



LIBRARIES

UNIVERSITY OF WISCONSIN-MADISON

Township 46 north, ranges 32 and 33 west, specimens 30264-30281. No. 242 [1891]

Kelly, Fred T.

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

<https://digital.library.wisc.edu/1711.dl/RDDKQQ7MF2CFR8W>

<http://rightsstatements.org/vocab/InC/1.0/>

For information on re-use see:

<http://digital.library.wisc.edu/1711.dl/Copyright>

The libraries provide public access to a wide range of material, including online exhibits, digitized collections, archival finding aids, our catalog, online articles, and a growing range of materials in many media.

When possible, we provide rights information in catalog records, finding aids, and other metadata that accompanies collections or items. However, it is always the user's obligation to evaluate copyright and rights issues in light of their own use.

Kelly

42

242

LAKE SUPERIOR SURVEY

Kelly

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.



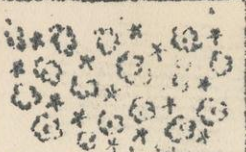


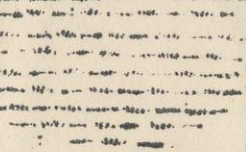
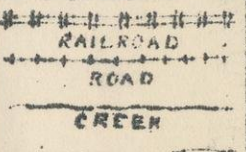
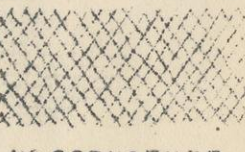

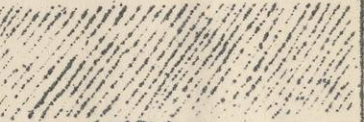

It will be the constant business of the geologist to search for outcrops. All hills within a reasonable distance of the course of travel will be examined. Oftentimes upon the steeper slopes of a hill a rock surface is covered with a coating a few inches thick of moss, leaves or vegetable mold and can 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 $3 \times 4 \times 1$ inch. In case several specimens of the same ledge are necessary, and when ledges are numerous, specimens $2 \times 2\frac{1}{2} \times \frac{3}{4}$ inch will be allowed. In all cases collect chips for slicing. No two specimens will be given the same number. In the cases in which several specimens come from the same ledge, the different numbers assigned to them will enable an easy description of their relations. Specimens will be placed at once in paper bags provided, upon which shall be marked in at least two places, with a blue or red pencil, the specimen number.

TOPOGRAPHICAL SIGNS.

 PINE OR HEMLOCK	 HARDWOOD	 PINE OR HEMLOCK AND HARDWOOD	 CEDAR SWAMP
 SPRUCE OR TAMARACK SWAMP	 MARSH	 RAILROAD ROAD CREEK RIVER	 NO STRUCTURE
 $\downarrow 55^\circ S.$ NEARLY MASSIVE	 $N. 38^\circ E.$ $S. 62^\circ E.$ SHALY OR BEDDED	 78° 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

No. 4

Fred T Kelly

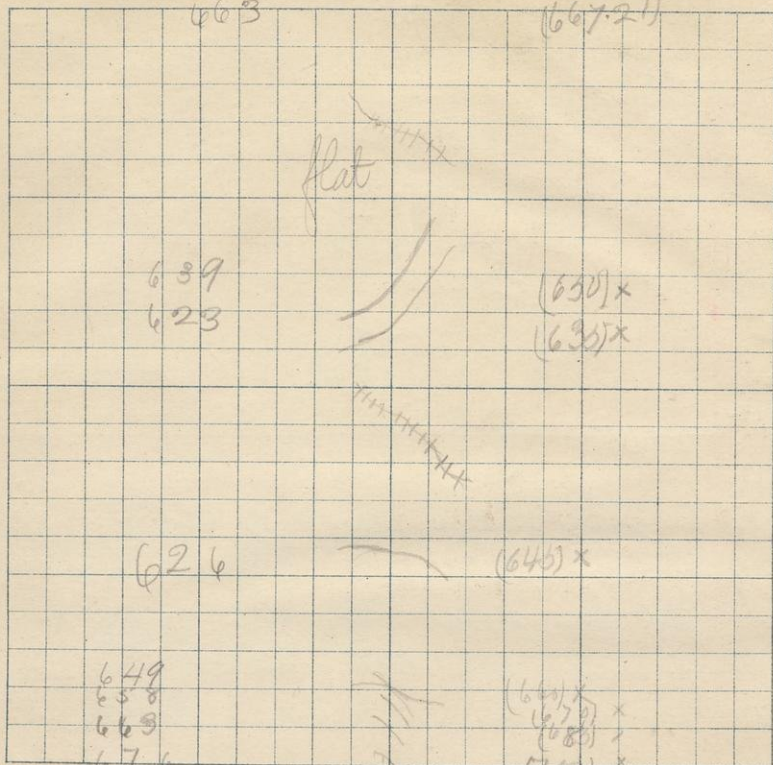
Frank Mason, *comptroller*

SPECIMENS: 264-281JOYNS: 46-33
46-32

NOTE: 263 was skipped.

S. 27
663

T. 46

R. 33
(667.21)

In this look as in the east the arrow shows the line followed + direction of travel.

Checks from others:
 at 10:30 aneroid 20 ft too high
 11:55, 30 ft higher
 1:20, 50 ft higher

No compassman raise alone



Start, south from $\frac{1}{2}$ stake, set
anemoid at B.M. (667.21)

abs. 28.235

8:30

N $6\frac{1}{2}$ east

Good hardwood with some
hemlock

310 road

850

9:00

10 55 old tote road

11:20

264 1975 reach line 25 steps east of stake

~~Stake set at 10:00~~

~~Just a small ledge on the end
of ~~wood~~ ~~stake~~ at ~~ears~~ to be a
~~firm~~ ~~land~~ ~~stake~~ ~~way~~ to
28 ~~feet~~ ~~in~~ ~~the~~ ~~area~~ ~~and~~
one or two small lakes were seen~~

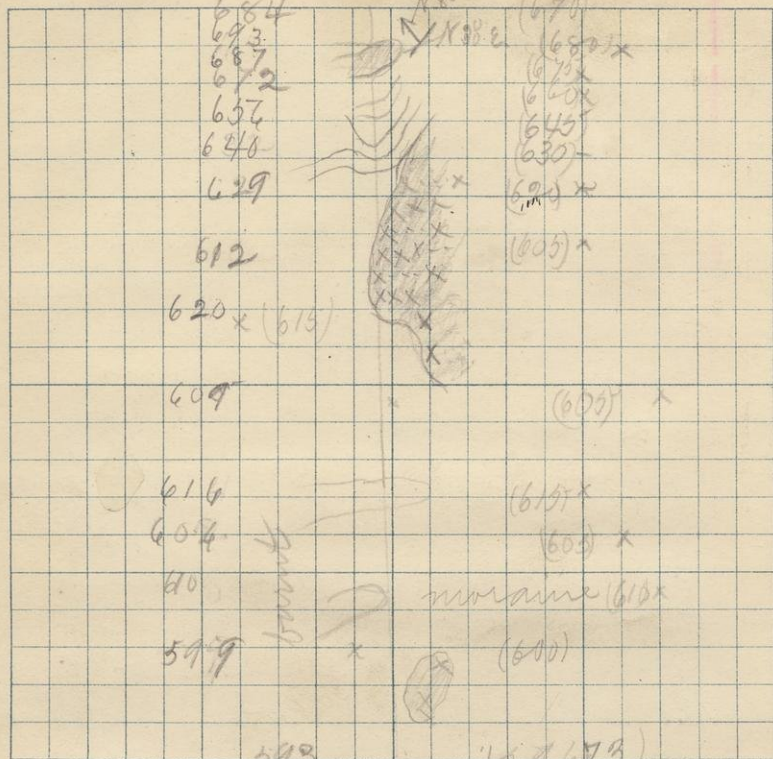
Continue south in good hard
wood anevroid 700 10.20
or 7° east

- 264 1900 N 800 W of S.E. cor sec 34-46-33
Strike N 45° W dip N 45° Quite
a large ledge at the brow of a
hill. Land slopes from it to SE
a second ledge of same kind
about 50 paces S of it
- 265 1875 N 925 W of S.E. cor of sec 34
-46-33 Strike N 80° W dip N 78°
Not a very large ledge perhaps
150 sq. ft of exposure. So much
weathered that it was diffi-
cult to get a specimen
- 266 1200 N 940 W of S.E. cor sec 34-46-33
Strike N 75° east dip N 74° An
elongated outcrop running
about ^{30 paces} N W & S. W. much weather-
ed with blebs and ^{small} dikes
of quartz.
- 267 at S.E. termination of ledge described
above Strike N 70° east dip N 80°
Very shaly. Portions contain much
quartz especially where it comes
in contact with No 266. 11.35

S. 34

T. 46

R. 33



N 269 910 N 1000 ft of SE cor sec 34
 (should be on previous page)

Strike N. 40 E. dip N. 40 E. 85°

Ledge at edge of hill about 150 ft
 of exposure. Moist and covered
 with vegetation, hence consider-
 ably altered

No compassman ran along

Set aneroid at B.M. (396.73) and
start north in pine chopping
and burning 25° N. 11/15

436 25° N

800 20° N

1465

1200 enter cedar + tan swamp

1380 10° N

1460 53° E

1500 enter partly buried hard
wood with a few spruce + pine ^{2:25}

270 1875 N 500 N of S. E. cor sec 34

Strike $N 32^{\circ} E$ dip $N 85^{\circ}$. Expo-
sure extending westward for
about 100 paces much bro-
ken and having numerous
outliers

Did not reach an old line but
did not succeed in find-
ing the new, but did find
an old north cross line.

S. 27

T. 46

R. 33

657 [687]

(690) [670]

648

(650) x

639

670 x

695

(670) x

685

679

688

650 x

660 x

(670) x

684

(670) x

no end



wood hardwood (sugar maple and
birch) green

N. 4° East

1000 N 5° east

1160 road

1200 Hardwood: (sugar maple + birch)
with some hemlock + scat-
tering pines, some of the latter
being chopped

²⁰⁵⁰ Reach line 125 steps west of

1/2 stake aneroid 685 at BM

670. BM 636.92

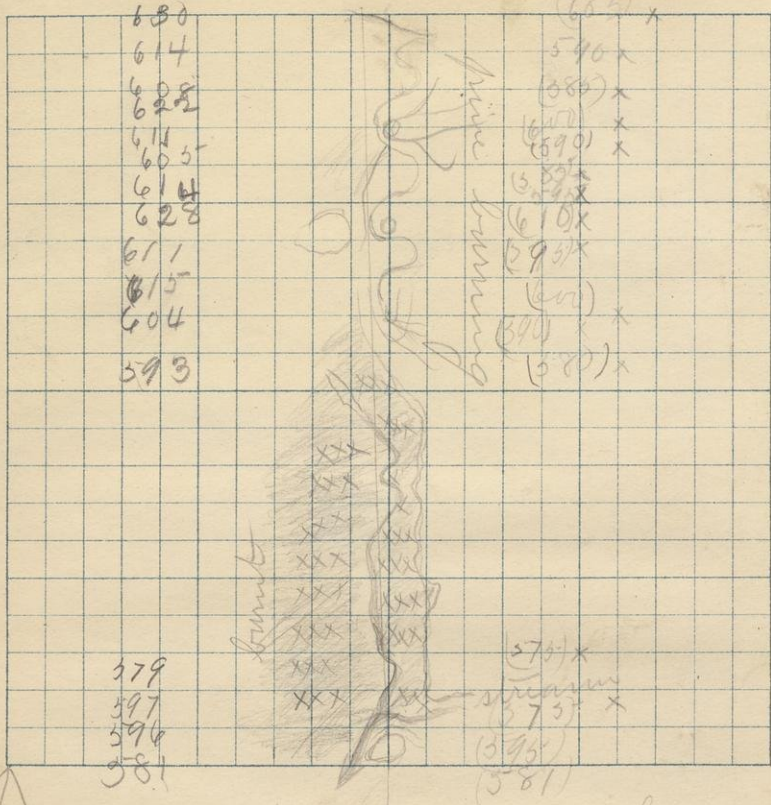
4.00

abs 28140.

