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Crystal Falls region, Michigan: [specimens] 32200-32298. No. 290 1892

Merriam, W. N.
[s.l.]: [s.n.], 1892

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LAKE SUPERIOR SURVEY

Crystal Falls Region
Michigan
H. N. Merriam

32200-32298

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 nintetieth 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.






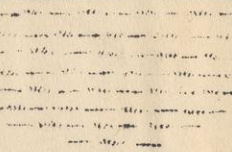
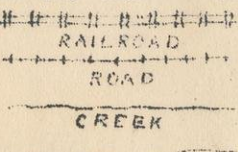

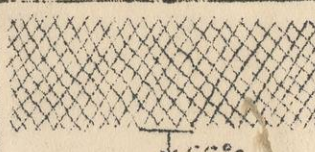


It will be the constant business of the geologist to search for outcrops. All hills within a reasonable distance of the course of travel will be examined. Oftentimes upon the steeper slopes of a hill a rock surface is covered with a coating a few inches thick of moss, leaves or vegetable mold and can 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.

 <p>PINE OR HEMLOCK</p>	 <p>HARDWOOD</p>	 <p>PINE OR HEMLOCK AND HARDWOOD</p>	 <p>CEDAR SWAMP</p>
 <p>SPRUCE OR TAMARACK SWAMP</p>	 <p>MARSH</p>	 <p>RAILROAD ROAD CREEK RIVER</p>	 <p>NO STRUCTURE</p>
 <p>↓ 55° S. NEARLY MASSIVE</p>	 <p>N. 28° E S. 62° E SHALY OR BEDDED</p>	 <p>↗ 83° SECONDARY STRUCTURE.</p>	

TIME EQUATIONS FOR 1892.

290

Days.Min. Days.Min. Days.Min. Days.Min.

MAY.

Add to mean local time.

1- 5 3 6-21 4 22-30 3 -31 2

JUNE.

Add to mean local time.

1- 5 2 6-10 1 11-15 0

Subtract from mean local time.

16-20 1 21-24 2 25-29 3 -30 4

JULY.

Subtract from mean local time.

1- 5 4 6-12 5 13-31 6

AUGUST.

Subtract from mean local time.

1- 6 6 7-13 5 14-17 4 18-22 3
23-25 2 26-29 1 30-31 0

SEPTEMBER.

Add to mean local time.

1- 0 2- 4 1 5- 7 2 8-10 3
11-13 4 14-15 5 16-18 6 19-21 7
22-24 8 25-27 9 28-30 10 -31 11

OCTOBER.

Add to mean local time.

1- 3 11 4- 7 12 8-11 13
12-15 14 16-21 15 22-31 16

Dip at Amasa $76^{\circ}20' \pm$

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.

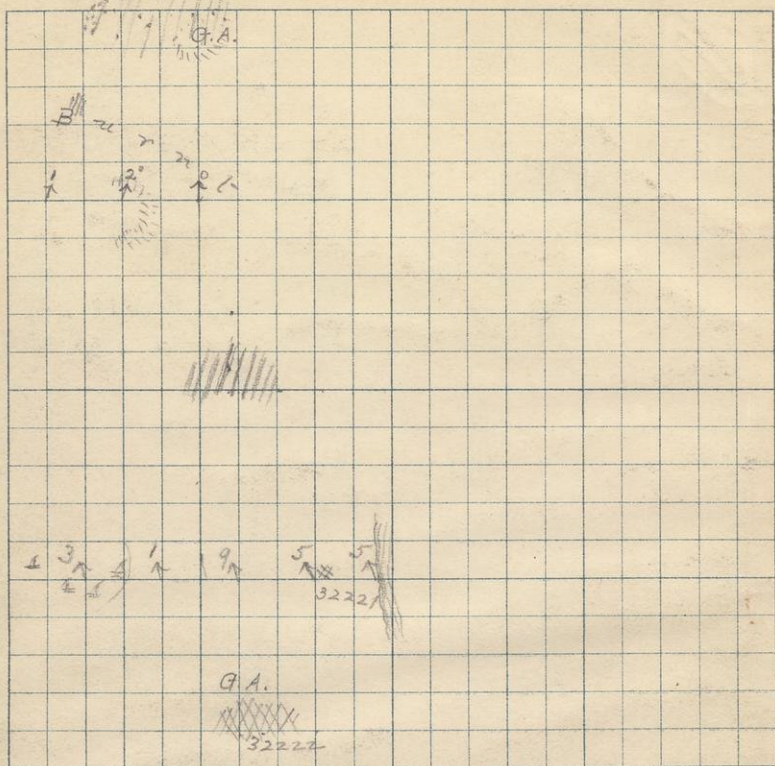
Add to watch time.

1-13	16	14-19	15	20-23	14
24-26	13	27-29	12	30	11

N. E. S. 34

T. 40

R. 33



The first run through 34 (250 sq ft. line)
 is 80 steps short due to incorrect starting point, the
 stake being in the water and distance estimated

32200 675 N. 100 N. S. E. 27-45-33

201 A ledge of Greenstone conglomerate 90 x

202 45' faces. In places the conglomer.

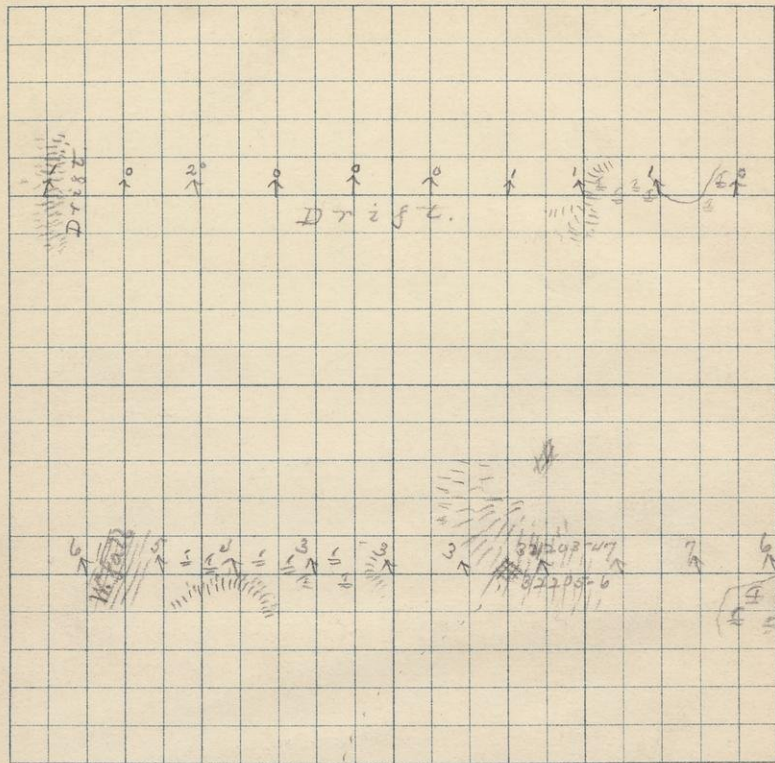
G.C. atic character is finely shown, the fragments ranging from nearly a foot in diameter to fine banded almost quartzite like phases.

The strike of these bands is 16° E of N. and the dip uniform to the West at an angle of 75° .

32202 Fragments from pebbles. Some of the fragments are from an amygdaloid and some show a concentric banding.

On the north line of Sec 34-45-33 8.00 steps west of the corner, is a large exposure of Conglomerate. The strike and dip taken in several places show the former about 5° E of N.

Dip 75° N. On the west side of this exposure a band very much more conglomeratic than the rest of the rock is exposed over a width of 20 or 50 ft.



Look at this outcrop

915 N. 1880 N. S. E. 34-45-33

Small ledge of Greenstone conglomerate
only a few yds. in extent

Strike 5° E of N. Dip 80° N.

712 N. 1528 N. S. E. 34-45-33

Greenstone congl. Strike 9° E of N.
Dip 80° to W.

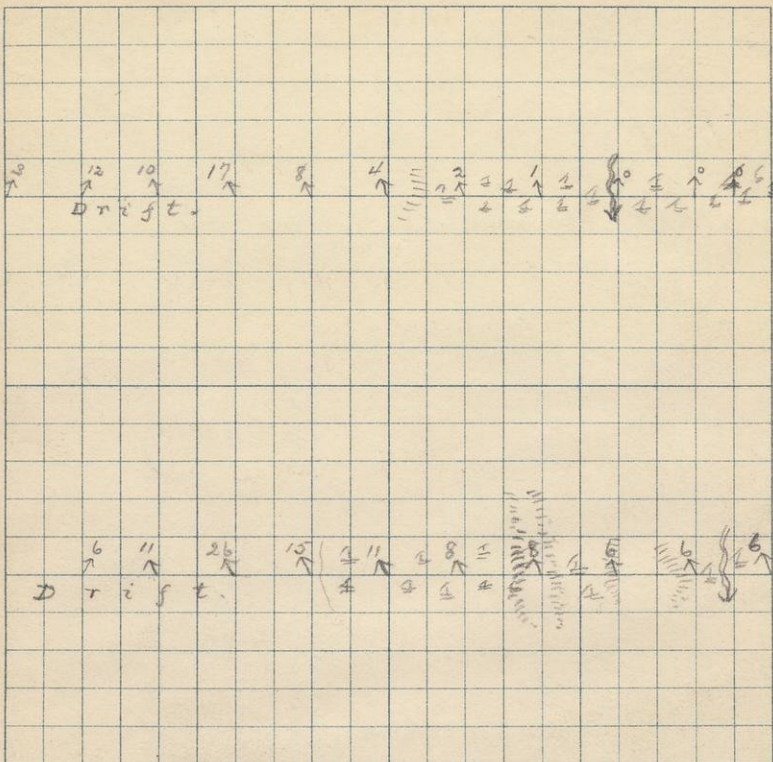
Banded pebbles were noted at this
point their weathered surface looking
much like the banding of the finer
phases of the congl.

