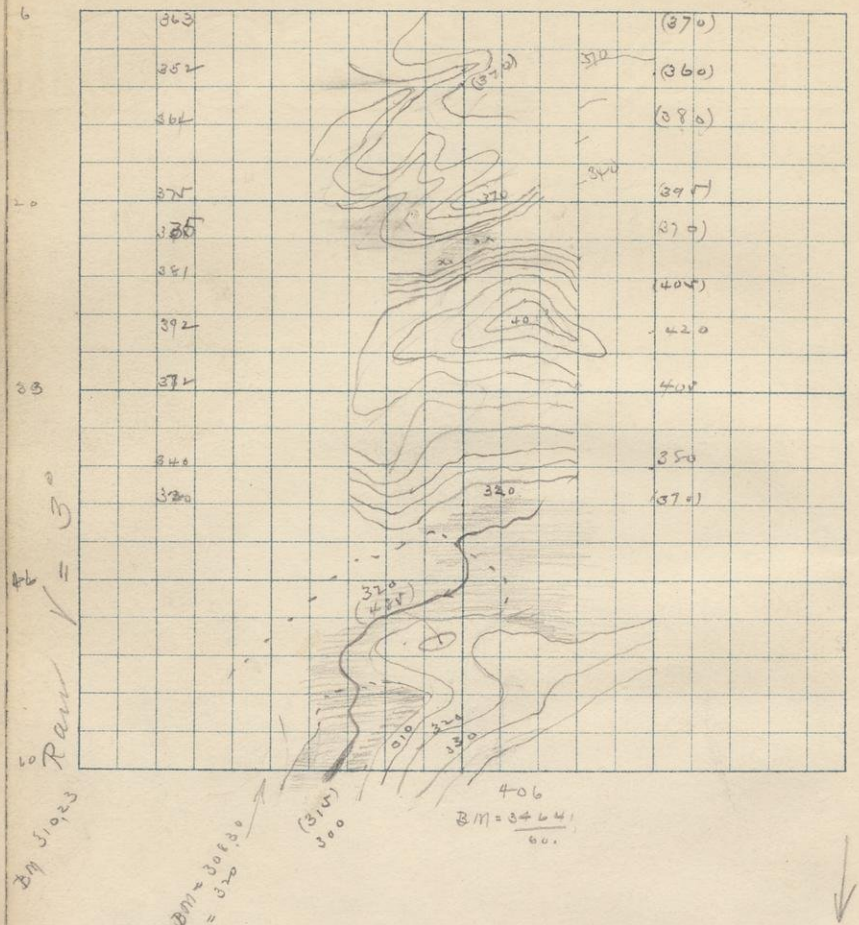
1900 to 2000 W. windfall

all standing timber

is dead

16

S. 10 T. 42 R. 31



old windfall from

0 - 600 The standing timber is burnt and dead

600 - 400 dead spruce & cedar swamp

700 - 1300 old windfall everything down.

1300 - 1600 open spruce swamp some cedar at 1600

1600 - 2000 old wind fall

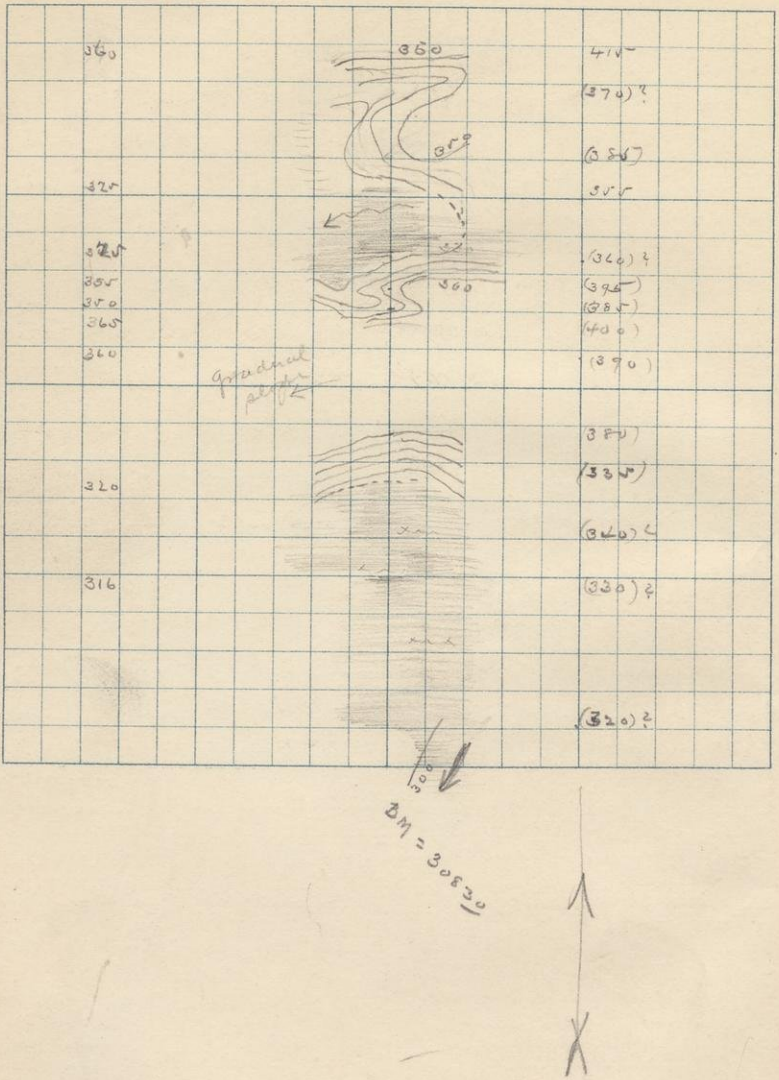
BM 3461

Aneroid 406

60 at 11 am.