S. 24

T. 46

R. 33



No compassman ran above

(381)

Set aneroid at B.M. 38464 9:00

abs 28.250 [^] pine burning
v 2° used cloudy start of path

120 marsh near creek

130 creek

275 burnt cedar swamp

740 reach stream

840 reach stream

935

10:00

1070 pine bar

1300 N 40° west

1475 v 1° west

1690 v 3° east

2000 reach line 40 paces west

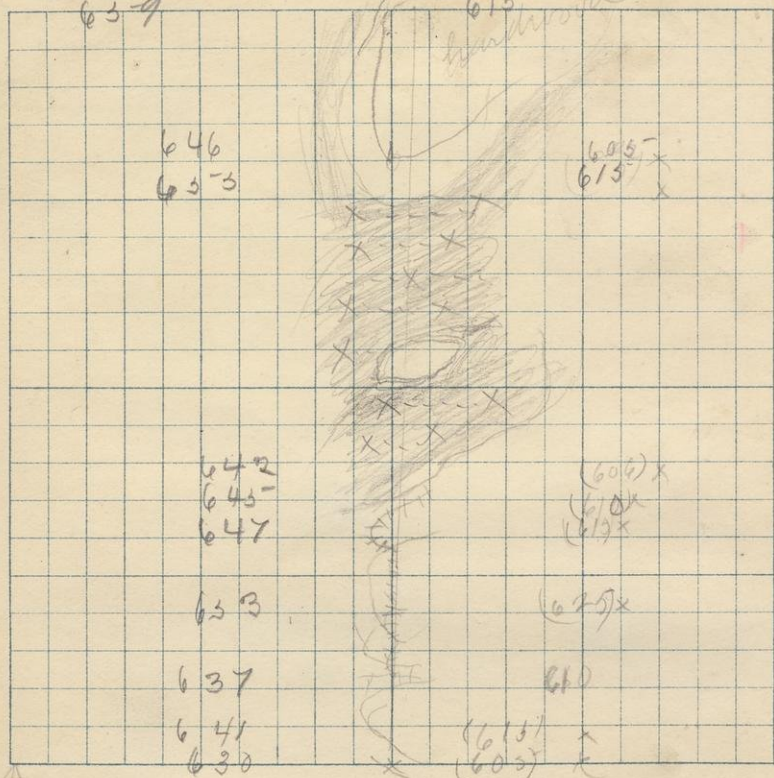
of stake aneroid (650) 11:00

S. 13

T. 46

R.

33



Continues north in pine and
hardwood burning 11:00

v used 3° east

500 green hardwood trees with
a few hemlocks

sd enter tan arack swamp

970 N 3½° east

10 5/8 reach edge pond v 8° east

1090 enter hardwood hemlock

+ spruce

1782 v 7° east

1960 reach line 60 paces east
of stake aneroid (6.15) B (6.29)

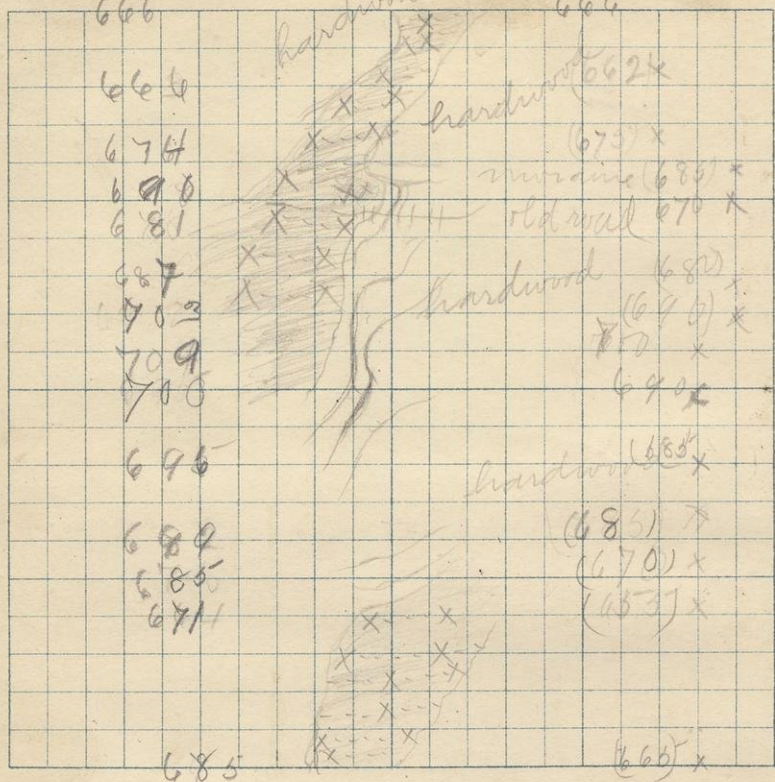
659 edge of tan swamp 1240

also 28210

S. 13

T. 66

R. 33



V.
 No compassman ran alone

Set aneroid at 666 B.M. 669.93
 also 28195

Start south in rather slight
 hardwood cedar + tamarack

swamp to left $N 5^{\circ}$ east 1235
 120 cedar + tamarack swamp

300 fair hardwood with a
 little hemlock + spruce

420 $N 5^{\circ}$ east

540 old road

1340 $S 5^{\circ}$ east

1480 cedar + tamarack swamp

1600 Tom swamp

2055 each line 15 paces
 of stake 2.30

685	(665)
683	(660) x
680	(655) x
686	(660) x
688	(660) x
680	(650) x
686	(655) x
677	(645) x
688	(655) x
679	(640) x
659	(625)
645	(610)
619	(580)

dominant with fringe edge
of swamp in fair hardwood
anemoid 465

200 N 3° east

375 tamarack swamp

540 hardwood + hemlock
pine (chopped)

900 Pine chopping with hard
wood burnt and occasional
clumps of green hardwood

1990 peak line 50 paces east
of stake anemoid 580 B 11(6234)

619

4.70

S. 24

T. 46

R. 83

680		(690) x
685		(690) x
696		(700)
696		(700)
682		(685) x
672		(675) x
662		(665)
665		(650) x
648		(635) x
633		(635) x
649		(650) x
634		(635) x
625		(625) x
612		(613)

arrange
trail

Ferris compassian

Set aneroid at 613 7 B.M. 616.88
in tamarack swamp N $4\frac{1}{2}$ W

20 north obs 28280 840

271 160 N 1000 W. of S.E. cor sec 24

46-33. Strike N 85° W dip N 85°

Ledge much broken perhaps
150 paces east and west rock very
hard dike of white quartz. ~~extends~~
and N 15° E dip about 4 or 5 inches
wide

337 trail, hardwood fair 920

1000 " " 920

1300 hemlock & hardwood good

1890 alder ^{& tamarack} swamp

20 00 reach line 75 east of stake
aneroid 690 945

S. 13

T. 46






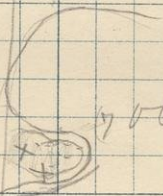
R. 83

680	680	690	675
691		700	x
691			700
682		(690)	x
692		700	x
698		700	x
689		690	x
695		700	x
685		695	x



Continue north from $\frac{1}{4}$ mile
 post aneroid 690 9:45
 edge of swamp immediately
 enter hemlock (good) some
 small hardwood N by dial 4° east
 1000 A few pines others as before, 9:05
 1250 Good maple with a few
 birch

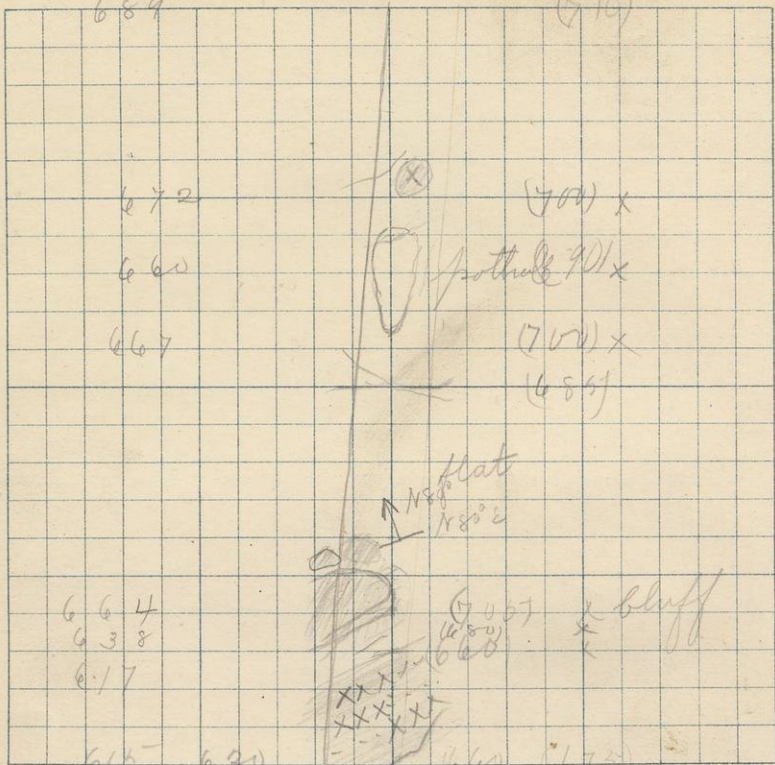
~~2000~~ reach ⁱⁿ ~~line~~ at stake aneroid
 675 (corrected) B.M. (668.73) 665
 also 28.185 10:25

670		(670) x
661		(665) x
660		(665)
664		(674) x
678		(685) x
692		(700) x
690		(700) x
674		(685) x
682		(695) x
679		(695) x
681		
685		(695) x
679		(700) x
689		710 x

Terris compassman.



Set aneroid at 670 $\frac{1}{8}$ B.M. (67421) / 670
 Go south v. flat variation cloudy
 obs 28.180 Fair hardwood with 0.35-
 scattering pines
 290 edge of swamp
 300 edge of cedar + tamarack swamp
 fair hardwood with scattering pine
 600 v. 1' east
 700 larger maple + birch with
 a few hemlock
 1055 tamarack swamp ^{by dial} v. 5' east
 1600 small hardwood spruce
 1500 v. 1 1/2' east good maple + birch 11:15
 with some hemlock
 1870 Tam swamp
 1930 hardwood
 2000 reach line 115 paces west
 of 1/2 stake 11:30



Continues south from $\frac{1}{2}$ mile
post aneroid 710 Good hardwood
& hemlock N $6\frac{1}{2}^{\circ}$ east 11:40

1500 hardwood smaller with
pine choppings 5 0 12:05

272

5:30 N 30° W of S.E. cor of sec 24-46-33
Strike N 80° East dip N 80° conglomerate
exposed forming an
irregular mound the blebs
are quite numerous in parts;
in a few places there are small
dikes of quartz.