1300 N. 1400 N. S. E. 34-45-33

A west facing ledge of congl. about
20 ft. long and 7 high. No strike
or dip could be determined.

32203 1300 N. 1256 N. S. E. 34-45-33

32204 A small exposure of conglomerate
G.C. with apparently a dike cutting
it. The exposure was very small
but where the junction was seen
it was sharply defined
specimens taken on either side
of junction



32205 About 18 inches from the junction
32206 " 12 " " " " "

13576

32207 1500 N. 1000 N. N.E. 34-45-33

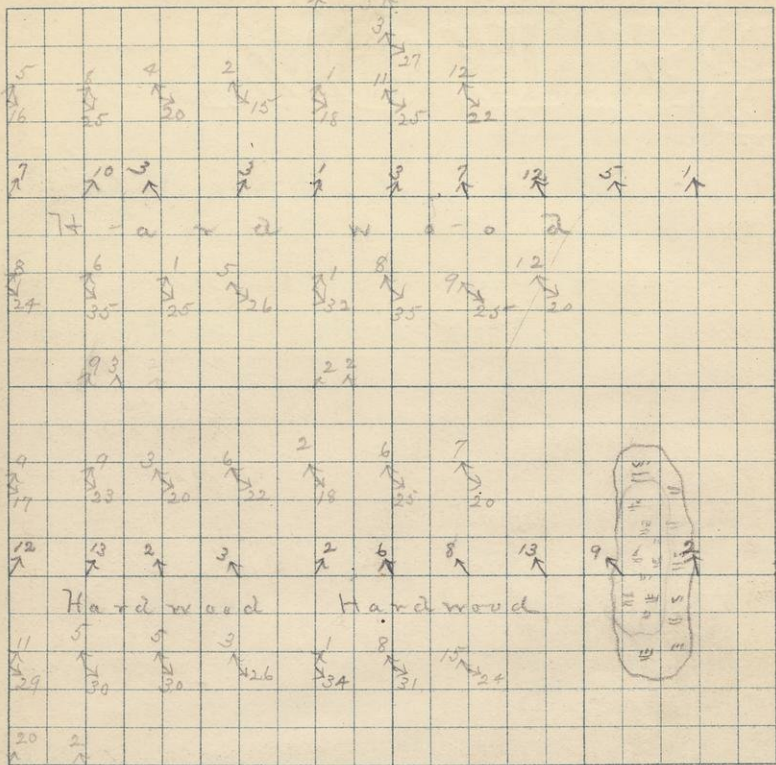
R.57. A slate and limestone about 60 steps wide and The red slate shown in 32207 is the most prominent rock and lies principally above the limestone (the dip is 80° N.) although a narrow band comparatively free from the limestone lies below the limestone

13577

32208 Lies to the west of these red slates and is about 30 steps wide This rock seems to form a junction with the slate something as shown in the sketch. Whether unconformable with the slate or a slight fault I cannot say. The distance covered is about 20 steps.



32209 The limestone appears to lie both
32210 in bands and in the shape of con-
Z. tions in the slate the great bulk of it lying near the base of the slate. The sketch on page 10 will show a generalized section; the



smaller cut shows a limestone fragment or concretion with the manner in which the slate beds surround it

32211 Near the base of the slates and below most of the limestone, The red slate as shown in 32207 shows in a narrow band below 32211

32212 A band in 32207 The alternation of the different slates and limestone are 30 steps ^{wide} at this point

These rocks probably belong in the Upper Huronian, as there is nothing approaching the Lower Huronian in this region

70 paces south the red slate shows to the west of the white shale and across a width of 30 steps. In the shale a squeezed ^{concretion} cutting diagonally across the slate

1350 ft. 50 N. D. E 34-45-33

The red slate and limestone show in a small exposure

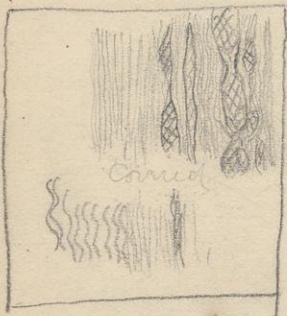
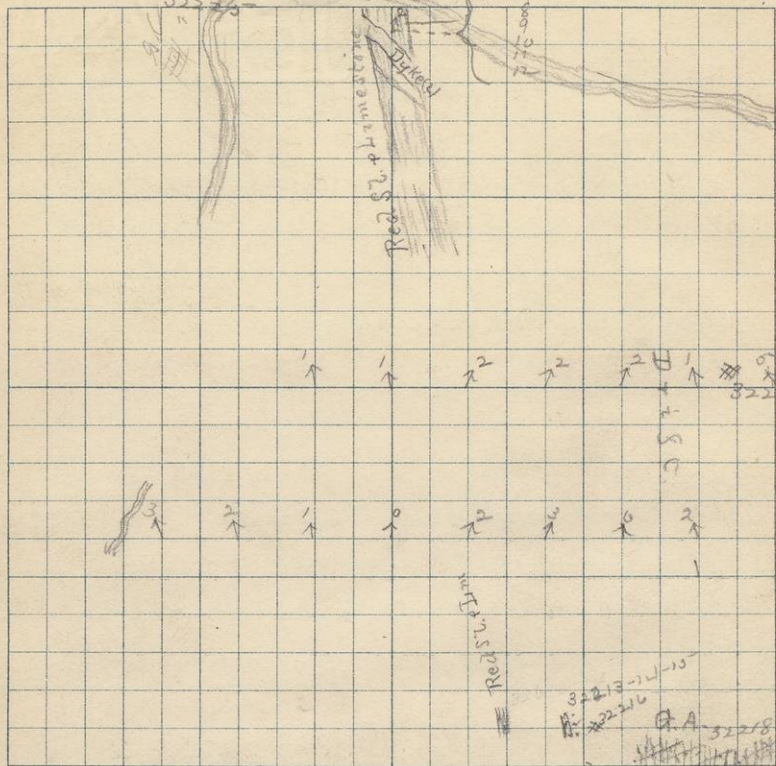
S. 21

N. 60 W

S. 3

T. 45

R. 33



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60

32213-1270 N. 50 N. S. E. 84-40-33

32214 A low ledge of conglomerate, dipping
 C. 50 to 60 N. (?) I do not think a true
 conglomerate, the pebbles are mostly
 well rounded and apparently water-
 worn and of several different kinds
 In many of them, a concentric
 structure similar to that seen
 in a ledge near the center of N. N. 1/2
 of 34 (See Maurer's notes)



Sketch shows one of these pebbles
 about 3 inches in length

32215 Pebbles from this conglomerate

32216 20 steps east of 32213-14

G.C. Small ledge very much shattered
 and broken

32217 700 N. 1330 N. S. E. 3-44-33

G.C. A ledge about 60 ft. across of
 greenstone breccia. The ledge
 forms a N. slope the North point
 of a N. S. ridge that rises about
 20 ft above the surface to the east