18

S. 10 T. 42 R. 31



Nov 16 11:10 am

BM = 308.30 annual δ = 30°.23

0–100 tamarack brûlé
hemlock spruce

100–500 spruce slash, swamp

500–745 " " "

745–1350 old windfall
everything down except
small groups of
Norway pine 8"–16" dia.

1470 Small creek 2' wide

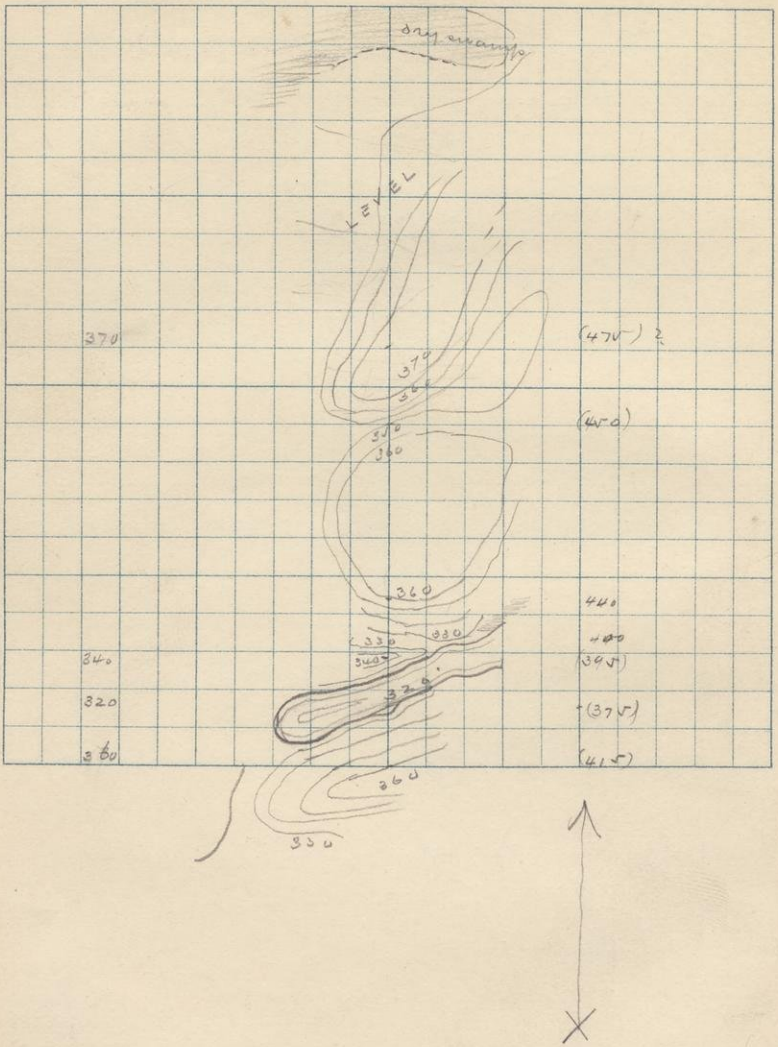
1350–1520 old cedar windfall
in swamp

1520–2000 old. windfall,
little standing and
all this is dead

Run V = 3°E set post #1
1991

12-20 BM

S. 3. BM 343 T. 42 R. 31



0 – 500 windfall – everything dead

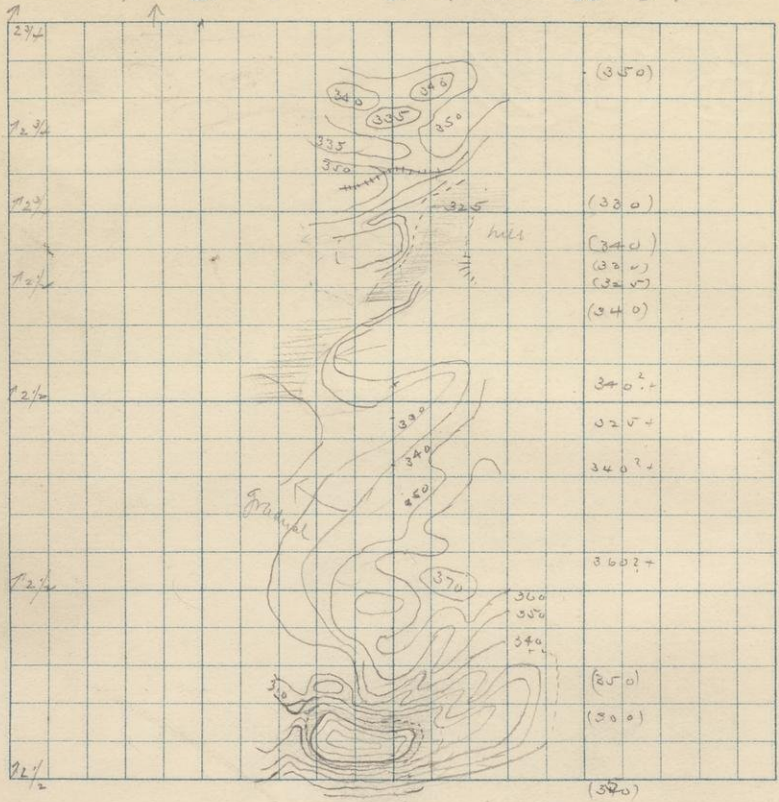
500 – 1000 no windfall but nearly all timber standing is dead
Some green hemlock cedar, spruce thick