1600 another ledge of same kind
with same strike & dip

1700 cedar swamp

2000 reach line 150 paces west
of stake aneroid in swamp 660
at stake 6750 ^{ft} 8.175 B.M. (634.31) 638
Sun behind cloud so that 12:00
we could take no variation ex-
cept for a short time

S. 20

T. 46

R. 32

665

~~xxx~~

670

678
690

685 x
695

686

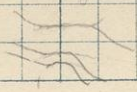
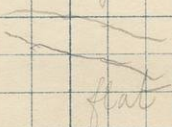
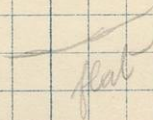
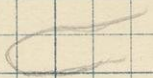
696 x

673
688

675 x
690 x

699
689
680
645

700 x
690 x
640



Mr Nason compassman

Start north in good hardwood
 Set aneroid at 665 - BM 668.70

v 3° east abs 28165 - 8:15

500 v 3 $\frac{1}{2}$ ° east

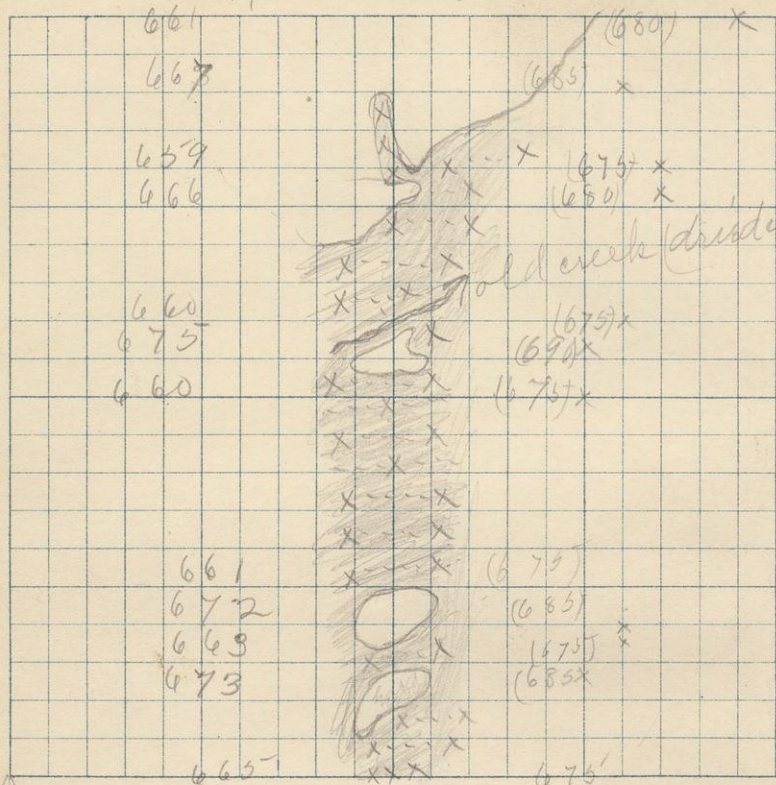
1100 hardwood + pine quite good
 with a few hemlocks

900 ridge line at cor stake in
^{cedar} swamp 9:10

S. 17

T. 46

R. 32



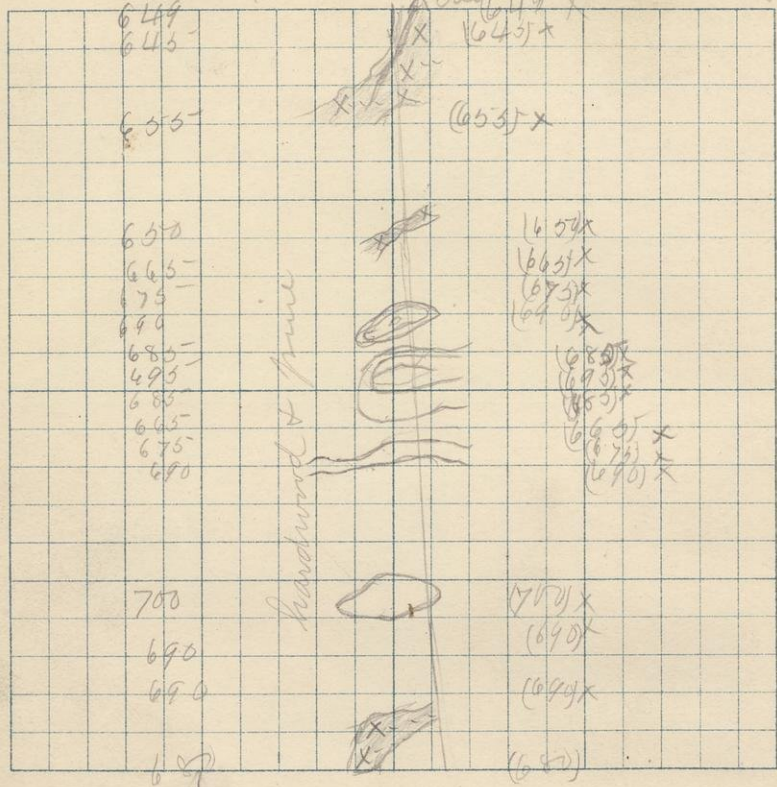
continue north from sec. cor. mile
 post aneroid 675 in cedar swamp
 75 paces tamarack swamp 9:10
 175 pine spruce + hardwood 8 east
 250 cedar swamp
 340 hardwood spruce + balsam
 (small)
 300 tamarack swamp
 1050 edge of swamp small
 spruce + hardwood 9:50
 1225 old creek channel dried up
 1320 small hardwood + pine
 1375 tamarack swamp
 1750 small hardwood with spruce
 and pine
 2010 reach line at stake aneroid
 680 (corrected for 4 ft) B.M. (66485) 6.61
 abs 28140 10:20

S. 17

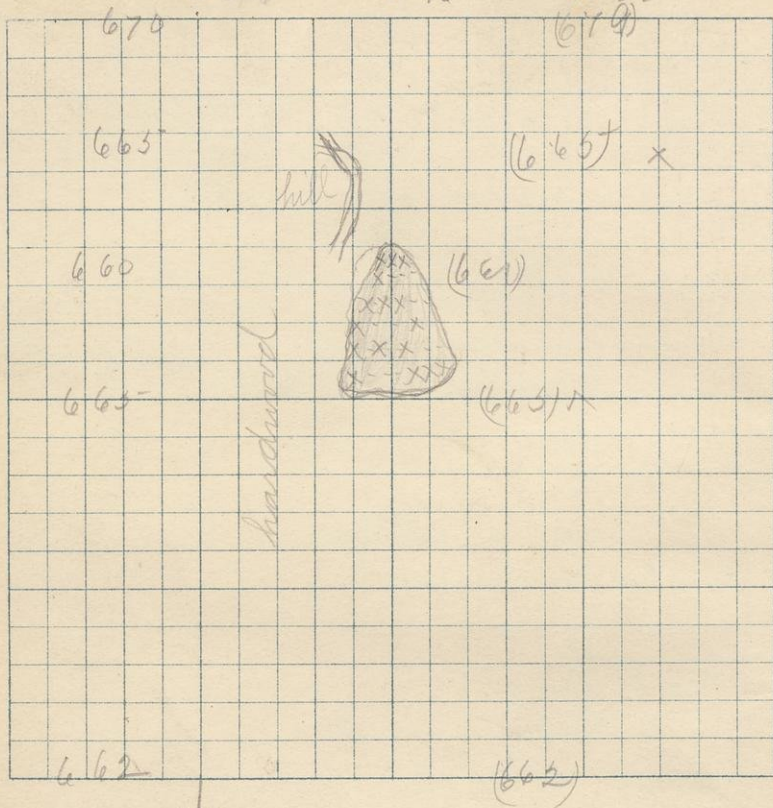
T.

H. *almond dry east of B.M.*

R. 32



Start south from $\frac{1}{2}$ B.M. set an-
 eroid at 649 B.M. 65271 (649)
 abs 28.145 - thicket at edge of swamp
 to east. Good pine west $\frac{1}{2}$ east 1835
 50 tamarack swamp
 75 dried up creek channel
 275 Good pine. with small
 hardwood
 570 tamarack swamp
 600 hardwood spruce + pine
 rather small
 800 fair hardwood with spruce
 + a little pine.
 950 Good pine + hardwood 1100
 1200 Hardwood good with
 scattering pine.
 1700 some hemlock other woods
 as before
 1842 ~~Good~~ + tamarack swamp
 1940 Small hardwood pine
 + spruce
 2064 reach 117 paces east of stake
 aneroid 680 at stake 675 12:48
~~to~~



continue south from 1/2 mile post
aneroid 670 fair hardwood 11:45

a few pines etc

600 cedar and tamarack swamp

980 good maple & birch with a few pines
1000 12:10

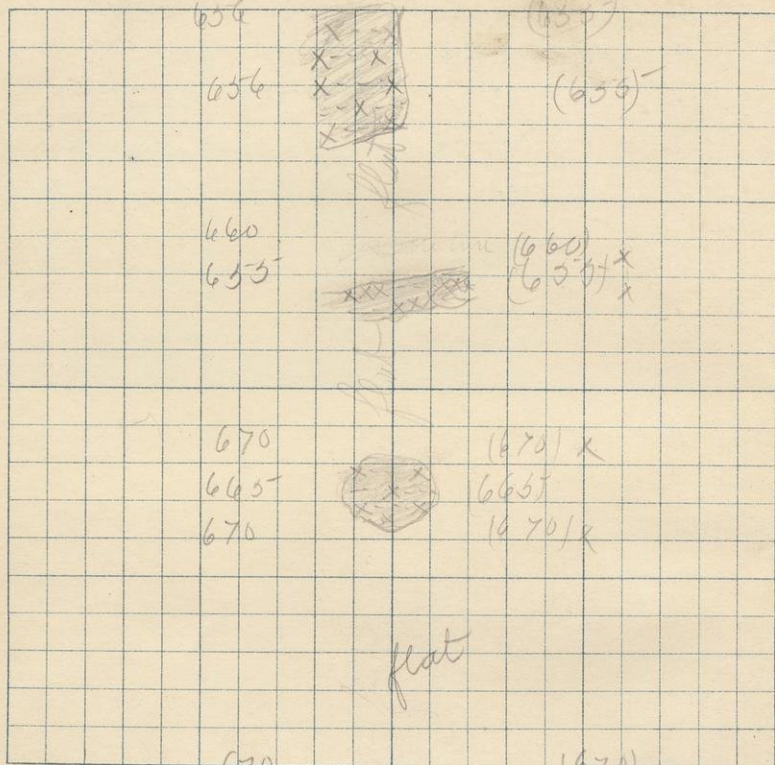
200 reach line 10 steps east of
stake abs 28130 12:30

aneroid 662 B.M. (665-76) 662

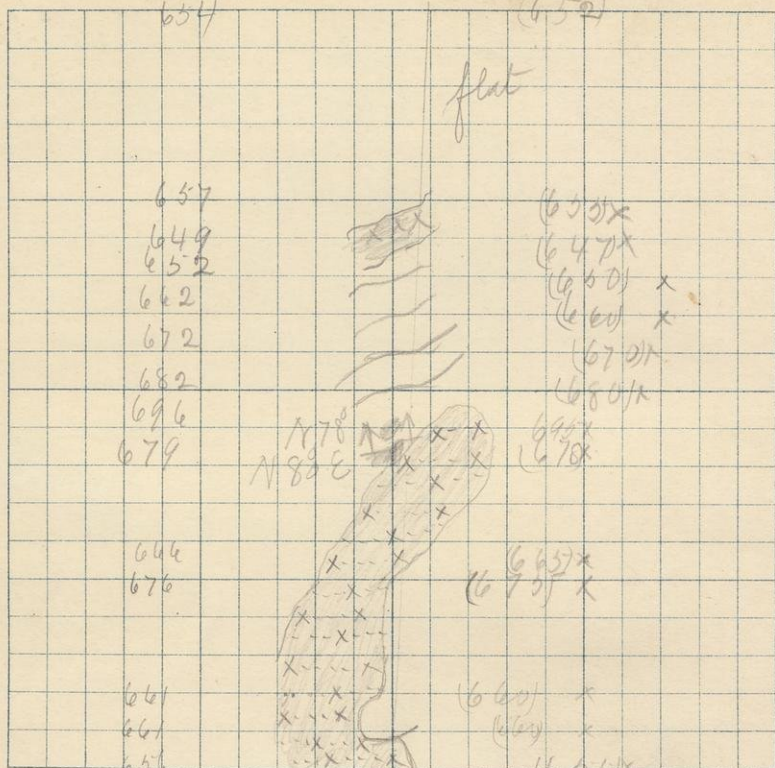
S. 20

T. 46

R. 32



Start north in good hardwood
 Set aneroid at 670 B.M. 674.25
 vi east abs 28290 8:40
 300 scattering pines with
 hardwood good
 625 enter tamarack swamp
 835 good hardwood with
 spruce and a few pines
 1000 9:10
 1175 enter cedar swamp
 1290 fair hardwood & pine
 1690 tamarack swamp
 1980 reach line at 4 post in
 tamarack swamp aneroid 656



continue north from $\frac{1}{4}$ mile post
aneroid 655 - tamarack swamp 940
80 small hardwood pine & spruce
with a few hemlocks

500 enter tamarack swamp

800 ~~fine~~ hardwood with some
pine (good)

273 820 N 1000 W of S. E. cor. of sec 17

4692 Strike N 80° E dip N 78°

Jedge at border of tamarack
swamp extending east & west
followed about 60 paces some-
what shaly in parts and
overlain by sandy soil 1045-

900 another ledge (shaly) of same
kind with same strike & dip

1375 cedar swamp

1465 good pine with hardwood

1550 good hardwood (about $\frac{1}{3}$ pine)

2076 reach line 100 paces east

of cor. ~~and~~ cor. in tamarack
swamp aneroid 652 B.M.