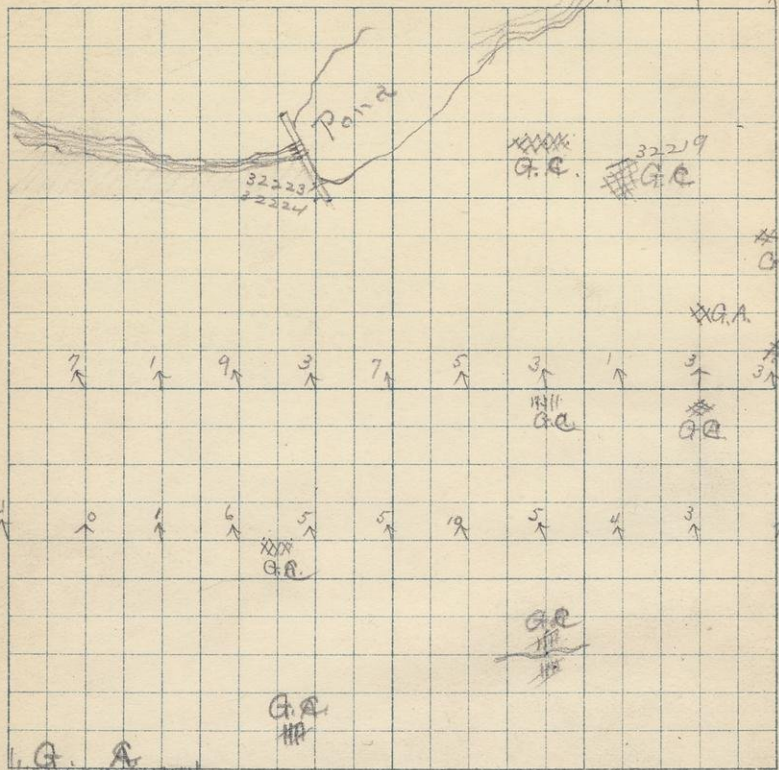
12
S. 2

S. 34

T. 45

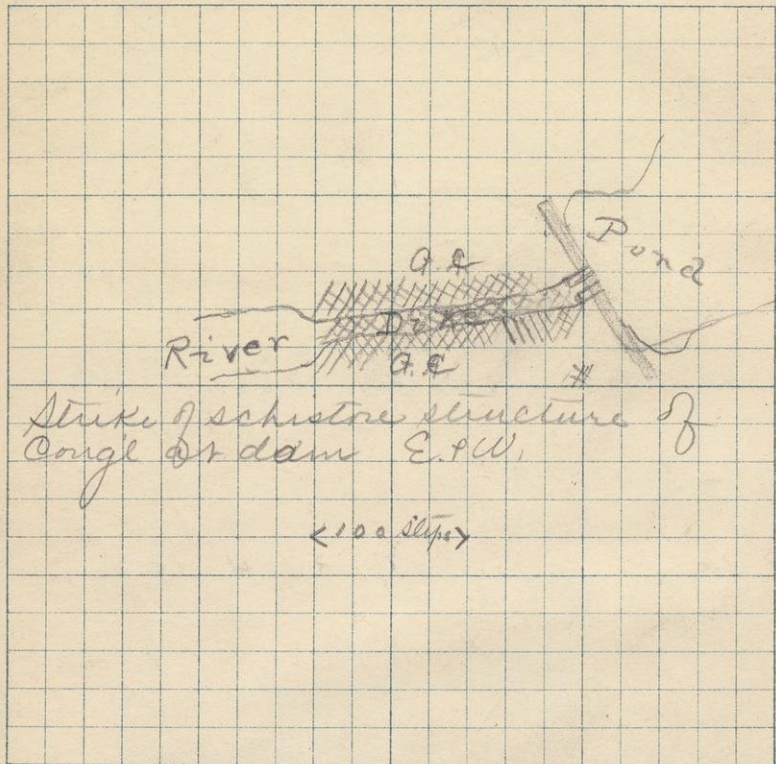
R. 33

11 2 2

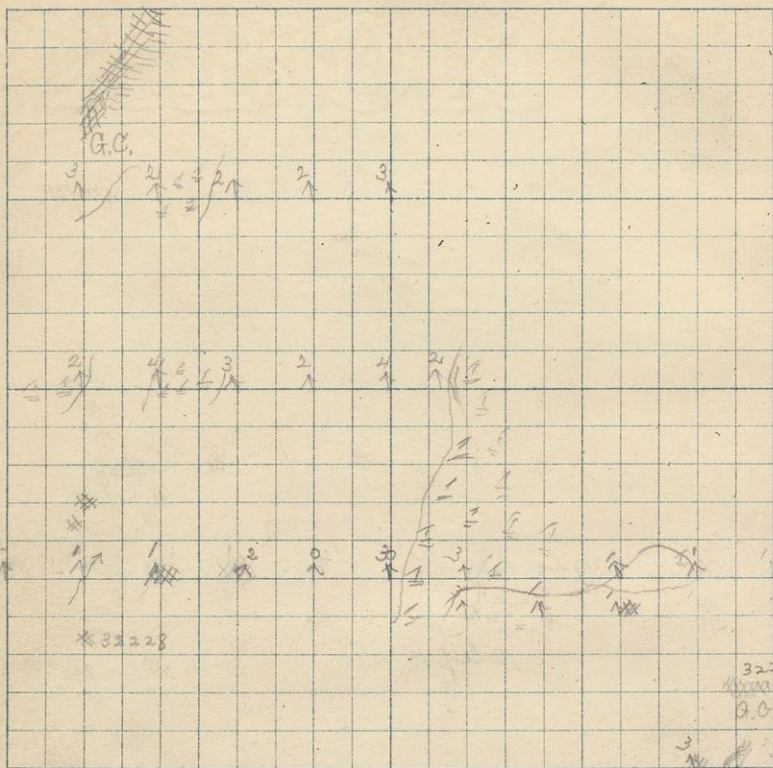


300 ft. 480 ft. S. E. 34-45-33

- ✓ A ledge of greenstone congl.; The strike is N. 14° W. Dip I am not sure of but think it is high to the East (80°)



- 32218 40 N. 1080 ft. N. E. 34-45-33
 G.C. - a large ledge of Greenstone congl
 facing north ~~and~~ The ledge runs
 E. & W. about 150 ft.
 Not sure of strike & dip.
 This ledge is practically continuous
 to 250 east of $\frac{1}{2}$ post and the dip
 I think is high to the west
 625 W. 50 N. small ledge of G.C.
 from this point to 300 E and 190 N.
 the G.C. is exposed almost continuously
- 32219 200 ft. 775 N. S. E. 34-45-33
 G.C. Large ledge of G.C. Could not
 determine the strike or dip of any
 of the ledges in this part of the section
- 32220 1060 ft. 520 N. S. E. 34-45-33
 G.C. a small ledge of G.C. Spec. shows
 peculiar weathering
- 32221 1250 ft. 600 ft. S. E. 34-45-33
 G.C. A finer phase of these congl. laterals -
 exposure is small only a few feet in extent



32

32

32

32

G

32222 1040 N. 700 ft. S. E. 34-45-33

G. A dike about 8" wide running N. 28° W.
The walls are irregular but sharply
defined. Unless the strike of these
Agglomerates has changed within
a $\frac{1}{4}$ of a mile the dike cuts diagonally
across them

32223 From a dike about 40 ft wide running

G. from the lower dam (Sec 34-45-33)
N. 5° S. for a distance of 150 to 200 steps
It forms the bed of the river
The Agglomerate shows a fine strike
and dip on the south side of the
stream 50 steps below the dam
Strike N. 32° E. Dip 70° E.

32224 From dike at contact

32225 1000 N. 1700 ft. S. E. 34-45-33

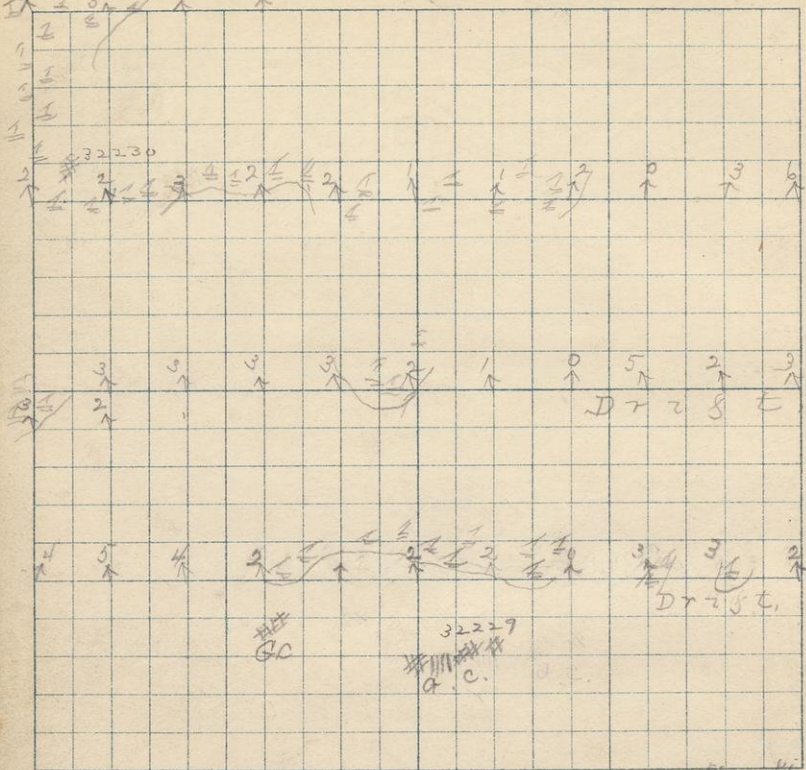
G.C. A large ledge 200 steps west of
the limestone and slate.

The rock is badly broken up showing
the effect of squeezing from I think
two directions. The rock looks
like a graywacke and on a small
fracture breaks like one; the ledge

S. 22

T. 45

R. 83



G.C.

32229
G.C.

G.C.

32

32

32

32

32

on the whole however looks much more like a greenstone or green schist

32226 110 N. 1960 W. S. E. 22-45-33

32227 A ledge of Greenstone congl. This

Be. rock is somewhat different than
 ✓ the Greenstone Congl. seen further
 to the south. The fragments are
 very numerous and are all a feldspn
 porphyry. The cement itself looks
 porphyritic.

210 N. 200 W. S. E. 22-45-33

✓ like 32226-27

250 N. 770 W. S. E. 22-45-33

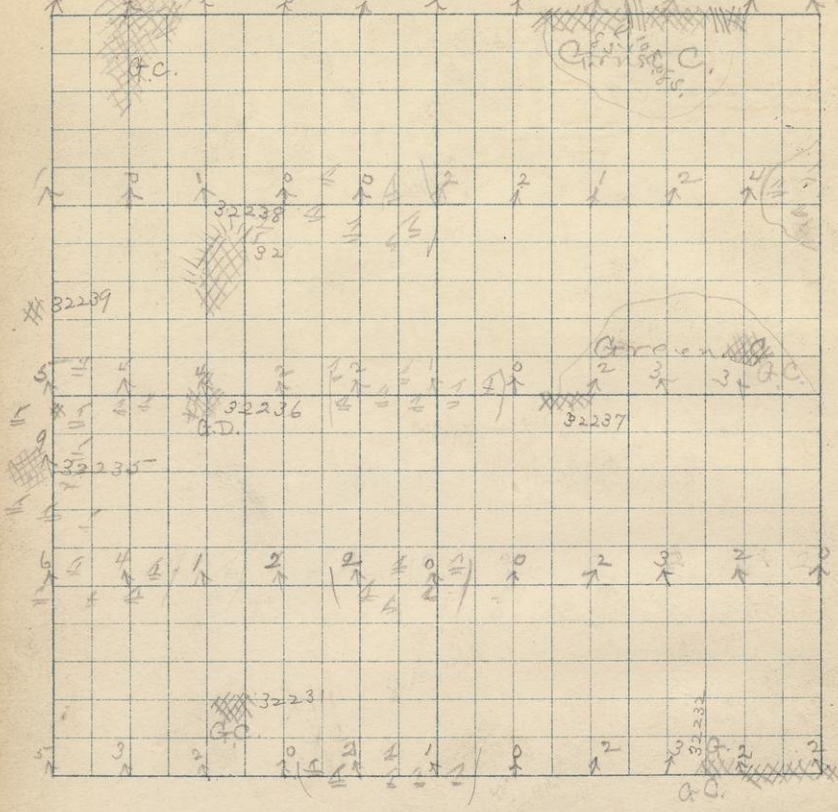
✓ A large ledge of Greenstone congl. exactly
 like that in Sec. 34-45-33

The rock is too massive to show structure
 All these congl. have been badly squeezed
 and the pebbles are nearly all elongated

32228 900 N. 175 W. S. E. 22-45-33

Q. Sp. A small ledge of massive rock, that
 shows spheroidal parting
 nicely. None of the finer

N. 26 1/4 S. 22 T. 45. R. 33



material seen like the other greenstone
congl's are to be seen in this exposure

32229 1500 N. 1500 N. S. E. 22-45-33

GC. From a large ledge of Greenstone
congl. strike N. 5 E. Dip 75%.
Practically one ledge from 1400 W.
1500 N. to 1525 N. 1500 N.