1000 – 2000 everything cut.

DM = 343.07
Amount 480.00
137 . 93
buy changeable weather
Storm clouds passing
all day

VM
137

BM 3432.0 S. 3 T. 42 R. 31



Nov. 16 '11 8:25 a.m.

BM = 34320 Aneroid 0' = 30.01"

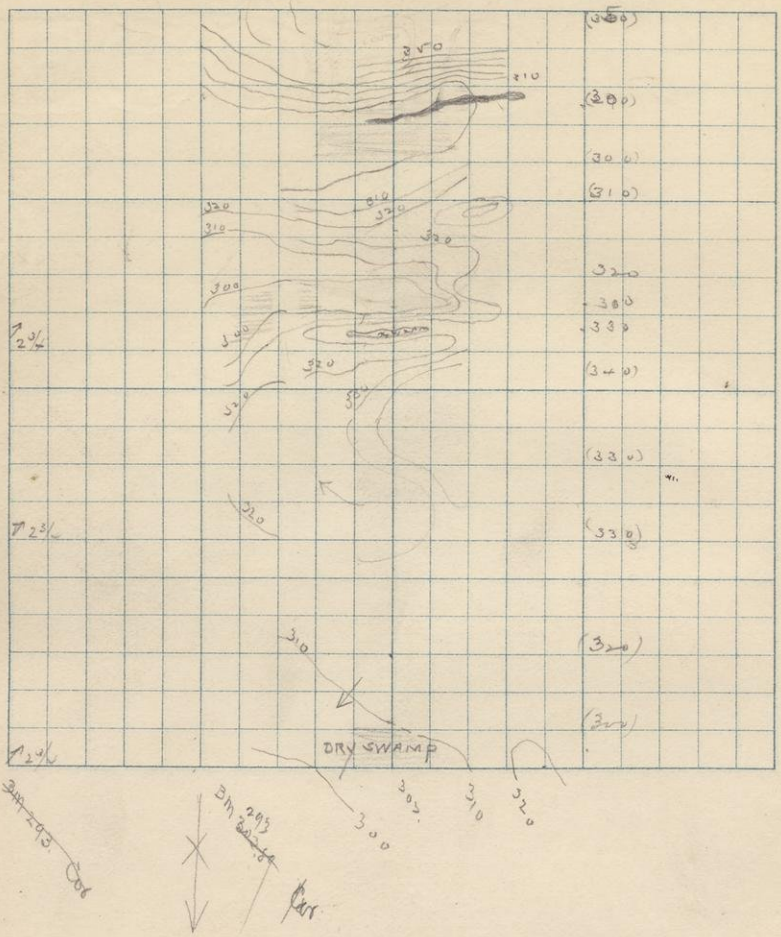
0 - 640 Open country - all timber cut except some dead stubs.

640 - 2000 Windfall and some dead standing timber - nothing green

9:30 am

Found no stake

S. 10 · T. 42 R. 31



3008

3008

3008

All windfall and all timber
dead except last 300 p.

292 Creek 10' wide flows W.

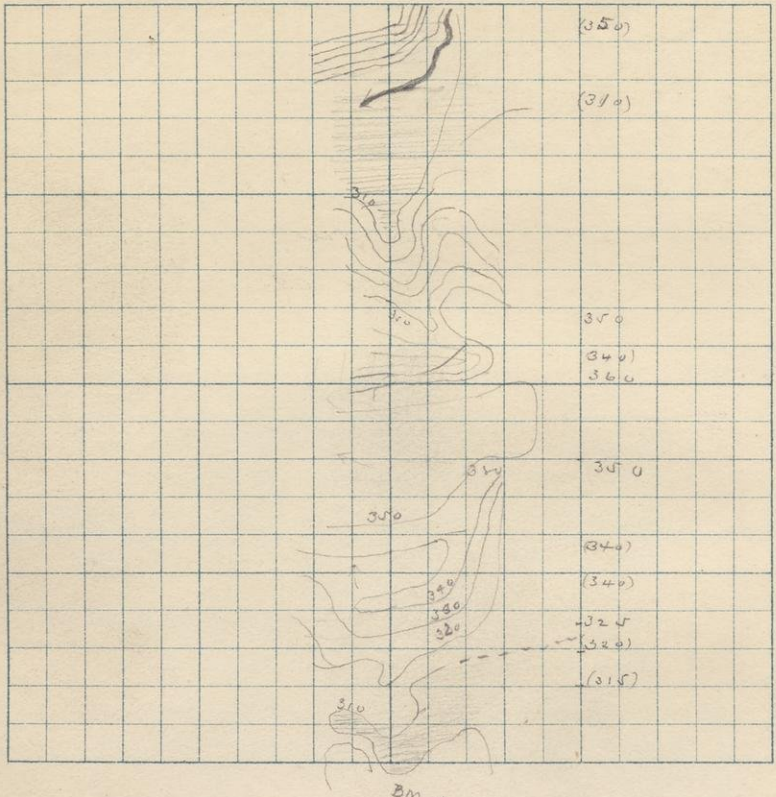
30086 1180 N 1500 W of SE cor 11-42-31
A Greenstone ledge
100 p long. 20 wide
Fine grained and all alike
except for one or two
dykes from which came specimens
2 & 3