(657.66) abs 28, 3.15

105-5

648		(648)
646		(646) X
654		(654) X
668		(668) X
648		(648) X
664		(664) X
679		(679) X
680	N 52° W	(680) X
671		(671) X
656		(656) X
667		(667) X
662		(662) X
667		(667) X
678		(678) X
673		(673) X
674		(674) X
689		(689) X
684		(684) X
675		(675) X

Strike & dip do not
correspond with those
of description on page 39
W.K.

No. 276
N 52° W of 8E or sic 17-46-82
Strike N 85° W dip N 85° W
about 60 paces long forming
a kind of irregular pointed rock
in general but a pure slate consid-
erably contorted in places and
with small pieces of quartz.
slightly could not take variation after
starting

Set aneroid at $\frac{1}{2}$ B.M. at 648

B.M. (65788) 648 obs 28.320

Go south in hardwood with scattering pines 0.0 11 11

200 Cedar & tamarack swamp

300 small hardwood ^{spruce} with a few pines

350 Good pine with a little hardwood

650 Cedar swamp

675 small stream

725 pine (good) with small hardwood

274 930 N. 510 W. of S.E. cor. of sec. 17-46

32 strike N 64 W dip N 80°

Ledge about 120 paces long extending nearly east & west ^{seem to grade into each other} thus & the following

275 930 N. 330 W. of S.E. cor. sec. 17-46

32 strike N 65 W dip 75°

Near west end of above ledge: rock very hard difficult to get a specimen 12:50

1150 Cedar swamp

1200 hardwood & pine

1250 Cedar swamp

1425 hardwood + pine fair

2010 reach line 125 paces west of 1425
 stake aneroid 6.85 12:30

S. 20

T. 46

R. 32

675

(642)

flat

637

(640)? x

646

(635) x 3

657

(645)

672

(660) x

657

(645)

663

(650) x

663

(660) x

flat

669

(655) x



continue south from $\frac{1}{2}$ mile post
 aneroid 665' obs used same as
 obtained in the morning on $\frac{1}{2}$ line
 cloudy 12.30

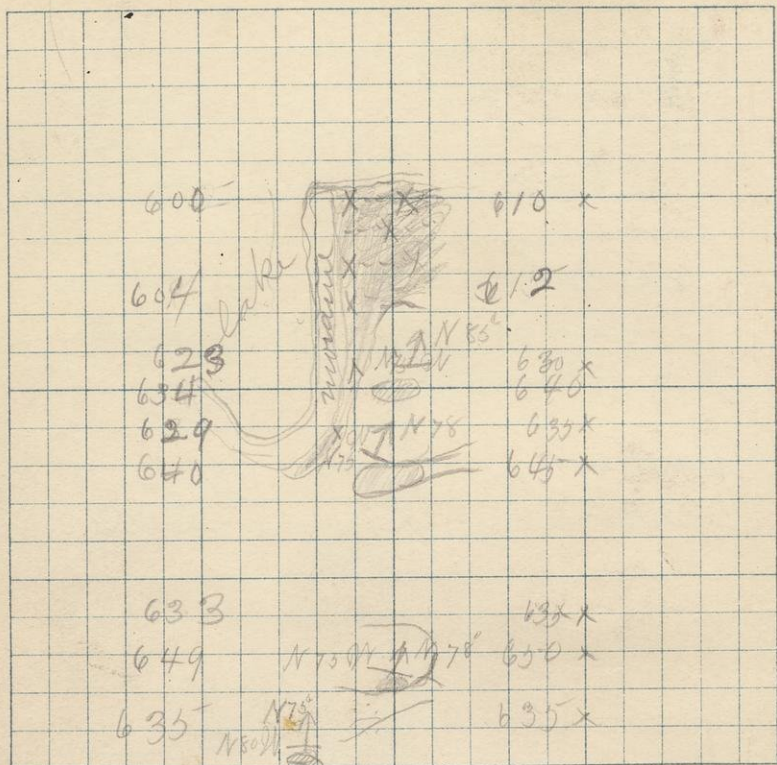
good hardwood with scattering
 pines

875 swamp (tamarack)

1025 hardwood good with
 scattering pines 1:15

2976 reach line 120 paces west
 of stake aneroid 655' obs 28.315

B.M. (672.76) 669 1:30



277 10 N. 235 W of SE cor of sec 21
 46-32 Strike 180° N dip N75°

Ledge crosses line (east + west), is about
 75 or 80 paces long and is not much
 weathered, but covered largely with
 vegetation. Near the west end there
 dikes of quartz

Set aneroid at 652. B.M. 653.39 652
 abs. 28,445' N. 30° east Start north
 in good hardwood 7:50

278 225' NW of SE cor sec 22-46-32

Strike N 75° W dip N 78°

Ledge about 2 ft high at edge
 of a slight elevation rock very
 hard but in dikes visible 8:15

300 some pines with the hardwood

279 700' N 20' W of SE cor sec 21-46-32

Strike N 75° W dip N 85° Ledge

an irregular mound about

15 ft above surrounding country

Hard to get a representative specimen 8:30

912 outcrop with same rock

as in 278 20' N. W. also

in an irregular mound

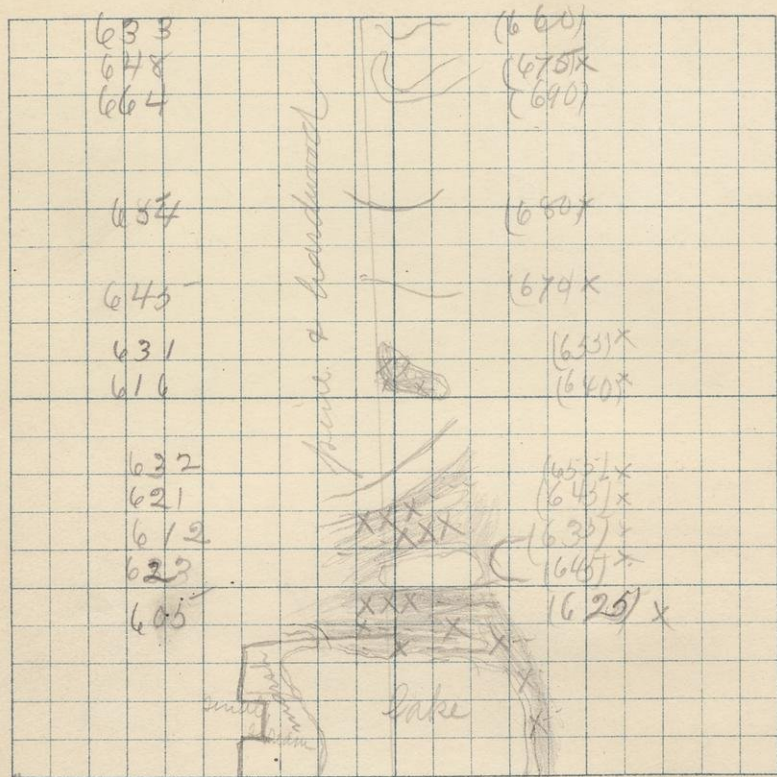
1000 another outcrop of same kind 8:45

21 1210 tamarack swamp

1500 lake snake offset around lake

mile post in lake to N.W. corner

9:00



continue north from sec cor ~~around~~
 west of lake 220 paces from
 cor aneroid @ 31

100 north start east

50 east again north 100 paces

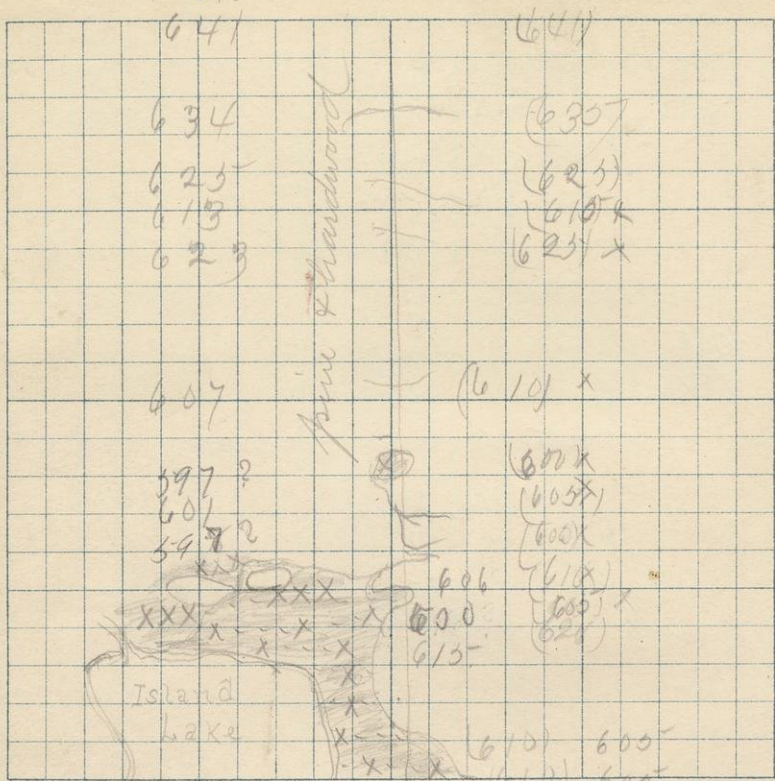
West 50 paces north 150 + east 400
 north again at 10:45

10:40 swamp of tamarack

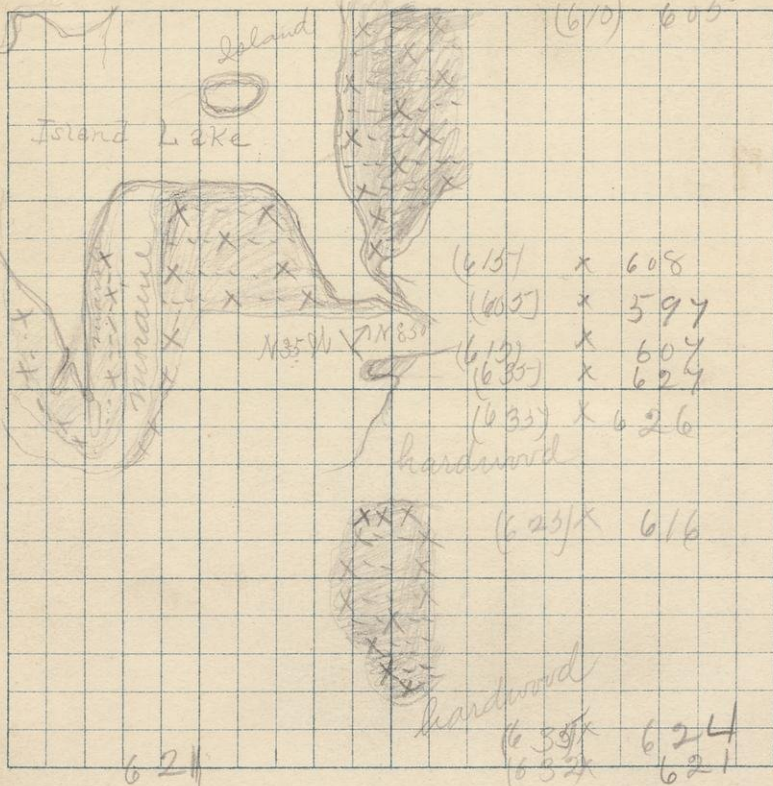
1976 ^{near of hardwood} reach line 75 paces west
 of post aneroid elev B.M. 636.65

abs 28.430

11:40



Set aneroid at 641 B.M. 64573
 abt 28.415 ^{directly} v. 3° east Start south
 in fair hardwood + pine 12,05-
 200 good pine
 340 small hardwood + spruce
 with a little pine
 600 good pine
 1000 about $\frac{1}{2}$ pine + $\frac{1}{2}$ small hardwood + spruce 230
 1150 tamarack swamp
 1200 $\frac{1}{2}$ pine $\frac{1}{2}$ hardwood + spruce
 1300 tamarack + cedar swamp
 1460 ridge with small hardwood
 spruce + pine
 1500 low swamp
 1530 pine spruce + undergrowth
 1800 undergrowth with a few pines
 1875 tamarack swamp
 2015 reach line 25 paces east of
 stake aneroid 616 150



N.B. The middle line of map shows the line followed i.e. the eighth line

continue south from $\frac{1}{2}$ mile stake
aneroid 610 In tamarack swamp
v used 3° east cloudy 1:00

640 small spruce & undergrowth
with scattering pines 25 paces from
lake (lake level 605)