32230 1960 N. 780 N. S. E. 22-45-33

GC. A ledge of Greenstone congl. in
swamp; the fragments in this rock
are more angular and not so
plenty as in much of this congl.

32231 1075 N. ^{7 (12)} 1350 W. S. E. 22-45-33

GC. I could not determine whether
the specimen was from a disk
or not

32232 1160 N. 1000 N. S. E. 22-45-33

GC. Small outcrop of Greenstone congl

32234 1485 N. 700 N. S. E. 22-45-33

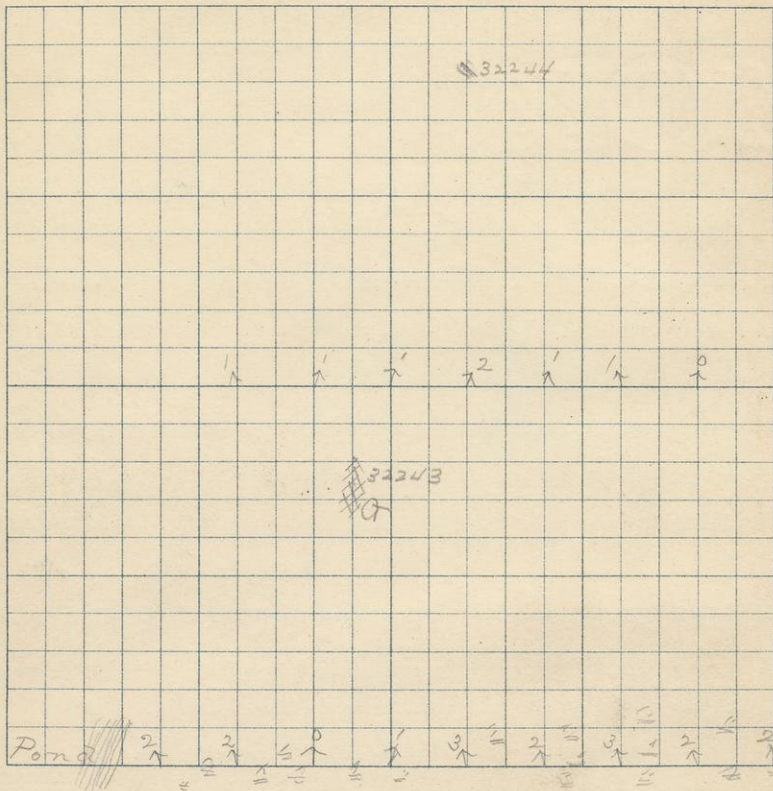
A small ledge of green schist. The schistose structure runs S. E. & N. W. and the dip is 80 E. The rock shows an amygdaloidal structure in places on the surface. On breaking the cavities are found to be filled with carbonate of iron which has weathered to an oxide near the surface, and on the surface has been removed leaving the cavities and amygdaloids look

32235 2025 N. 1400 N. S. E. 22-45-33

G.S.F. A large ledge of black slate carrying considerable iron carbonate.

The exposure is badly shaltered, the rock breaking in two directions easily, the rock is covered and I could not see a large surface. The dip I think is about vertical. Strike N. & S. (?) The rock is magnetic slightly.

The same rock shows again 1475 N. 1980 E. Probably a fine grained phase of the Greenstone ash or congl.



Move all locations on south line Sec. 23
100 paces east

32236 1830 N. 1500 N. S. E. 22-45-33

G.C. a large ridge of greenstone (Diorite?)
 The rock is jointed badly. It carries
 crystals of carbonate some of which
 at least are carbonate of iron.
 The Greenstone congl shows only a few slips
 east

32237 1500 N. 1360 N. S. E. 22-45-33

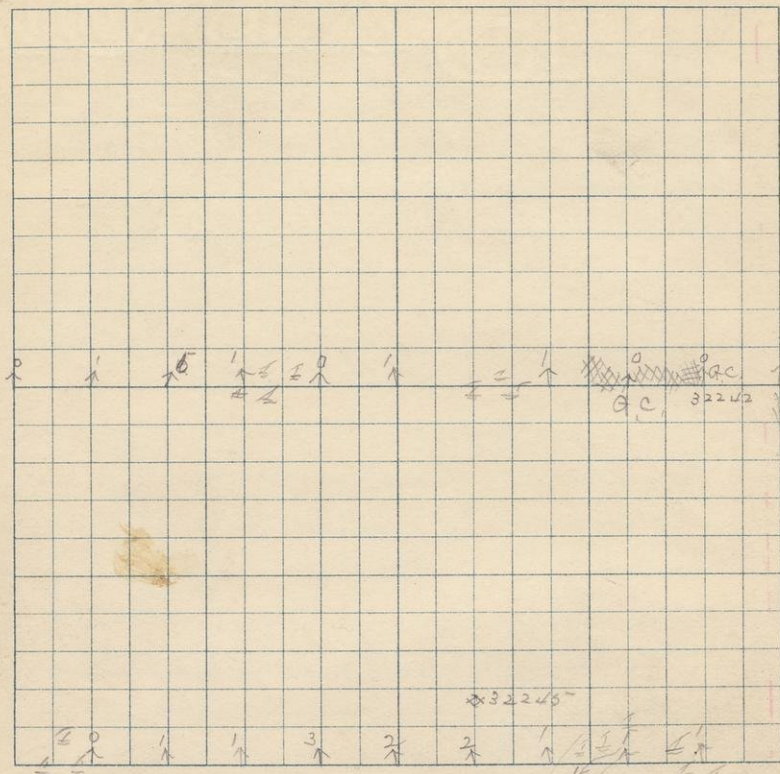
G.C. I think this rock belongs with
 the Greenstone congl although no
 pebbles were to be seen here. The exposure
 is covered. The same rock is exposed
 for 50 steps to the east, and I am
 not sure but it continues east to
 the edge of the valley where such large
 exposures of the congl are to be seen

32238 1800 N. 1750 N. S. E. 22-45-33

G.C. A large ridge running N. & S.
 The rock belongs with the Greenstone
 congl. I think

32239 1620 N. 50 N. S. E. 21-45-33

G.C. Exactly like the rock found about 250
 steps S. Spec. shows the way the rock breaks



Move all locations on south line Sec. 23 - 100
steps East.

32240 1030 N. 1623 W. S. E. 34-45-33
 Very similar to the schist supposed
 to be a dyke in the red slate and
 limestone. The strike of the schistose
 structure runs 30° S. of E.

32241 410 N. 1930 W. S. E. 24-45-33
 G.C. a small ledge of typical Greenstone
 Congl; could not get strike or dip

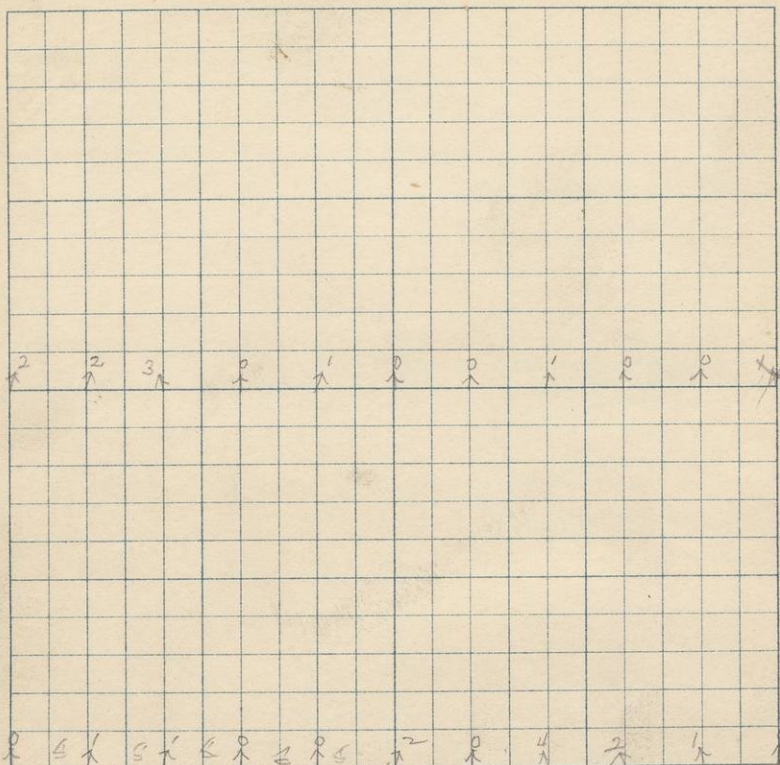
32242 500 N. 100 W. S. E. 23-45-33
 G.C. Greenstone congl

32243 1540 N. 370 W. S. E. 23-45-33
 A large ledge of *terra maris*
 greenstone, and more like some lying
 just west of the river near the center of
 the section (N. & S.) south east. The rock
 breaks much more like a massive
 greenstone than does the G.C.