30087
} 1180 N. 1500 W of SE cor 11-42-31
30088 Dykes in #1

Aneroid changed in 15 min
while on the out crop
from 330 to 320

At line at 2015 50 p W of cor.
Time probably slow Vstoned = 3°
BW 303.89 An 293.00
10:50 am

S. 10 T. 42 R. 31


(350)
(340)
340
350
350
(340)
360
345
350
(340)
(340)
325
(320)
(315)
340
BM 310.23

Nov 16 '91 11 AM.

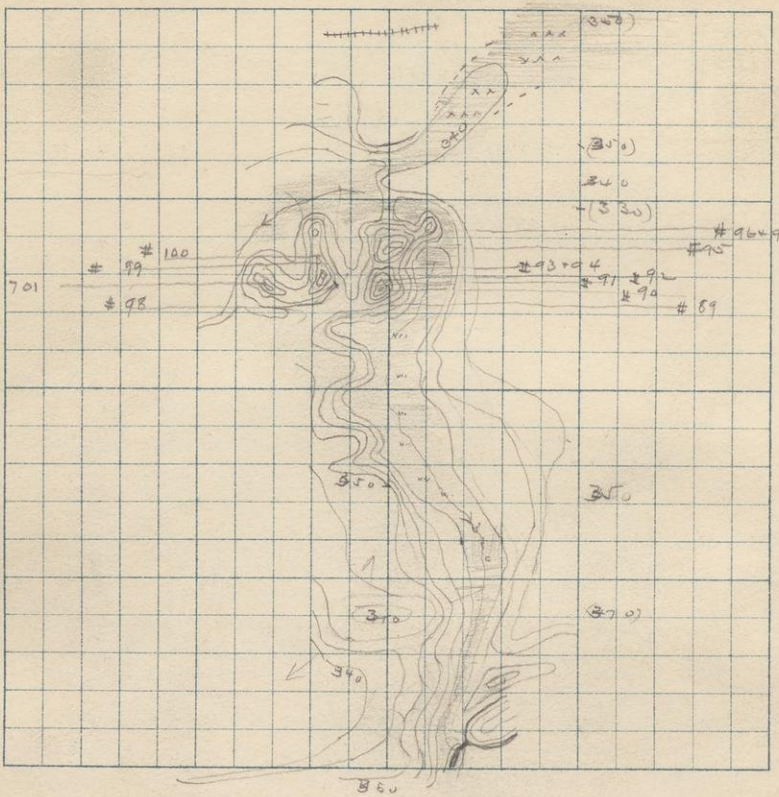
BM = 310.23 Az. 0° = 30".01

0-900 Windfall + dead standing timber

900-1200 Norway mixed with cedar + spruce + balsam

1400-1850- Cedar swamp cedar tick balsam spruce

S. 3 T. 42 R. 31



One whole mile of windfall except 800 - 1200 which is marsh on each side of it is windfall

BM 342.18 aneroid 350.00
at 1-20 PM.

At 1300 N 1000-1500 W. of SE cor sec 3-42-11 is large greenstone bluff. On opposite page is a contour sketch of the bluff. The numbers are specimen numbers ~~who~~ of specimens taken from it

30.90
30.93
30.94
30.95
30.96
30.99

The predominant rock is greenstone which varies in appearance or texture from the fine grained like 701 to the coarsely crystalline like 93.94 and 95 varies from same bluff

Blank Even Pages

30-34

Skipped

3.91
3.92 From what appears to be a dyke in that it is confined to a belt ~~of rock~~ in the crane greenstone ~~and~~ ~~rocks~~ which has a breadth of perhaps 50' and runs the entire length of the bluff N.W. about N 80° E.
91 shows a schistose surface quite common in the ledge
92 is on the N side of 91 - shows distinct cleavage. Dip of cleavage is about 75° S.

3.89 From S side of bluff where ~~one~~ is an old excavation (for iron presumably). The rock is easily cleavable and is either a dyke or a squeezed part of the whole mass so that now it appears to cut the greenstone - striking

about N. The pit is only a few feet deep but right on the rock. Nothing is exposed except greenstone and the specimen rock. No iron indications that I can see.