775 at south border of lake 1:35
Small hardwood spruce and
a few pines

280 1035 N 1525 W of S E cor sec 22-46

32 Strike $N 35^{\circ} W$ dips $N 85^{\circ}$
Edge part of ridge very much
in appearance as a moraine
exposure for 60 or 70 paces high about 15

1150 Good hardwood ^{with spruce} with occasional
pines

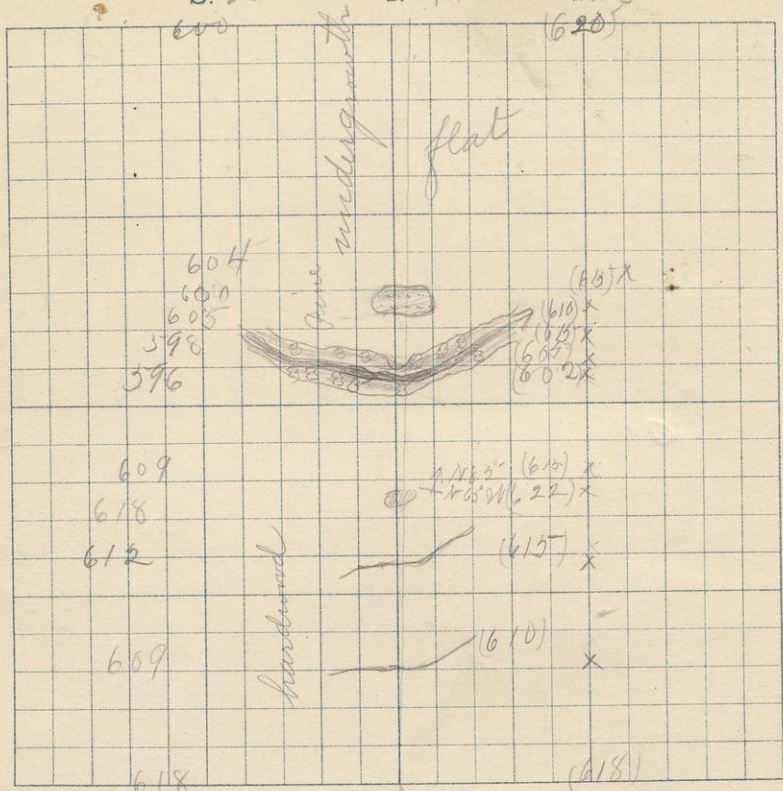
1300 swamp (tamarack spruce
& cedar)

1420 tamarack swamp

1825 good hardwood with
scattering pines

1962 reach line at stake aneroid 682

BM 625.48 ⁶² _N 28.435 2:25



Mile line poorly blazed, took a long time to find it. hence large correction

Set aneroid at 618 $\frac{1}{4}$ B.M. (6 29. 71) abs 26418

Start north \approx 3° east

Fair hardwood + spruce with
scattering ^{white} pines 7:45-

3000 cedar + tamarack swamp

570 fair hardwood + spruce with
scattering pines

281 765 N 10 1/2° E 1/4 sec 22-46

-32 Strike N 68° W. dip 85°

Ledge about 50 paces long
and about 6 or 7 ft high forming
an elongated mound or hump 830

1030 ^{alder} swamp at edge of stream

1062 stream

1100 pine fair (2) with small
hardwood.

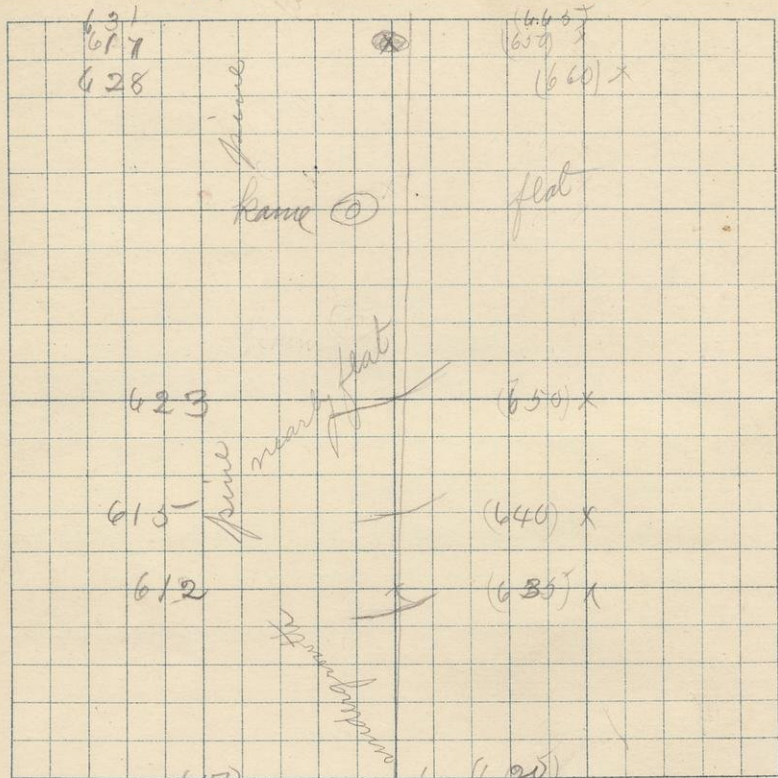
1240 marsh.

1320 pine + undergrowth 850

1500 poplar spruce + birch under-
growth with a few pines

1980 reach lumber 50 paces east of 7/4

fast aneroid 620 940

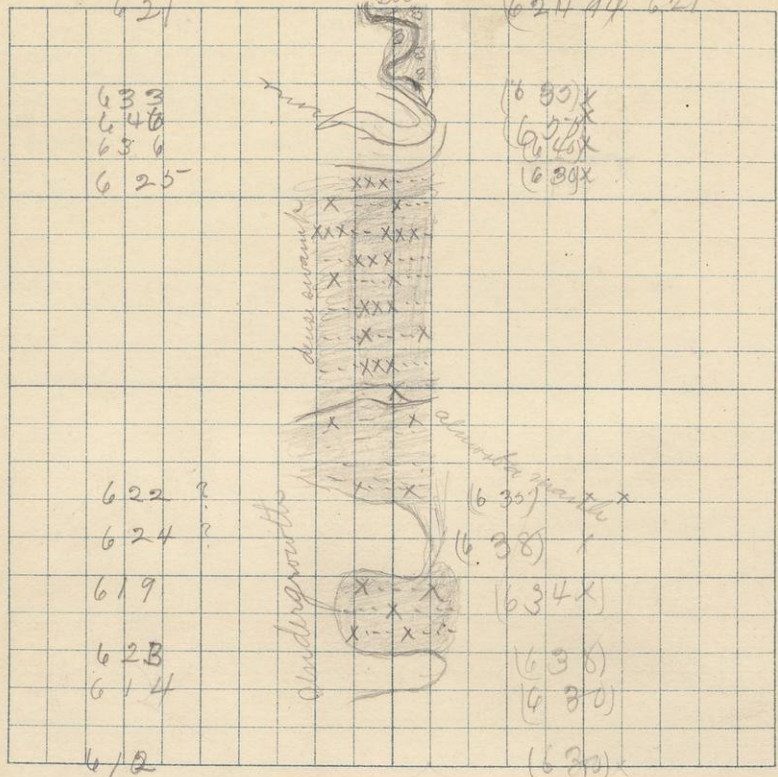


- continue north from $\frac{1}{4}$ mile
 post aneroid 620 9:50
 Undergrowth v. 3° west
 130 spruce & balsam (small)
 with occasional pines
 500 v. 3° east
 700 pine (white), spruce & small
 hardwood
 900 Good pine with a small
 amount of spruce & hardwood
 1300 small hardwood, spruce
 & a few pines 10:35
 1450 Good pine with a little spruce
 & small hardwood
 1950 tangrass swamp
 1975 reach line 45 paces east of
 stake, aneroid 665 obs 2034
 B.M. 3465 631 10:50

S. 15

T. 46
stream

R. 32



- Set aneroid at 621 BM 62494
 abs 28300 \approx 5° east Start south
 in alder swamp 11:00
 26 stream
 135 stream
 147 stream white
 200 flood ^{white} pine
 400 small spruce & hardwood
 with scattering pines
 425 cedar & tamarack swamp
 1000 @ 4° W 11:40
 1030 partly open swamp or marsh
 1375 Undergrowth
 1500 tamarack swamp
 1700 Undergrowth with scat-
 tering pines
 1827 reach line 12 steps east of
 stake aneroid 620 B 12:05

S. 22

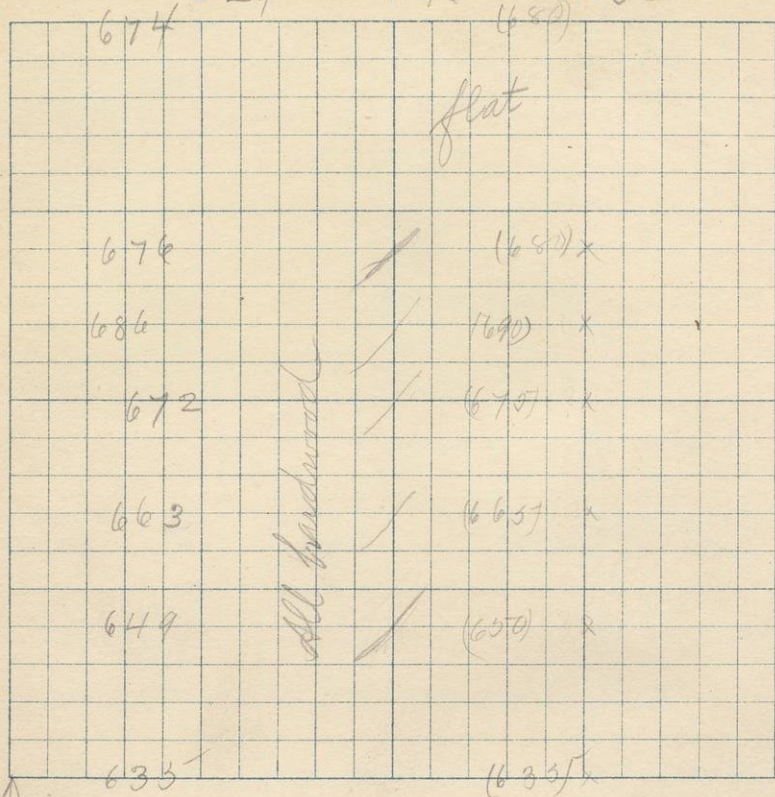
T. 46

R. 32

612	undergrowth		(687)
620			(648) x
611			(655) x
610			(640) x
595		Pine	
609			(640) x
613			(660) x
607			(645) x
615			(650) x
	hardwood		
622			(662) x
614			655



continue south from 1/2 mile point
 in undergrowth of poplar bal-
 sam spruce + birch 057° east 12:10
 330 tamarack swamp
 650 Good pine with small
 spruce + hardwood
 710 alder swamp
 746 reach stream
 780 quite good pine with
 a little hardwood
 900 fair hardwood with about
 1/4 fair pine 12:45
 975 ^{cedar} tamarack swamp
 1000 ^ 1:00
 1130 Good hardwood with scatter-
 ing pines
 1950 cedar swamp
 1995 reach line 55° 614
 of stake aneroid 655 BM (61840)
 Obs 2 8:35 1:25

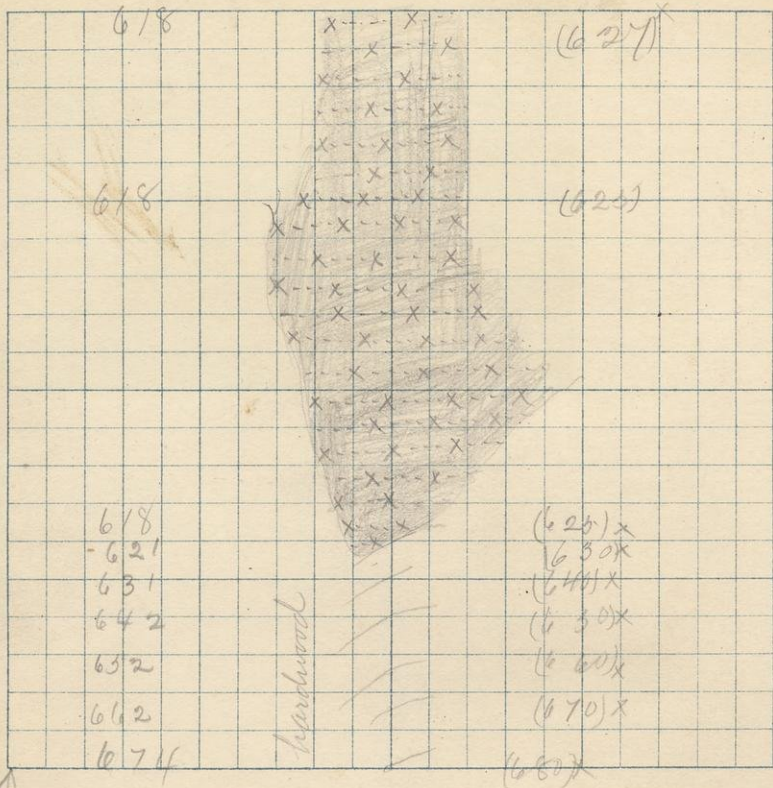


The readings given for this mile seem to me to be too high, taking into consideration the fact the slope was scarcely noticeable, and besides during the 10 minutes between ^{first} setting the aneroid and starting the needle read for first higher necessitating the resetting of the aneroid.