N. 1/4 S. 23

T. 45

R. 33



32244
G.C.

322

G

322

G

322

G

322

G

32244 1400 ft. 925 ft. N. E. 23-45-33

G.C. Large ledge of Greenstone congl.
The strike N. 25 ft. Dip about vertical
(rather very reliable)

32245 400 ft. 85 ft. N. E. 23-45-33

G.C. Greenstone, fine grained massive
ledge about 30 steps wide

32246 1200 ft. 80 ft. N. E. 23-45-33

G.C. A more massive phase of these Greenstone
and congl.; the rocks are so badly covered
here that they cannot be well examined.

32247 100 ft. 20 ft. N. E. 15-45-33

G.C. A large ledge of Greenstone schist

The rock seems to be only a finer
phase of the Greenstone congl.
Both the weathered surface and
fresh surfaces show numberless
glistening particles which are in
part a carbonate.

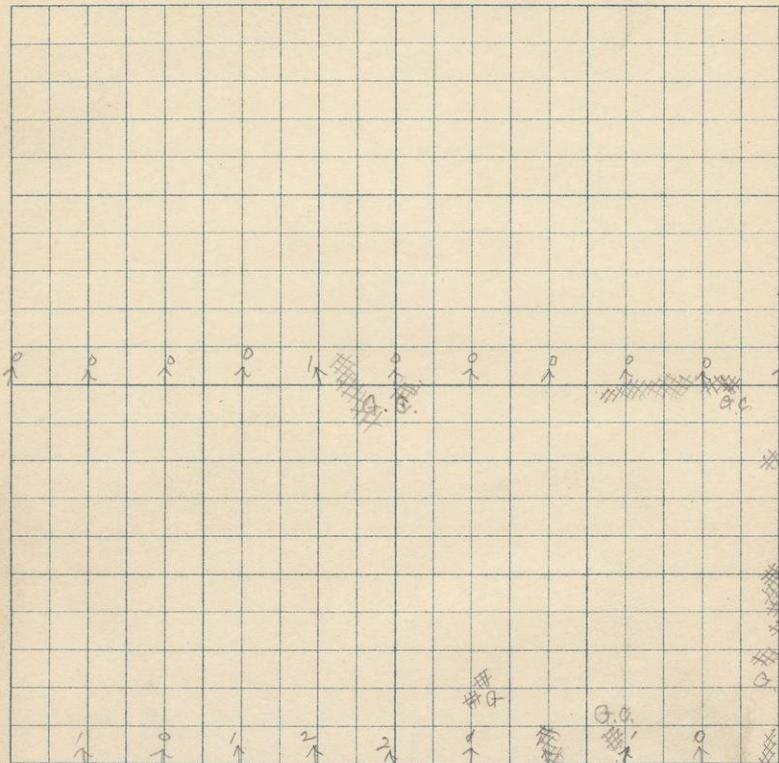
30

N.E. 1/4

S. 23

T. 45

R. 93



like 32246

like 32246 32246

G.C. G.C.

G.C.

322

G

322

G

322

32248 700 N. 00 W. S. E. 14-45-33.

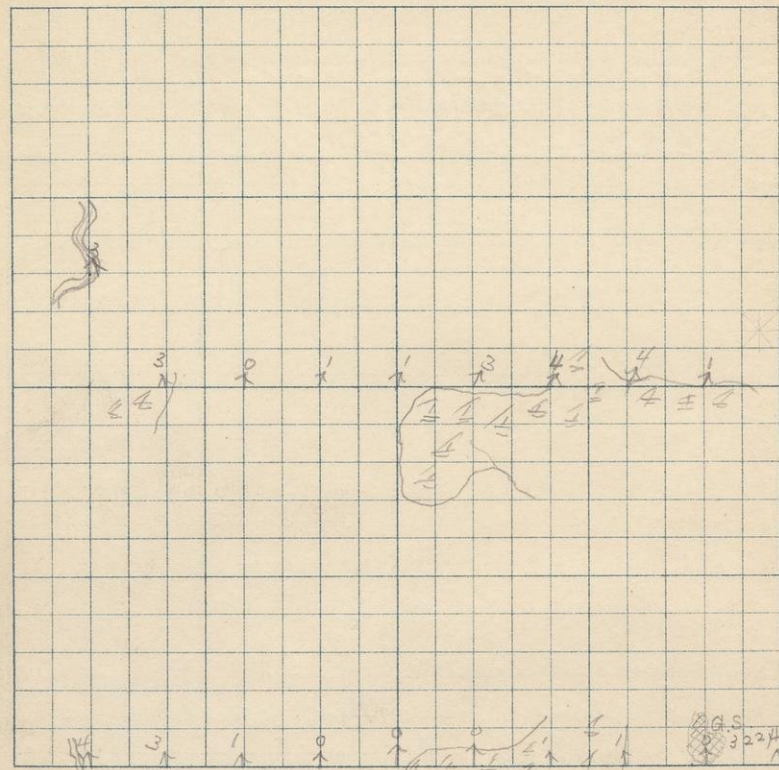
Q.C. A low ledge of very firm greenstone
congl. This rock is very similar
to that found along the east
line sec. 22 and also about
500 paces west of that line and
1000 North

32249 1000 N. 50 W. S. E. 14-45-33

Q.C. A low ledge of greenstone. The rock
is all covered.

32250 2000 N. 200 W. S. E. 15-45-33.

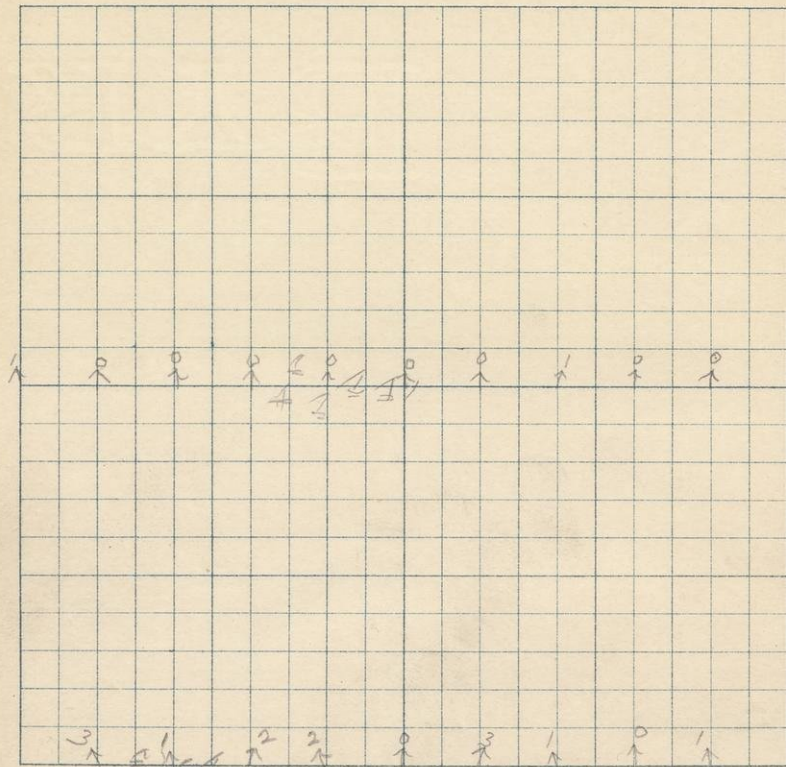
Small ledge of green schist
Strike 27° S of E. Dip 85° N. firm
No sign of any carbonates were
found here



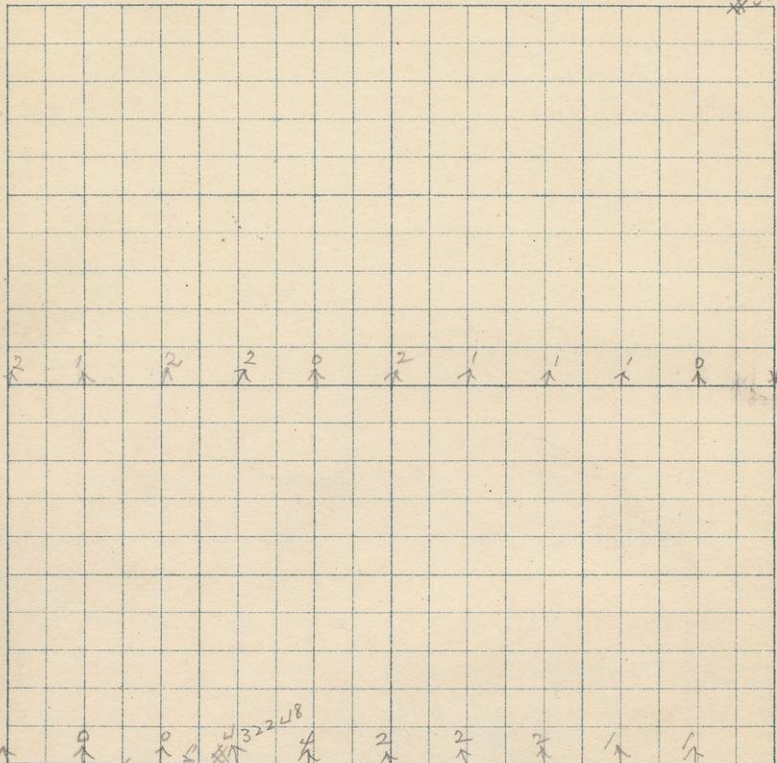
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33-43

Skipped



*32249



6

G.C.