3.0.98 From the surface near an old pit and presumably out of it. The pit is filled and the ledge can not be seen but I think the shaft is right in the greenstone. Whether the specimen is from rock in place I can not say but should guess that it is not for the pit is in a ravine between the cliff when the surface is slightly drift covered

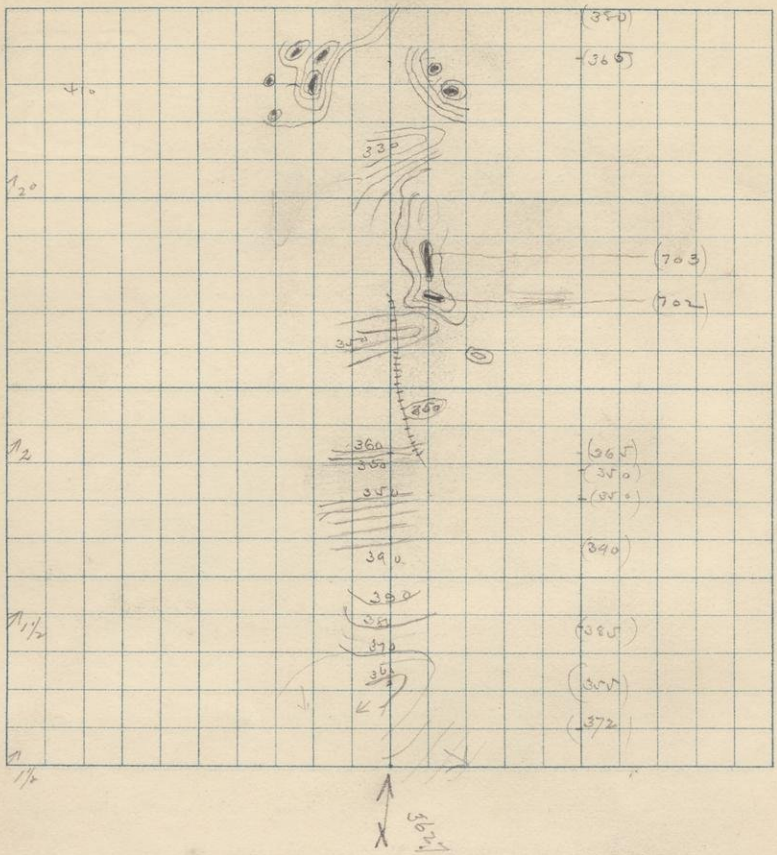
3.0.99 From N. side of cliff to show the calcite? on one side of the specimen. The calcite always appears in the joints and is probably a

secondary or native deposit.

30.99 } Farm the middle knob
30.100 } 100 is back 2 91 2

30.101 a specimen of the rock on the western most knob.

S. 32 T. 43 R. 31



The four succeeding contour sketches show approximately the character of area 32 x 29 - 43 - 31. The surface is almost one mass of rocks with knobs + cliffs as shown. It was impossible to get correct contouring with only four runs through the area and

3.07

3.07

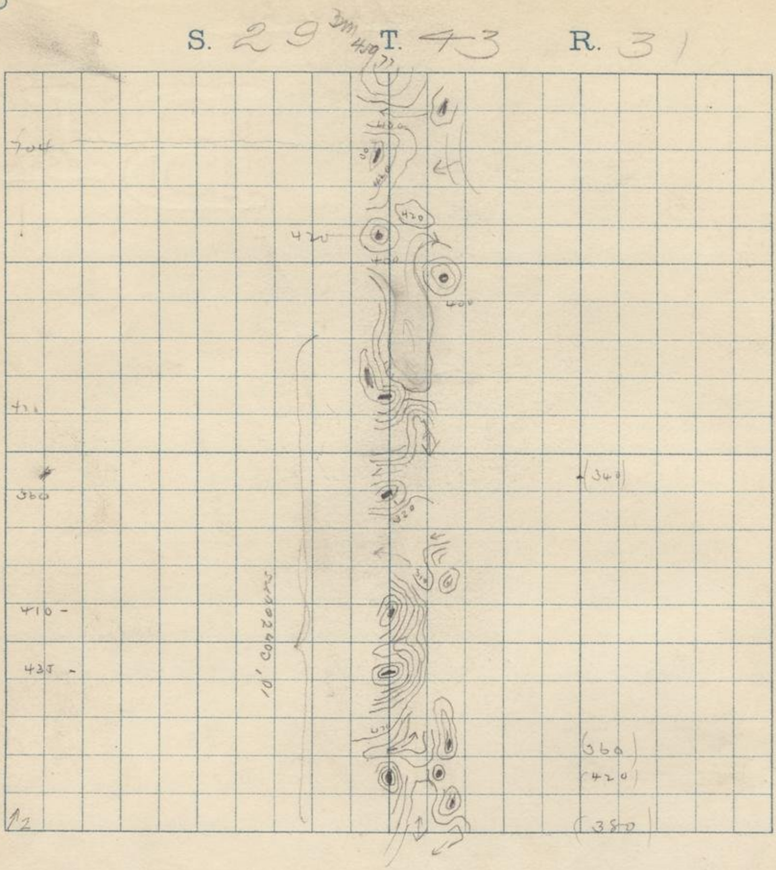
Nov 17 '91 8-10 am
BM 3627.0 aneroid 0' = 30.09

400 - 550 Green hardwood
hemlock maple birch
balsam
550 - 2000 fine cut - only
dead timber standing

3.702 1200 N 900 W of SE cor 32-43-31
Brownstone from a reef
which is same throughout