Aug 31.

59

Sel aneroid at 635 B.M. 638.57
abs 28,535 w 53 same as ^{plant} start north
in quite good hardwood ^{maple & birch}
scattering ⁱⁿ pines. .R 7:50
1000 Life shows variation of 11° 8:10
1400 No dial but blazed line
shows a variation of 13° east
1600 w. 6° east
1975 reach old cor post L.L. I line
10 steps farther south but no stakes
found for 50 paces on either side
840



Aug 31

61

continues north from sec. cor
aneroid 680 Isd ~~x~~ maple and
birch with a little basswood 840

#500 fair maple birch & spruce

600 Tamarack swamp

725 v by line (nodal) 14° east

875 open tamarack swamp

1000

9:10

1537 v by line 18° east

1828 reach line at sec post

aneroid (627) B.M. (621.7) 678

abs 28540. Cor post of old survey
had not been found by levelers
hence the corner is probably not
accurate

11:30

Line at B.M. shows a variation of 1/2°

Later, the party running the 1/2 line west
of the section line says the old survey
line is at least 100 paces north.

Aug 31

63

Set aneroid at $\frac{1}{4}$ B.M. at 6:19

B.M. 62268 abs 28625 N 18° east and

Go south in tamarack swamp 9:30

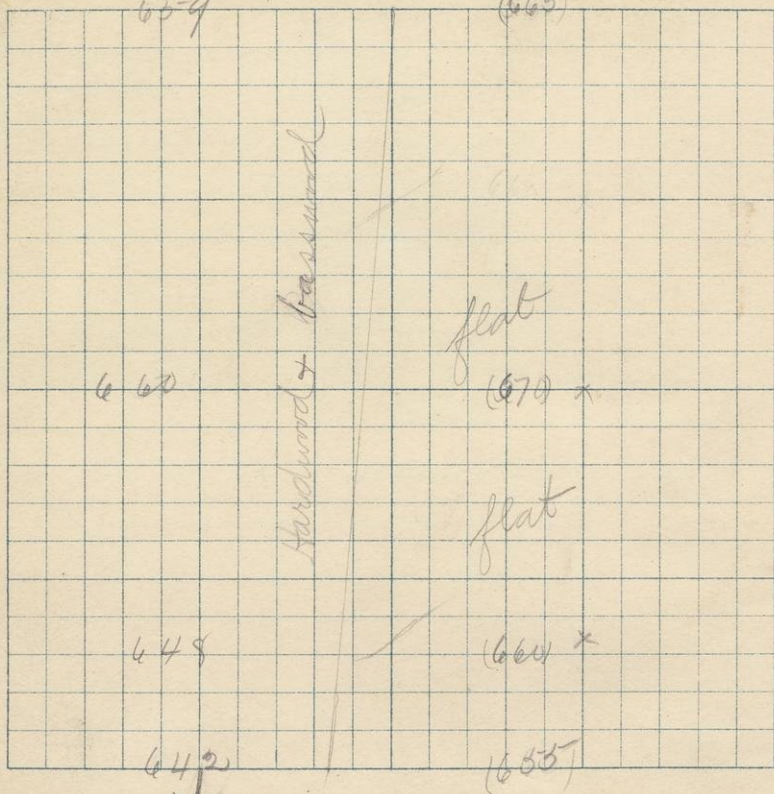
940 small spruce balsam &
birch with occasional pines

1030 Fair maple & birch with a
little basswood (good) + spruce +
scattering pine used, 5° east, in dial 10:15

1300 Good maple & birch with some
good basswood

1855 reach mile line 20 paces
east of $\frac{1}{4}$ mile stake. 18:45

aneroid 665



Pocket compass
used.

Through a misunderstanding of the compassman on the last mile the variation used was 5° or the average flat variation (taking into account the east and west section lines) instead of this we should have used nearly the same as we obtained from the old survey line going north. The dials were taken from camp so that only a pocket compass was used. This showed by its action that there was great magnetic disturbance throughout the mile.

Aug 31

65

continues south from $\frac{1}{2}$ mile post
aneroid at 665 In good maple +
birch with a little basswood.

v 5^{east} used

1045

1000 v 5^{east} used

11:10

1300 Timber as before with occasional
white pines

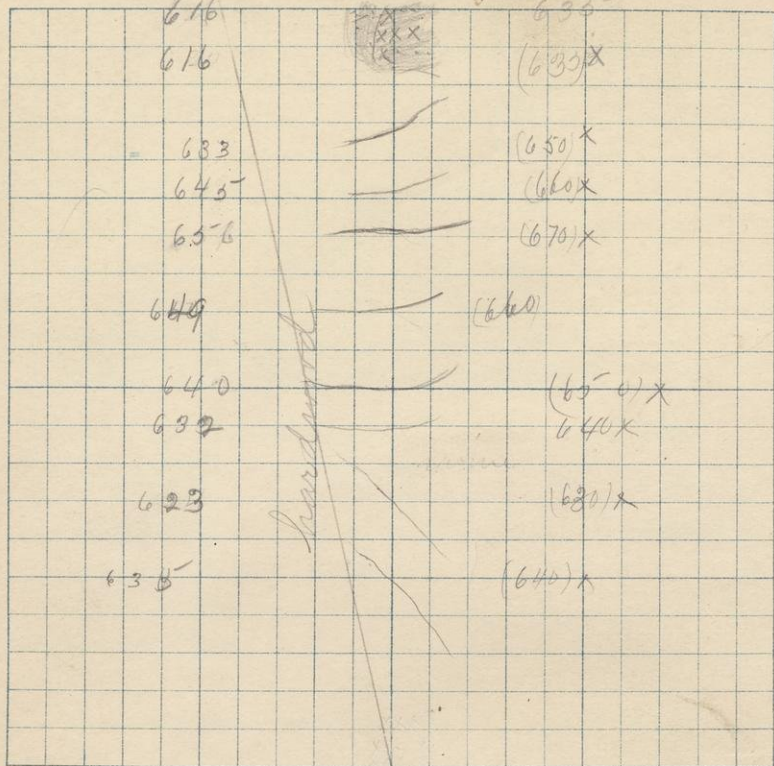
1976 reach line 230 paces west
of $\frac{1}{2}$ stake aneroid at stake 655.
at point where line was reached
also 655 abs 28475 BM (643,36)
642

11:45

S. 24

T. 46

R. 32



N. B.

The variations are not all reliable throughout the day's run, (the four plates s.e. this and the three succeeding ones) as the degree circle was loose and it was not noticed until the close of the day's run. This also accounts for the difficulty in lining

Set meridian at 45th $\frac{1}{2}$ BM 656.01

abs. ^{28.3750} start north in good hardwood
(maple & birch with some basswood) ^{a very few pines}

N. 22° W.

7.45 - 1

140 N. 22° W.

500 N. 16° W.

600 N. 19° W. timber same as before

800 N. 7° W. but only fair with a little spruce

1100 N. 10° W.

8 20

1200 N. 10° W. Timber of same kind
as before (without spruces) but good

1400 N. 14° W.

1600 N. 3° W.

8 40

1800 N. 1° W.

1860 tamarack + cedar swamp

2014 reach line 130 paces east of ^{9:10} stake
marked $\frac{1}{4}$ stake meridian 635. Upon

searching for $\frac{1}{4}$ post the old ~~post~~
survey $\frac{1}{4}$ post found still

350 paces farther west but

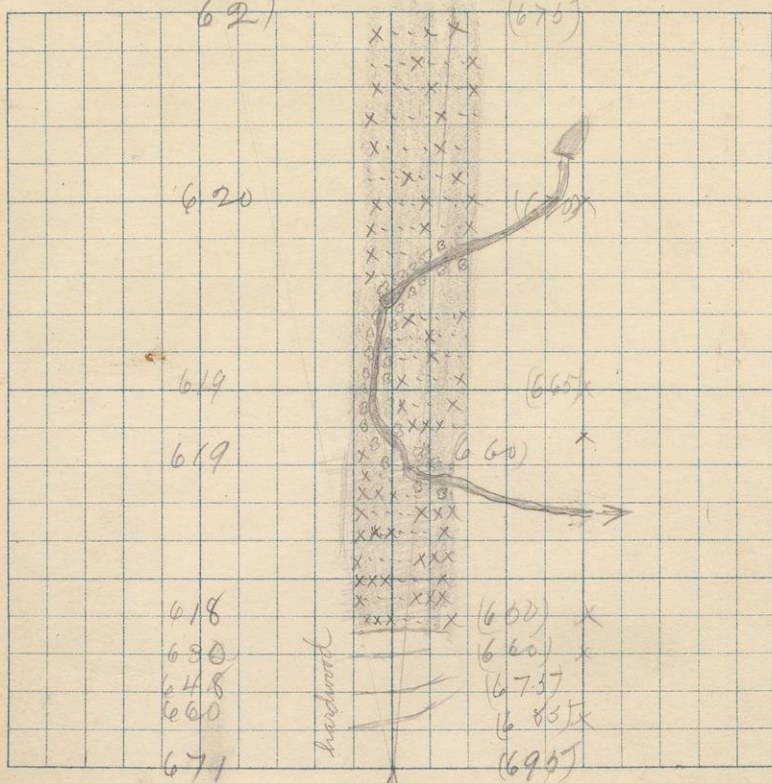
the L. S. $\frac{1}{4}$ post is still about

200 paces farther west

S. 13

T. 46

R. 32



See note on page 66 for N., + lining

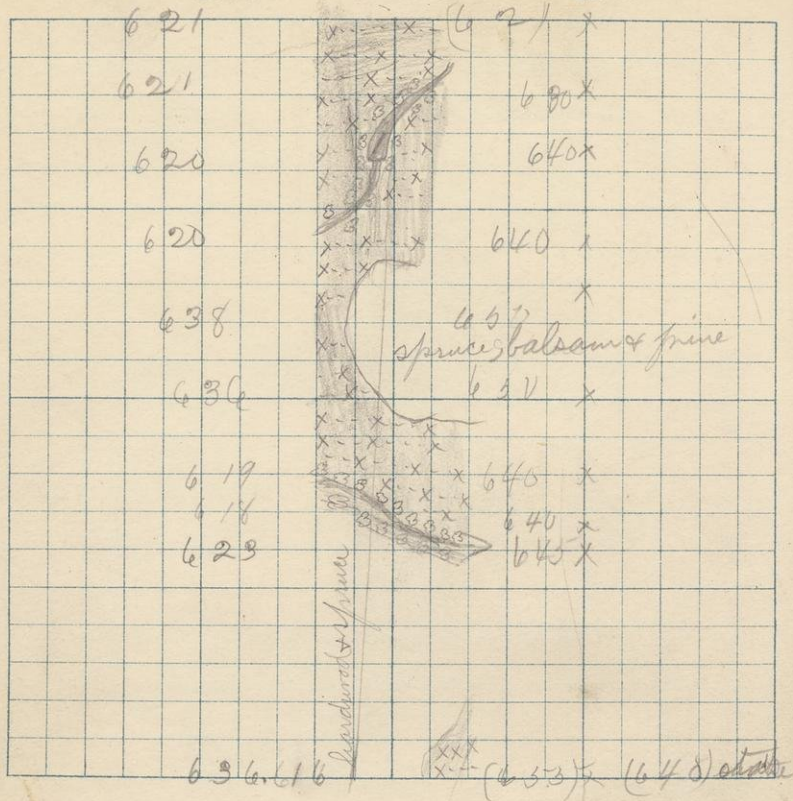
Continue north from $\frac{1}{4}$ mile post ^{edgwt}
 aneroid 695 $N. 7^{\circ}$ east 9:55
 In Good maple & birch with a
 little spruce & basswood
 350 cedar & tamarack swamp
 500 $N 15^{\circ}$ east
 700 10:20
 860 reach stream ~~10:40~~
 1000 $N 12^{\circ}$ east Tamarack swamp 10:40
 1200 reach beaver dam
 1789 reach line 153 paces east of
 $\frac{1}{4}$ post which is marked not
 exact.