32248

M. E. 1/4

S. 15

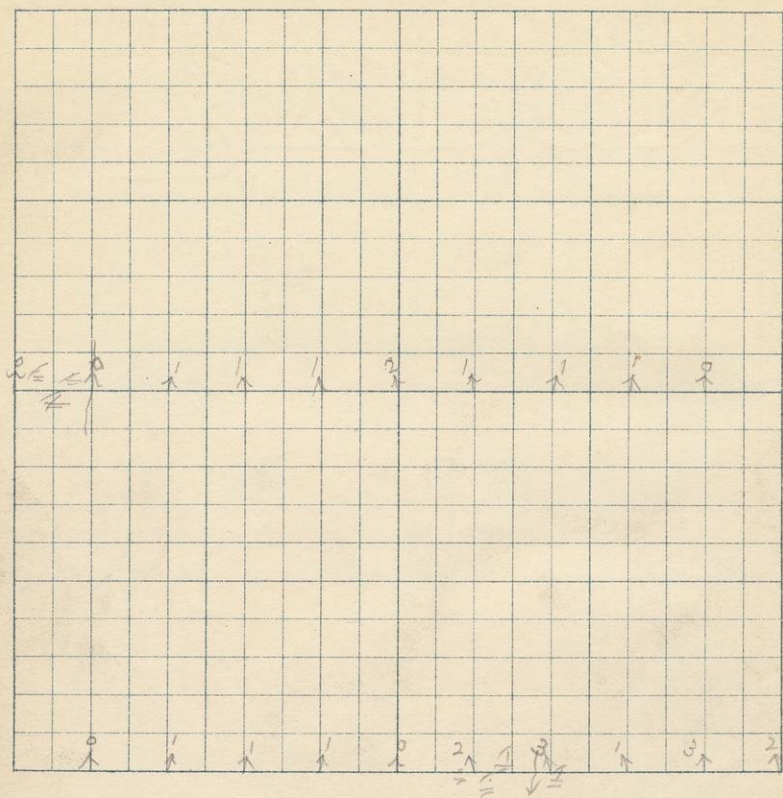
T. 45

R. 33

~~1285~~
 G.S. S. 27 E.

~~POINT~~
 2 3 3 3 3 3 3

2 1 0 1 1 1 1 1 2 1 0



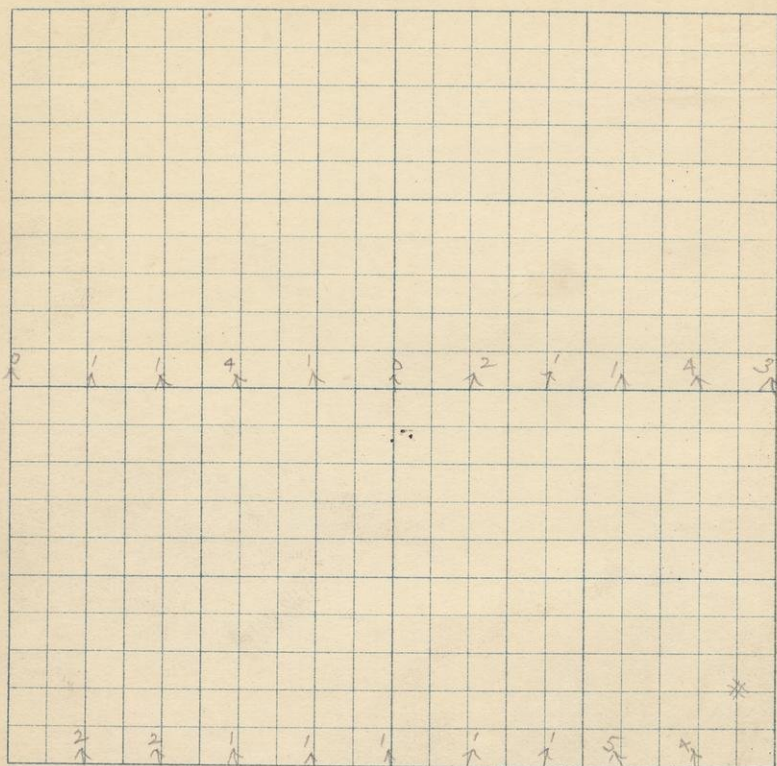
42

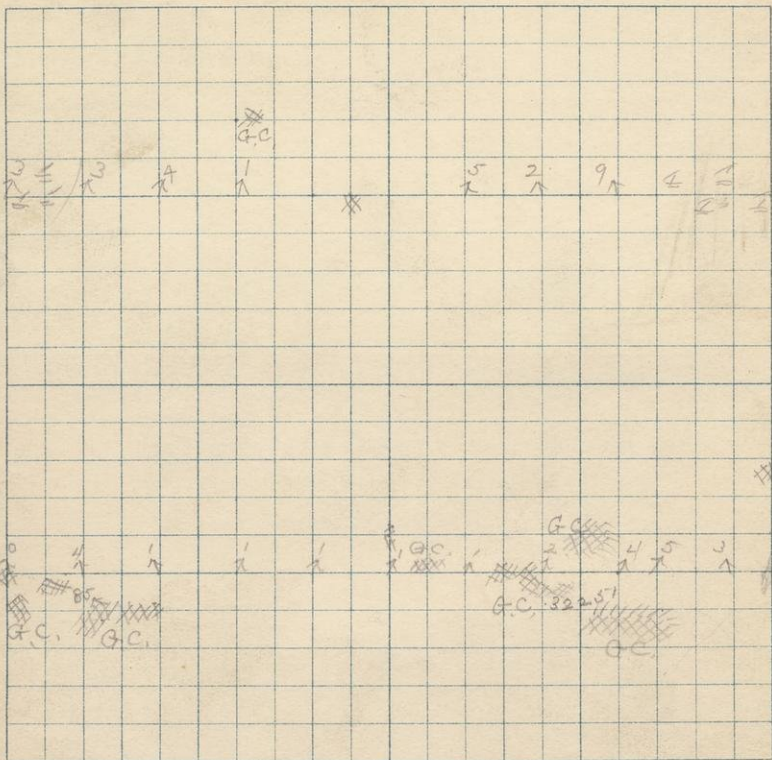
N.E.

S. 14

T. 45

R. 33





322
G.C.

322
G

322505

322
A

32
32
G.

32251 1300 N. 2300 N. S. E. 15-45-33

G.C.F. A phase of the Greenstone schists carrying iron carbonate. Only a small amount of the carbonate is shown at this place, but is almost the pure siderite.

32252 400 N. 750 N. S. E. 16-45-33

G.C. a large ledge in side of Knob rising 25 ft above swamp. Saw no fragments but think it belongs with the greenstone conglts

32253 About 60 ft east of 32252; It looks

G.C. like a dike but could not get a contact. Just east of this rock the congl shows carrying pebbles.