3.703 1350 N 900 W SE cor 32-43-31
fine grained gritty grindstone
from ledge bluff

S. 29 T. 43 R. 31



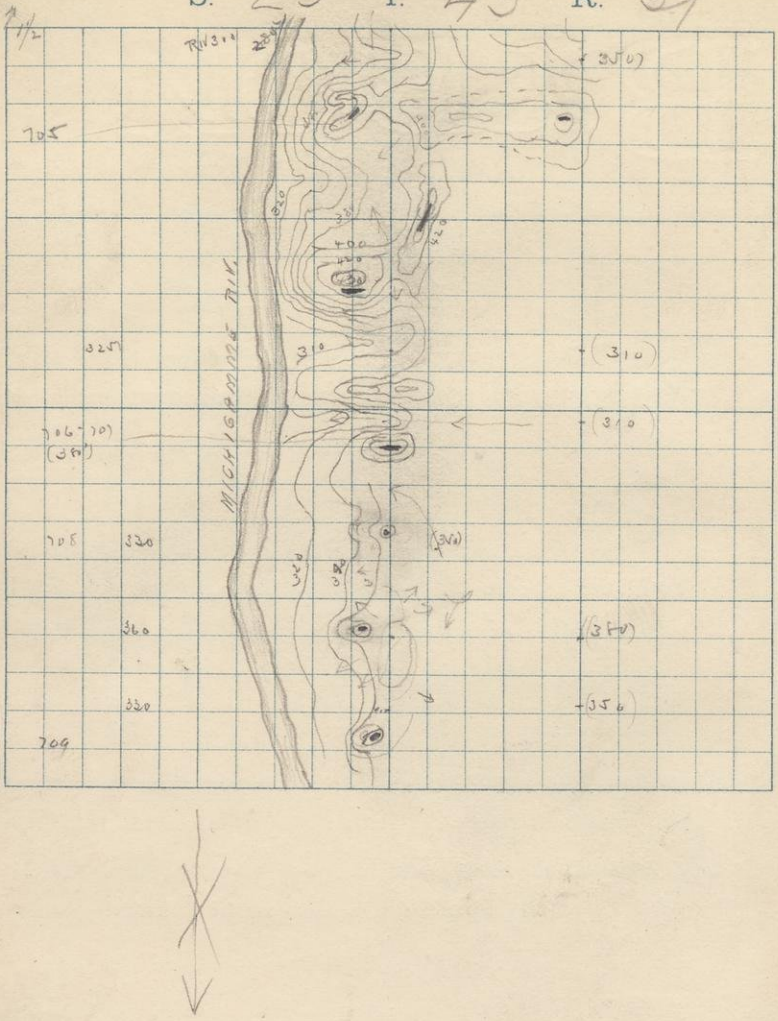
So only the most prominent knobs were sketched.

0 - 1900 timber cut
all dead that is
left standing

Sundeck, cedar pine & N 1/4

30/04 1800 N 1000 W of SE cor 29-43-2
Quite coarse and crystalline
greenstone.

S. 29 T. 43 R. 31



Nov 17 10-30 a.m.

BM = 376.94 0' 30.12

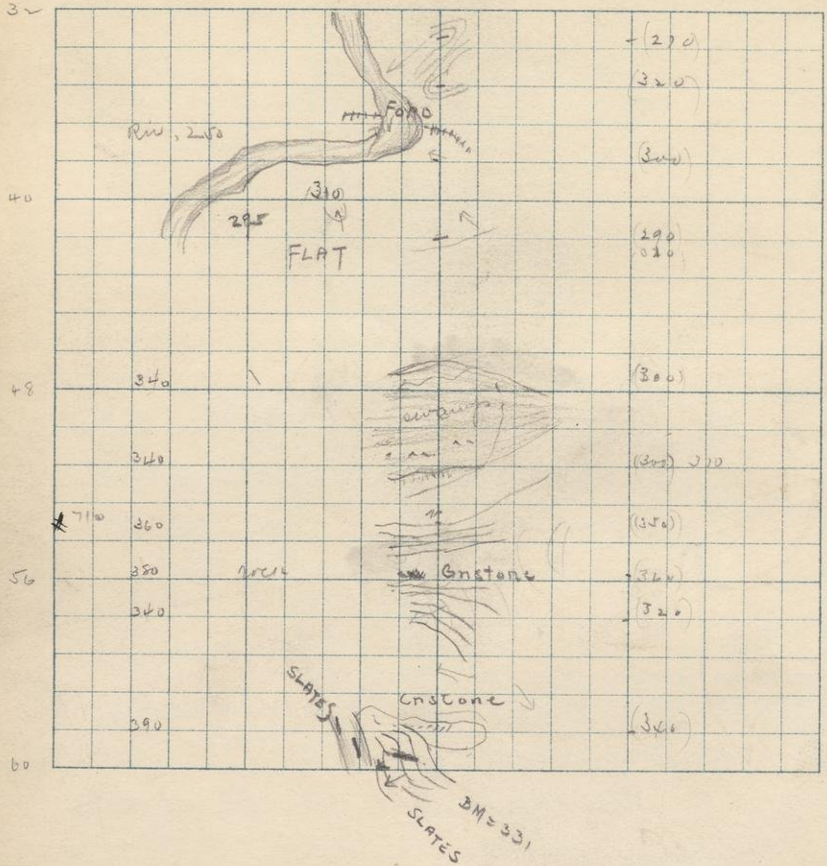
0 - 200 hemlock, pine
birch maple
balsam cedar