I do not know how to account
 for the great difference in lining
 as upon questioning the cook
 Passman I found he used ^{considerable} less
^{variation} variation than the dial gave.
 aneroid 675 abs 28.330
 variation at $\frac{1}{4}$ stake 1° east 11:20
 B M (624.73) 621

S. 13

T. 46

R. 32



See note on p. 66 for nr, + living V

Set aneroid at 621 $\frac{1}{8}$ B.N. 624.61
 abs 28320 v. 22 $\frac{1}{2}$ N 11:40
 Start south in tamarack swamp
 215 reach beaver dam
 350 v. 17 $^{\circ}$ N 12:10
 678 Spruce + white pine with balsam
 1000 v. 7 $^{\circ}$ West 12:25
 1050 tamarack swamp
 1312 reach stream
 1425 Spruce + balsam
 1500 v. 9 $^{\circ}$ N 12:45
 1710 Fair hardwood with spruce
 1933 reach line 100 paces west
 of $\frac{1}{2}$ stake (?) aneroid at stake 645
 Upon reaching line 655 1:10

616	Hardwood	XXXX XXX XXX	(640)
620			
634			(645)* (660) x
642			(670) x
651			680 x
638			670 x
625	Hardwood	XXXX	660 x
614			655 x
625			645
619			680

See note on p. 66 for N₂ + lining



Continue south from $\frac{1}{2}$ mile post
in cedar & lamarack swamp
aneroid at 646 1:10

$\text{V } 7^\circ \text{ east}$

200 Fair hardwood with spruce

500 $\text{V } 7^\circ \text{ W}$ Good hardwood 1:26

1000 $\text{V } 29^\circ \text{ W}$. Fair hardwood with
spruce & scattering pines 1:45

1132 $\text{V. } 11^\circ \text{ W}$

1500 $\text{V } 3^\circ \text{ W}$

reach line 147 paces west
of $\frac{1}{2}$ stake. Aneroid upon reaching
line 680 at stake (665) abs 2820

B.M. (62340) 619

$\text{V. at stake } 7^\circ \text{ W.}$ 2:20

798

(780)x

794

(780)x

779

(770)x

767

(760)x

775

(770)

764

(760)

752

(750)

740

(740)

hardwood

flat



Set aneroid at 740 $\frac{1}{2}$ P.M. 74410
 abs 281600 cloudy 5° W used 8:45

Go north in fair hardwood &
 spruce with scattering pines
 & hemlock

200 Good maple and birch.

700 W by dial 7° W 905

800 fair maple & birch with
 a few good baswoods & occasional
 white pines.

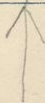
1965 reach line 46 paces east
 of stake 780. 935

S. 23-

T. 47

Bear dam R. 32

741		(700)
760 Creek dry		(725)
785		(734)
794		(760) x
813		(770) x
793		(768)
782		(750)
780		(740) ?
782		(750)
790		(765) x
779		(755) x
782		(760)
785		(765) x
794		(750) x



continue north from $\frac{1}{2}$ mile
 post aneroid at 680 Fair maps
 + birch $\approx 7^\circ$ W. s. & cloudy 9:45
 515 tamarack swamp
 660 poplar + hardwood undergrowth
 1000 W. by dial 2° W 10:10
 1180 tamarack swamp
 1360 poplar, maple, birch ^{hardwood}
 + spruce undergrowth
 1370 small poplar maple
 birch + spruce
 1464 reach line at stake aneroid
 505 abs 282.10 BM (745.37) 741 / 1830

Set aneroid at 750 $\frac{1}{2}$ M. 75381

Start south in spruce + balsam in
abs 281957 undergrowth with scattering
small hardwood + white pines V

N 5° east

10 50

115 swamp edge of creek bottom

125 old beaver dam

325 spruce + balsam undergrowth

600 small poplar maple and
birch

1000

11:15

1350 tamarack swamp

1665 small poplar maple +
birch

1435 fair hardwood maple + birch
with hardwood undergrowth

N 7° W

1956 reach line 55 paces ^{west} from
stake

11:20

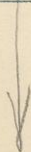
11:40

S. 36

T. 47

R. 32

826			(824)
816		—	(815)x
806		—	(805)x
796		—	(795)x
787	<i>hardwood</i>	—	(785)x
787			
787			
787			
787			(785)
		—	(770)x
762			(760)x



Continue south from 1/2 mile post
 aneroid 825 fair hardwood
 N 1° W. 11:45

100 good maple & birch with
 a few basswoods

700 fair maple & birch a little basswood

1600 N 4° W. 12:10

Good hardwood with scattering
 white pines.

1900 reach line about 15 paces
 west of 1/4 stake abs 28190. 12:25

B 765.72

811			(825)x
809		—	(820)x
800		—	(810)x
792		—	(800)x
773	All Hardwood		(800) x
785		—	(790) x
777		—	(780)x
770			(770)x



Set aneroid at 770 cor. B.M. (77357)
 abs 28360 Start north in good
 hardwood (maple & birch)

0130 N 13° W by dial 8:25

100 fair maple & birch with
 a little basswood

300 N 49° W

600 N 3° W

1000 N 4° W

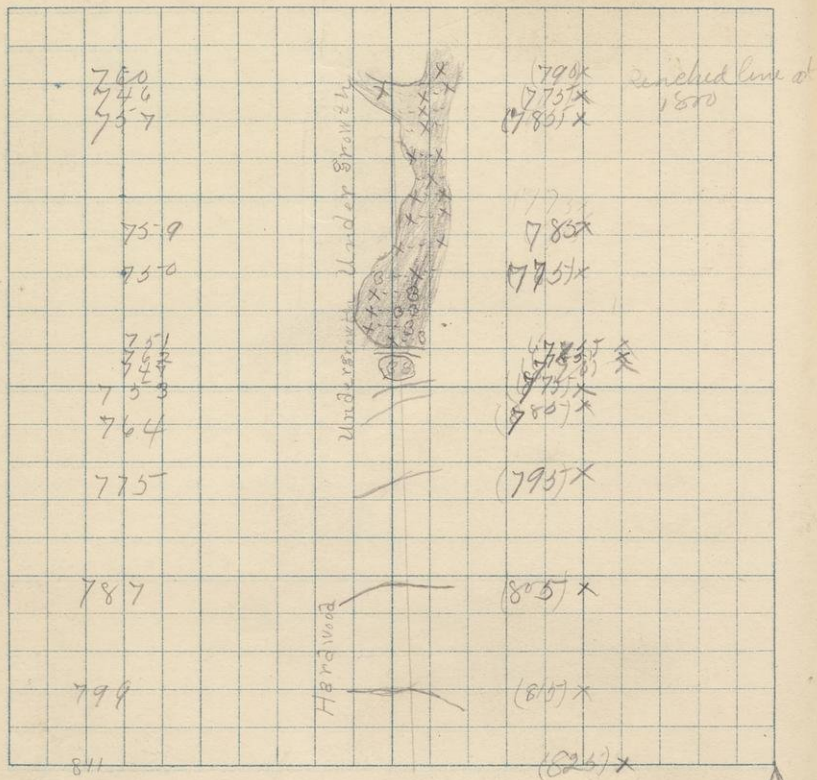
8:30

1600 N 8° W

2000 reach line at cor. post aneroid

8:20

9:20



Continue north from sec cor
aneroid at 825. $\approx 12\frac{1}{2}$ ft.

Fair hardwood (maple + birch with
some basswood mostly ~~at~~ young) 9.25
500 $\approx 4^\circ$ N.

625 Hardwood + spruce undergrowth
700 fair maple birch + basswood
900 undergrowth pine spruce cherry ^{wood.} ~~wood.~~
1000 $\approx 2^\circ$ east 9.50

1025 alder swamp

1075 undergrowth as before

1100 tan grass + alder swamp

1355 Spruce balsam + birch un-
dergrowth

1370 $\approx 2^\circ$ east

10.15

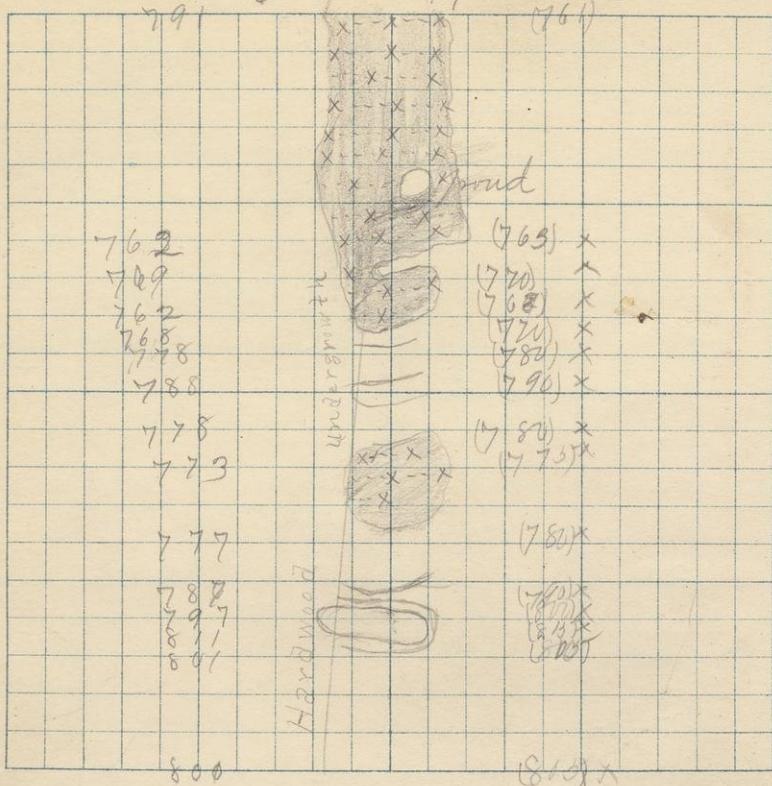
1645 tan grass swamp

1800 ~~reach~~ line 65 paces east of cor
aneroid 790 at edge of swamp also ≈ 1360
 \approx at post 3° east BM (764.18) 760