32254 1380 N. 1000 N. S. E. 15-45-33

32255 @ low ledge of green schist exactly

G.S.F. like 32254

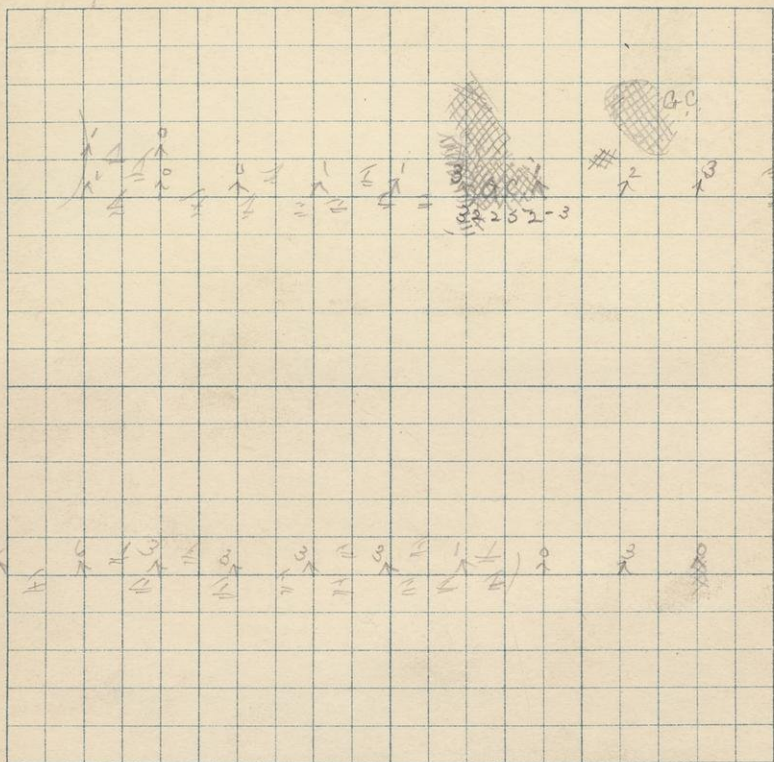
Strike N. 30 W. Dip about vertical

S. E 1/4

S. 16

T. 45

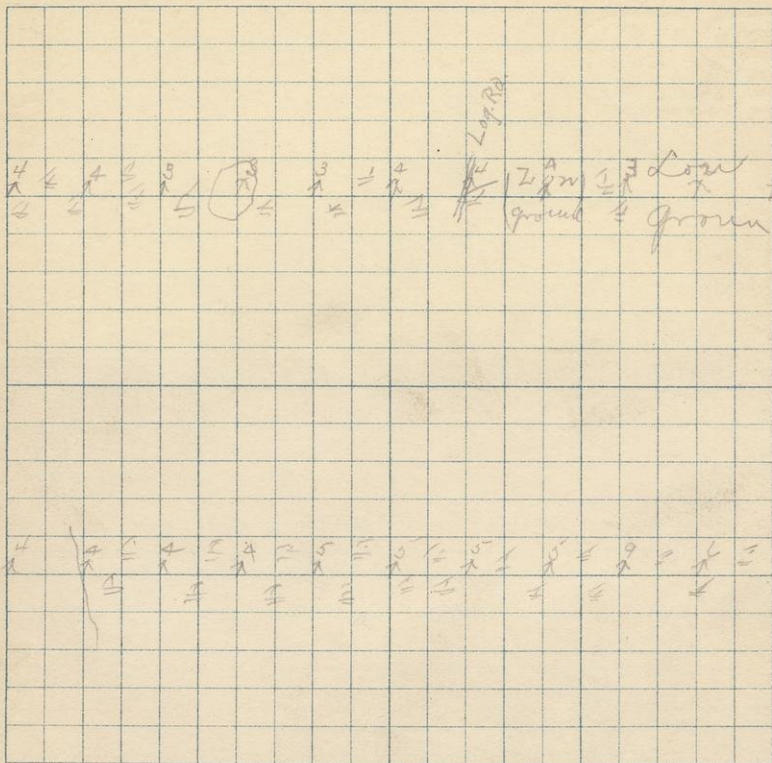
R. 33

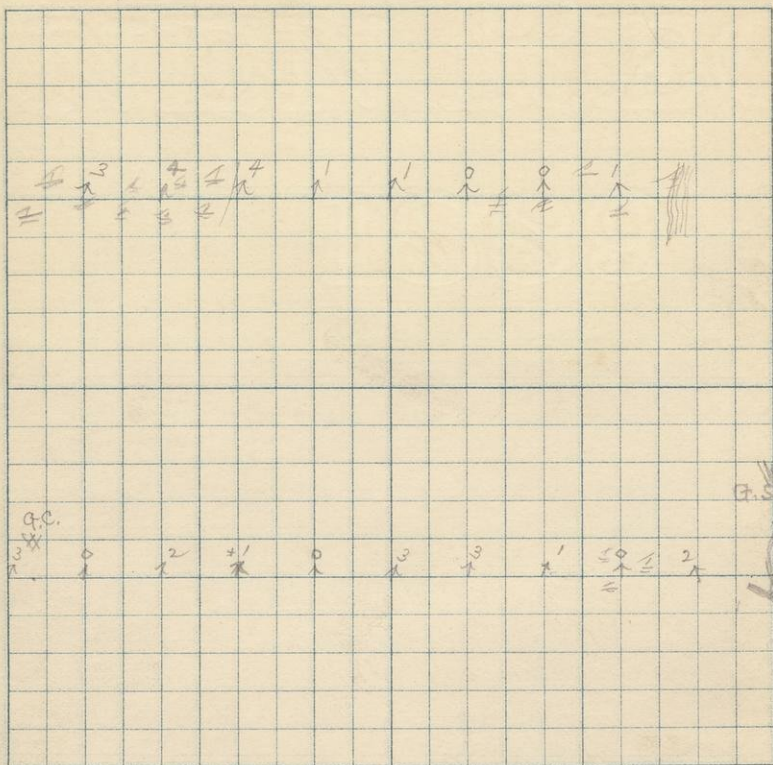


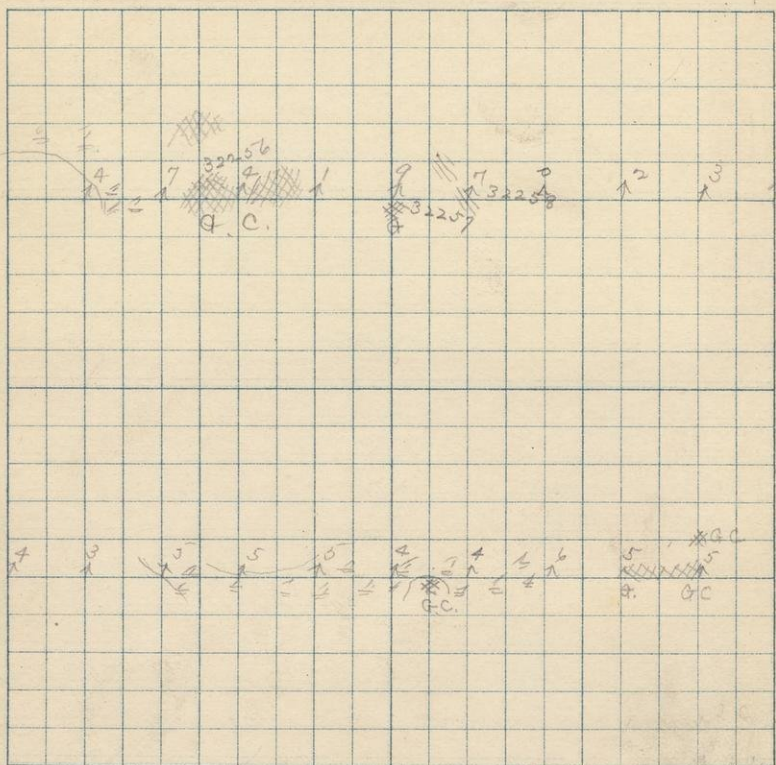
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47-51

Skipped







32256 750 N. 1750 N. S. E. 16-45-33

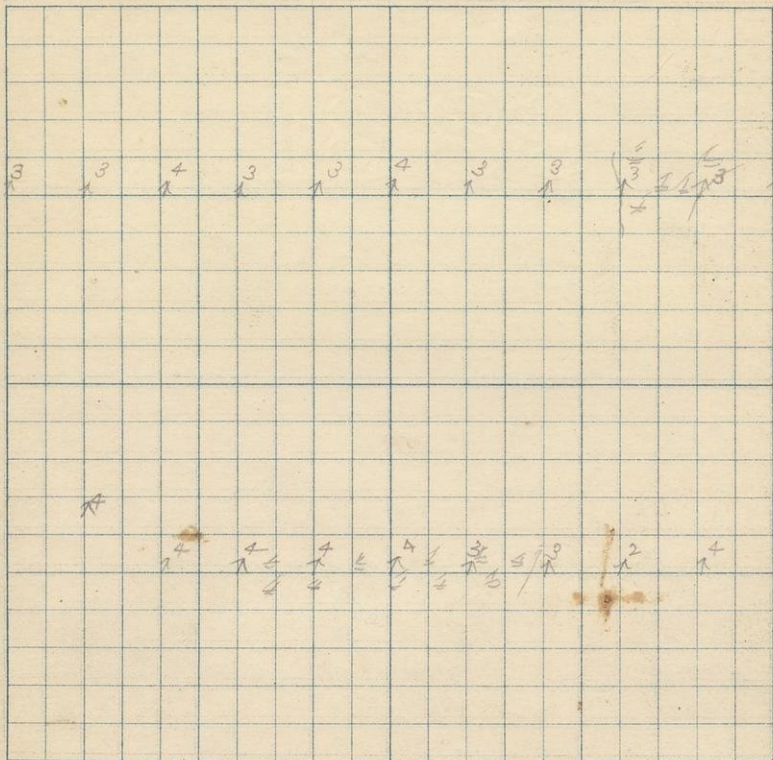
G.C. Large ledge of typical greenstone
conglomerate

32257 500 N. 1740 N. S. E. 16-45-33

G. A low ledge of massive greenstone
showing no schistose structure
This is the first typical greenstone
I have seen that shows no signs
of pressure

32258 400 N. 1760 N. S. E. 16-45-33

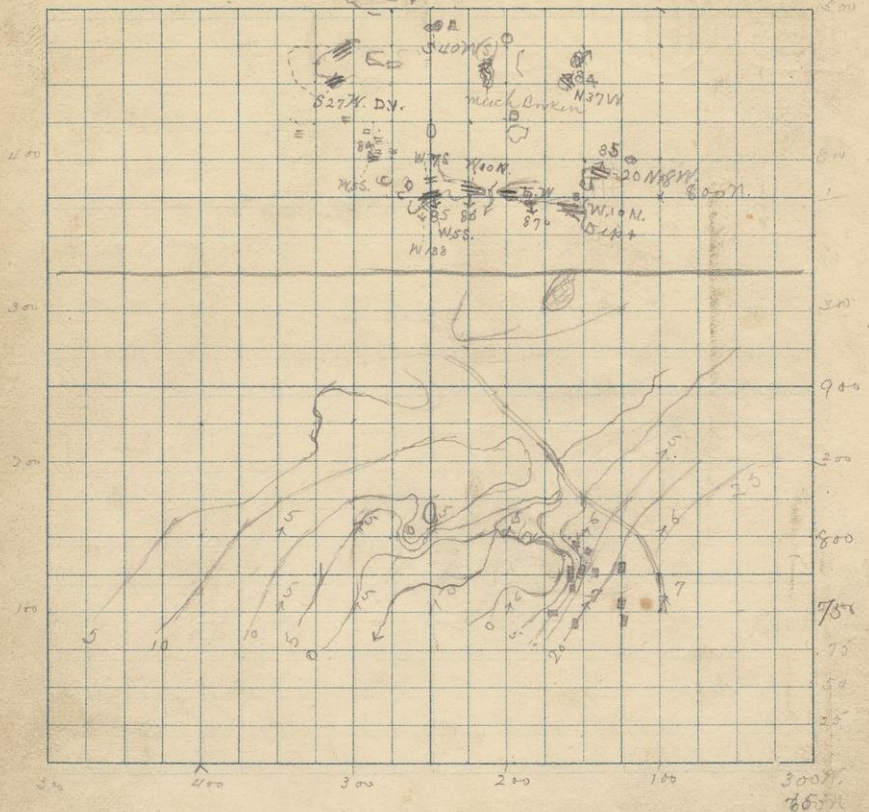
a ledge of ferri-greenstone schist
showing across a width of 40 or 50
steps The same rock shows
also 430 W. 1800 N.