200 - 2000 nothing but
dead stubs standing

3.705 E 1750 N 1600 W of SE cor 29-43-21
Coarse and crystalline
greenstone.

3.706
3.707 950 N - 1500 W of SE cor 29-43-21
An allied greenstone?
A drainage seems to have
been developed and this
may be a dyke with E & W
strike. Could not see
any contact of this and
any shot rock. My reason
for supposing a dyke
is a slight schistosity

S. 32 T. 43 R. 31



32
40
48
56
60
Riv, 250
FORD
310
295
FLAT
(270)
(320)
(300)
(290)
340
(300)
swamp
340
(300) 310
360
(350)
380
Gnstone
(340)
340
(320)
SLATES
Cnstone
390
(340)
BM=331
SLATES

0 – ~~28~~00 – No green timber
standing

1800 – 2000 some balsam
cedar birch &
hemlock.

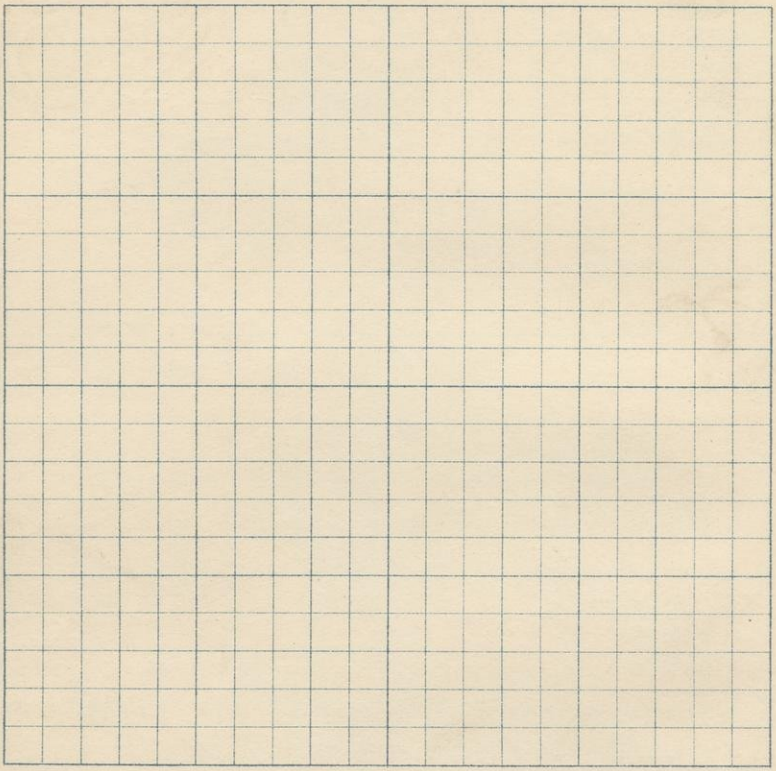
BM = 331+ aneroid = 270.—
1-~~2~~0 P.M.

3,708 N 30 N 1500 W of SE cor 29-43,31
Greenstone crystalline
(diabase or gabbro) with
pyrites.

3,709 100 N 1500 W of SE cor 29,43,31
Compact greenstone.

3,710 ~~0~~ 640 S - 1500 W. of S.E. cor 32,43,31
like 709.

S. T. R.



0 N. 17 rods W of SE cor 32-43-31

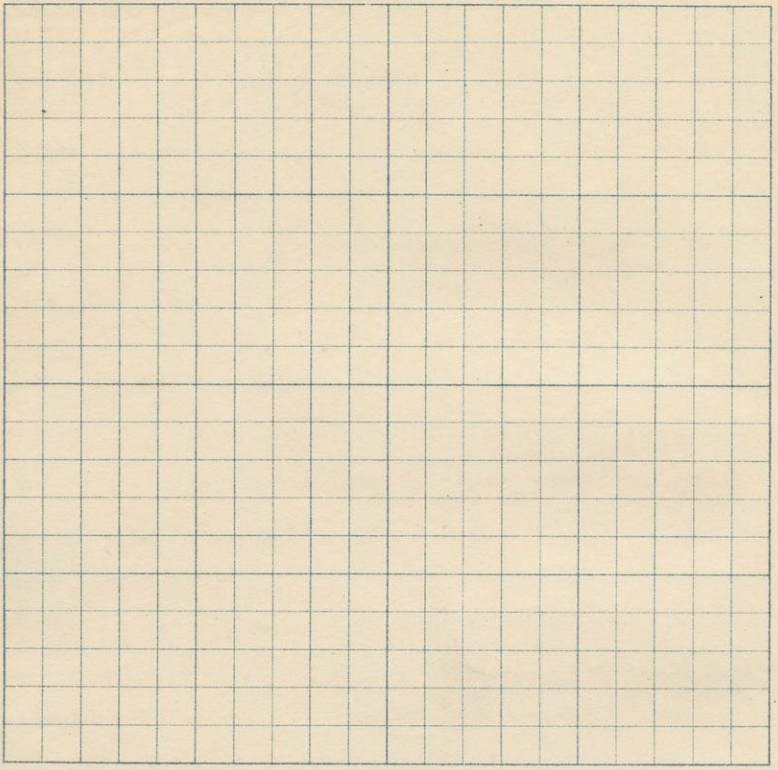
3.711 } Slates from surface at
3.712 } test pits on Michigamme
River bank