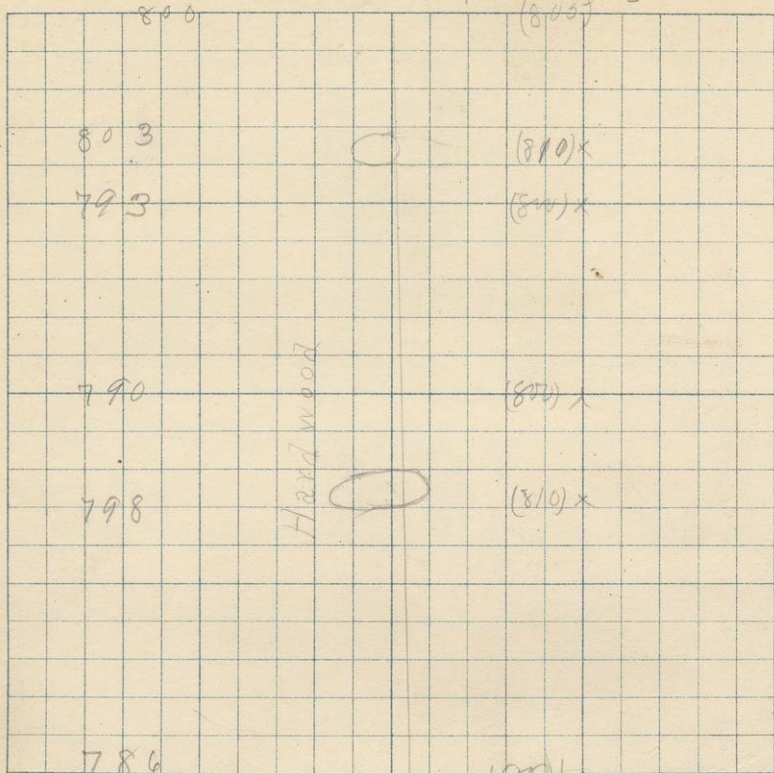
S. 26

T. 47

R. 92



Set aneroid at 7611 $\frac{1}{8}$ B.M. 76548
 abs 28,395 $N 2^{\circ}$ east. Start south in
 tamarack swamp 10:50
 645 hardwood undergrowth $N 2\frac{1}{2}^{\circ}$ east
 675 tamarack swamp
 825 Old pine burning with propan
 spruce + birch undergrowth
 1000 do 11:20
 1140 tamarack swamp
 1340 fair hardwood (maple + birch)
 1540 $N 4^{\circ}$ east good maple + birch
 1917 reach line 1500 paces west of ^{old} line
 $\frac{1}{8}$ post $\frac{1}{2}$ aneroid 5045 + 12:15



continue south from $\frac{1}{8}$ mile
 first aneroid at 800' N $3\frac{1}{2}^\circ$ east 12:20

Good hardwood maple & birch
 with scattering pines

1000 N 7° W

12:35

1400 N 9° W

1800 fair hardwood

1940 reach line 60 paces east

$\frac{1}{8}$ stake aneroid 800 abs 28,260




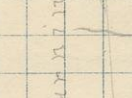
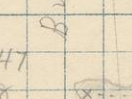





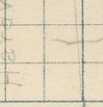
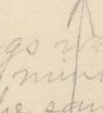
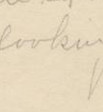
Or at stake 9° W. B.M. 790.47 106

769

S. 34

(720) T. 47

R. 32

	764		(770)
	754		(720) (775)
	768		(775)
	780		(755)
	770		(775)
	760		(765)
	766		(770)
	756		(760)
	747		(750)
	738		(740)
	743		(745)
	744		(745)
	734		(735)
	723		(723)

Burning

Herbwood

N.B. Two readings were taken in the swamp about 20 minutes apart showing a rise of 15 ft at the same point. This was taken while looking for the 1/4 stake

Set aneroid at 723 $\frac{1}{4}$ B.M. 726.68

abs 28.320 N 4' east 745

Go north in good hardwood (maple
and birch) with scattering ^{white} pines

500 N 5° east; fair ^{spruce} hardwood (maple
and birch) with scattering white pines

710 tamarack swamp

800 hardwood undergrowth with
scattering pines

900 fair hardwood (maple &
birch) with ^{spruce and} scattering white pines

1000 N 1° east 8:20

1400 enter tamarack swamp

1450 old burning ^{at 8:30}

1970 reach link 175 east of 4th stake
aneroid at link 175 at stake 740.915

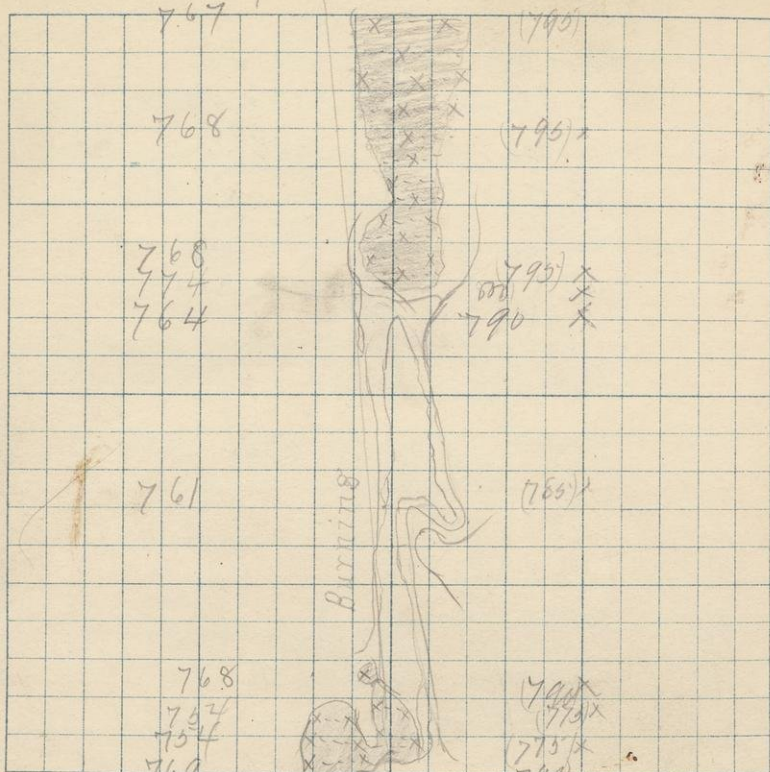
B. M. 726.68

81

S. 27

T. 47

R. 32



Continue north from $\frac{1}{4}$ mile post
aneroid at 690 N 3° east

Old burning pine + hardwood 9:15

25 tamarack swamp

210 Old pine burning 9:30

500 N 3° east

720 tamarack swamp burnt

1000 N 1° east green tamarack swamp 9:40

1200 Fair hardwood + spruce
with scattering ^{white} pines

1260 tamarack swamp

1300 NO


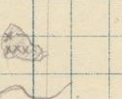

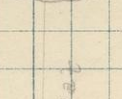
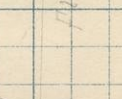

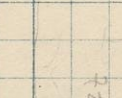
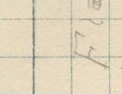

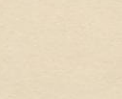



1842 reach line 180 paces east of
post which is marked about 48' above
rod 795 - Absolute 28.235 BM 770.76
NO at stake 10.20

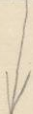
Bearing tree of old 4 stake found
87 paces east of L. S. S. 1/4 stake.

S. 27

T. 47

R. 32

739	Undergrowth Hardwood		739
734			745
738			760 x
732			735 x
742			745 x
737			753 x
760			763 x
770			773 x
779			785 x
772		Burning	
760			770 x
748			765 x
744			760 x



Set aneroid at 739 $\frac{1}{8}$ B.M. 74294

abs 28,260 $\approx 2^\circ$ east 10:45

Start south in fair hardwood (maple and birch) and spruce

50 tamarack swamp

120 fair maple, birch + spruce scattering ^{pine}

210 cedar & tamarack swamp

350 fair hardwood & spruce

500 $\approx 3^\circ$ east. Hardwood & spruce most

by undergrowth with scattering

^{of} pines

11:15

1000 v.d.

1150 Old pine & hardwood burning

1300 $\approx 1^\circ$ east

1876 reach line 45' paces west of

$\frac{1}{8}$ stake aneroid 760. $\approx 1^\circ$ east 11:35

continue south from 1/8 mile post
 aneroid at 760 N 1° east 1148
 Old pine and hardwood burning
 780 tamarack swamp
 130 Burning as before
 300 tamarack swamp
 500 N 3°
 520 old burning pine + hardwood
 635 tamarack swamp
 815 old burning with a little green
 timber
 940 tamarack swamp
 955 burning as before
 1100 3° East 1215
 1630 tamarack swamp
 1100 fair hardwood with scattering
 white pines
 1588 creek bottom
 1600 creek
 1675 fair hardwood
 1970 back line 155 paces west of
 stake aneroid at line 740 at stake
 755 abs 28.240. B.M. 726.55 1235

Set aneroid at 690 sec cor BM 4943
 abs 28335 - v. plat of about 5' used
 Start north in fair maple, birch and
 spruce with scattering ^{white} pine 1215
 36 tamarack swamp
 105 reach creek
 440 fair hardwood maple & birch
 with scattering pines v. 5' east
 800 tamarack swamp 1250
 930 pine & hardwood burning
 1030 burnt tamarack swamp
 1280 Fair hardwood maple & birch
 with scattering white pines
 1340 54⁰/₂ east
 1510 tamarack swamp
 1780 old burning with some
 pine & underbrush left.
 1960 reach line 76 paces east of
 cor. post aneroid upon reaching
 line 760 at stake at cor post 760
 Cor post marked about 140

continue north from sec. cor. rule
post aneroid at 770.

Old burning with patches of under
growth. bumpy, flrat variation used
160 tamarack swamp

475 Old burning with under
growth

900 tamarack swamp

1015 Old burning spruce pine
& hardwood undergrowth

1650 cedar ^{alders} & tamarack swamp

2086 reach line in swamp 140

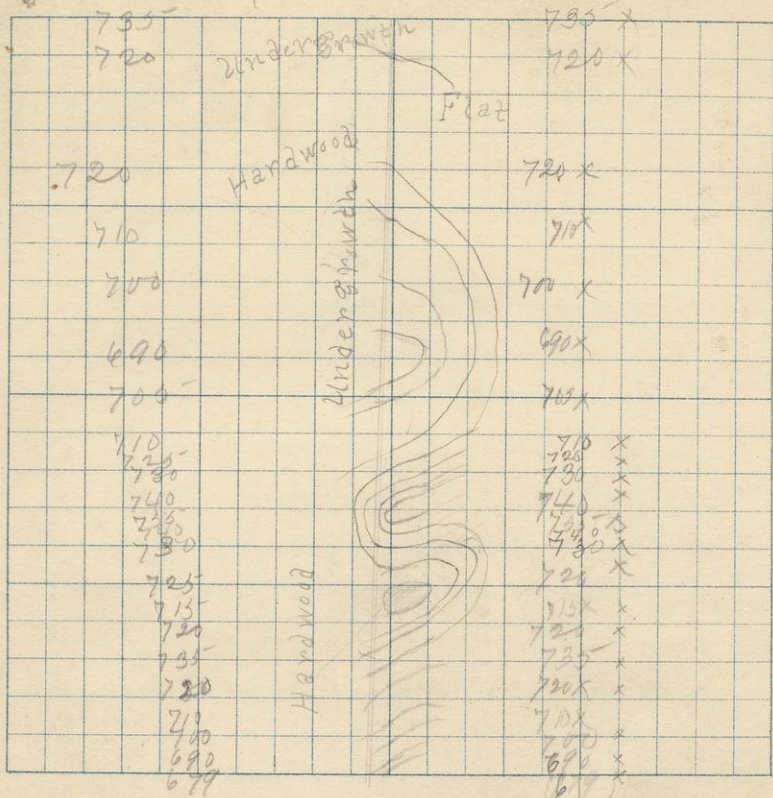
paces west of cor post marked
about aneroid in swamp 725

at post 745 abs 28,285-

B.M. 74603

300

set aneroid at 719 $\frac{1}{8}$ B.M. 723.64
 ab 28320 v. plat used
 Start south in cedar ^{at 672} + tamarack
 swamp 310
 672 Undergrowth maple birch + spruce
 720
 tamarack swamp
 900 Undergrowth
 1000 3135
 1400 fair hardwood
 spruce + balsam
 1957 reach line 20 paces west
 of $\frac{1}{8}$ stake aneroid 735 3155



- Continue south from $\frac{1}{2}$ mile post
 aneroid at 735. Hardwood undergrowth
 with a few pines 1400
 780 fair maple & birch with some
 spruce hemlock & scattering
 white pines
 850 Undergrowth maple birch & spruce
 1100 Fair hardwood and spruce
 1525 tamarack swamp
 1080 Fair maple and birch 445
 1440 reach line 43 paces west of $\frac{1}{2}$ stake 370
 aneroid 678 abs 2835. B#1683.38

This book was simply rotten work
 W. K.

106

Aug 81

1st mile maple + birch with some basswood
 2nd mile

to about 600 paces then tamarack swamp no
 outcrop in either though a part of the swamp
 was over boulders and showed great magnetic
 disturbance

1st mile back swamp up to between 94/10 hundred
 then spruce balsam + hardwood until about 1150
 after that maple, birch + some basswood.

2nd mile back, maple + birch with consider-
 able basswood throughout, no outcrop in either
 but needle very unsteady

1788 N 500 E of S E cor sec 34.

strike N 38° east dip N 50°
80 W. N 70°

0174624/2000

3

795

767

28

15

43

23