The township plat is marked "argillaceous slate" at W/4 between $\frac{32-43-31}{5-42-31}$ ×

This place (a hill) is entirely covered with snow and whether the whole hill is slate I cannot tell. In the test pits along the Riv. bank and on the Riv. I do ocean that slate 711 × 712 which are so fresed that dip & strike is not constant. Dip & cleavage is high × SW. " " very direction

3.714 } 0 N. 1 rod W of SE cor 32-43-31
Slates from surface at test pits.

S. T. R.



FINIS.

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48-105

Skipped

"Bayley and King" specimens in (Box)

	#	Box						
V	~~14175~~	80 48	35 RR cut.			~~Massive Grey~~		
V	~~14176~~	" "	"					
V	14254	80 - 39	1-47-35					
V	14255	"	12-47-35	V	~~14498~~	93 - 42		
V	14256	"	13-47-35	V	~~14499~~	93 43		
V	~~14257~~	80 41		V	~~14500~~	93 46		
V	~~14258~~	"		V	~~14173~~	"		
V	~~14259~~	"		V	~~14174~~	93 - 46		
V	~~14260~~	"			———			
V	14261	80 42✓	13-46-36	V	15296	105-	29-45 36	
V	~~14262~~	"	~~18-46-34~~	V	15297		"	
V✓	14282✓	"	18-46-34	V	~~14322~~ ?	92 - 29	18-47-36	
V	14283	"	" "	V	~~14323~~ ?	"	"	
V	~~14263~~	80 48		V	~~14324~~	"		
V	~~14264~~	"		~~V~~	~~14325~~	92 - 28		
V	~~14266~~	80 45		V	~~14326~~	"	21-47-36	
V	14271	80 46	3-47-34	V	14327	"		
V	14272	"	3-47-34	V	~~14328~~	92 - 21		
V	~~14273~~	"		V	15268	— 104	29-45-35	
V	14274	80 . 47	3-47-34	V	15269	"	30-45-35	
V	~~14275~~	"		V	~~15270~~	"	17-45-35	
V	~~14276~~			V	~~15271~~	"	21 " "	
V	~~14277~~	"		V	15273	"	~~22~~ 45-35	
V	14278	"	3-47-34	V	~~15272~~	"	26 45 "	
V	14279	"	" "	V	~~15274~~	"	" " "	
				V	15277	"	31-44-35	
V	14295	80 - 49	5-47-32	V	15276	"	20 " "	
V	14296	"	"	V	~~15275~~	"	9 " "	
				V	15278	"	8 " "	
V	~~14482~~	93 - 39		V	15279	"	1-45-36	
V	~~14483~~	"		V	15280	"	11-45-36	
V	~~14491~~	93 - 41		V	~~81~~	"	10 45 36	
V	~~14492~~	" 42		V	82	"	8 " "	
V	~~14493~~	"			~~[illegible]~~	"	———	
V	~~14494~~			V	~~15282~~ ?	"	16-47-35	
V	~~14495~~	"		V	15285	"	34-47-35	
V	~~14496~~	"		V	~~15286~~	"	27-46-"	
	~~14497~~	"		V	15287	"	32-46-35	

the L.S.S. 1891 terminology (ERM)

Masonic greywacke

	#	Bk	
V	15284	104	28-46-34
V	89		
V	90		
V	91		
NB	94 not sectioned		
	14484		

} from road 4 miles S. of Murphys. 47-34

-36

-36

-36

These crossed out were also found by LSS geologists season 1891

all ~~specimens~~ users specimens sectioned except 15292

-3V
3V
-36
"
36
"
"
3V
"
"
"
-36
-36
36
"

-3V
-3V
-"
-3V

Cont'd

15288
15289
15790
15791
15792
14484

14175	9045
14176	9046
14254	9122
14255	9123
14256	9124
14257	9125
14258	9126
14259	9127
14260	9128
14261	9129
14262	9130
14282	9150
14283	9151
14263	9131
14264	9132
14265	9133
14271	9139
14272	9140
14273	9141
14274	9142
14275	9143
14276	9144
14277	9145
14278	9146
14279	9147
14295	9163
14296	9164
14482	9338
14483	9346
14491	9346
14492	9347
14493	9348
14494	9349
14495	9350
14496	9351
14497	9352
14498	9353
14499	9354
14500	9355
14173	9043
14174	9044
15296	
15297	
14322	9189
14323	9190
14324	9191
14325	9192
14326	9193
14327	9194
14328	9195
15268	9988
15269	9989
15270	9990
15271	9991
15273	9993
15272	9992
15274	9994
15277	9997
15276	9996
15275	9995
15278	9998
15279	9999
15280	10000
15281	10001
15282	10002
15284	10004
15285	10005
15286	10006
15287	10007
15288	10008
15289	10009
15290	10010
15291	10011
15292	10012
14484	9341

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110-119

Skipped