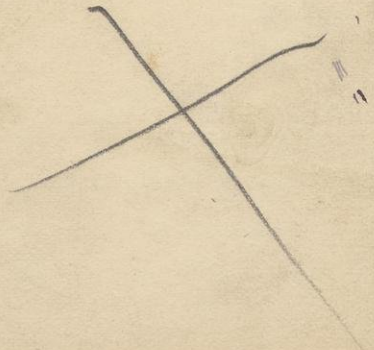
S.

T.

R.



172
C



Test Pits in sand

240 ft. 780 ft.

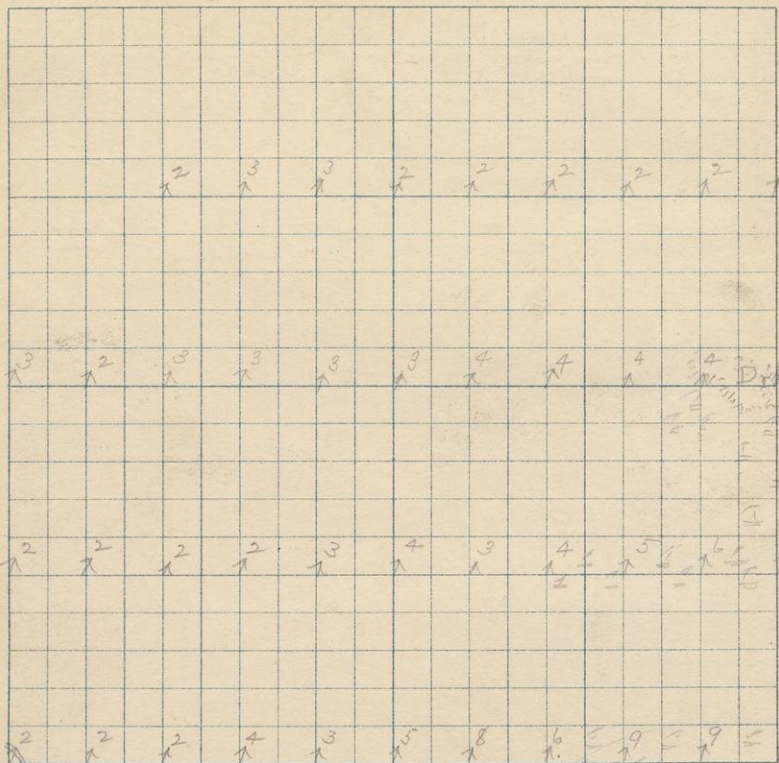
260 ft. 805 ft.

30 ft. 820 ft.

The extreme S. N. exposures of this chert are badly broken up; in places being crushed to a fine breccia.

32359 The four test pits just south of
 C.R. 450 W and 800 N of S. E. of Sec 20-45 33
 are bottomed in a conglomerate made
 up apparently of broken fragments
 of the cherty rocks lying a few feet
 to the north and cemented by
 oxide of iron. South of these
 pits others have been sunk but
 none are bottomed in rock.

The cherts themselves show to
 be much broken especially along
 the south and central portions
 of the area in places being
 crushed to a fine breccia
 Very little bright jasper is seen
 most of it being near the north
 edge of the ~~rock~~ area, which
 is also perhaps a little more



Road

1000 N. 315 W. D. E. 20-45-33

Angular fragments of chert and
jasper. A large quantity of secondary
chert

ferruginous

32260 Unsettled along the south side
61 of the cherts, and shows all the
62 different phases except the brecciated
one

32263 Near the center of the area

32264 Near the east edge and a little
north of the center

The chert greatly predominates
over all the other bands

(See map for location and dip and
strike of rocks)

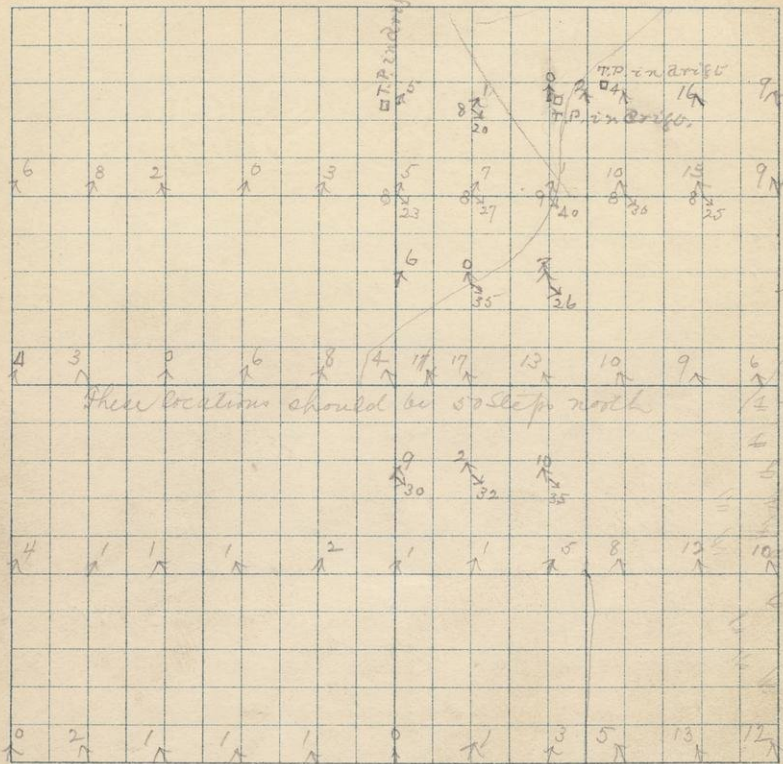
A large proportion of the chert
is secondary

M. E. 1/4

S. 29

T. 45

R. 33



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61-71

Skipped

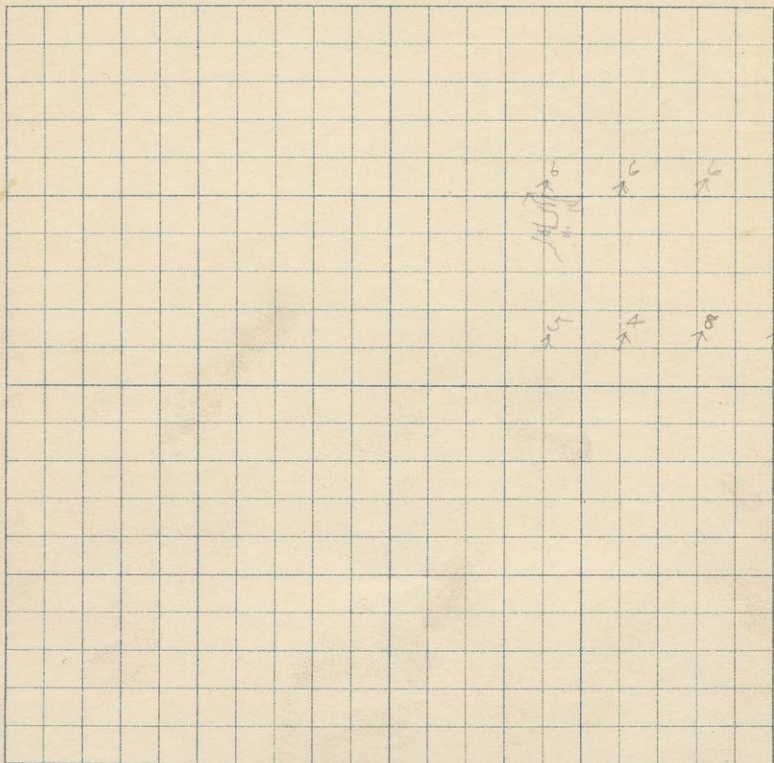
62

N. 21. 1/4

S. 29

T. 40

R. 33

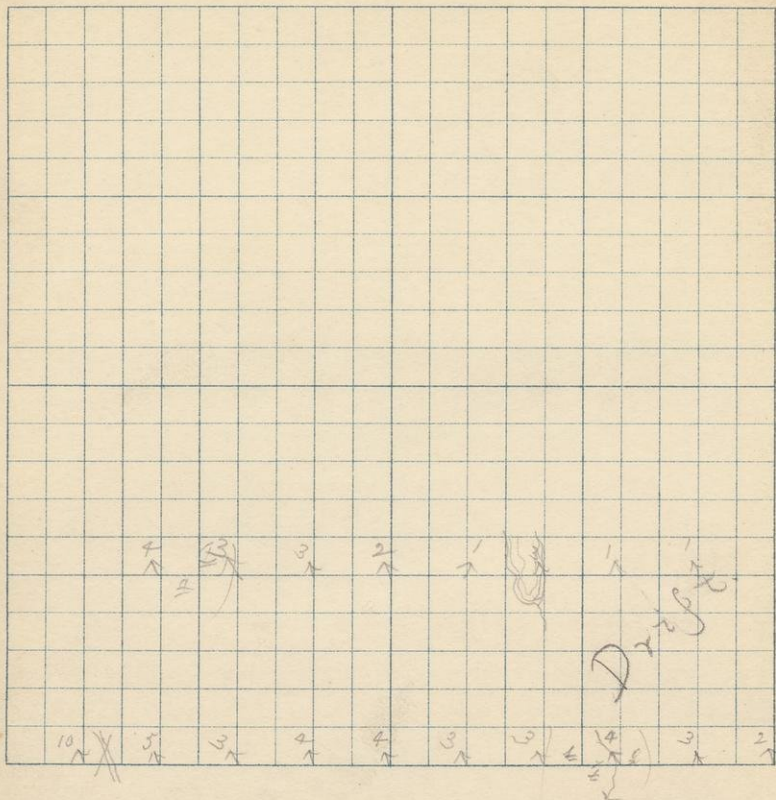


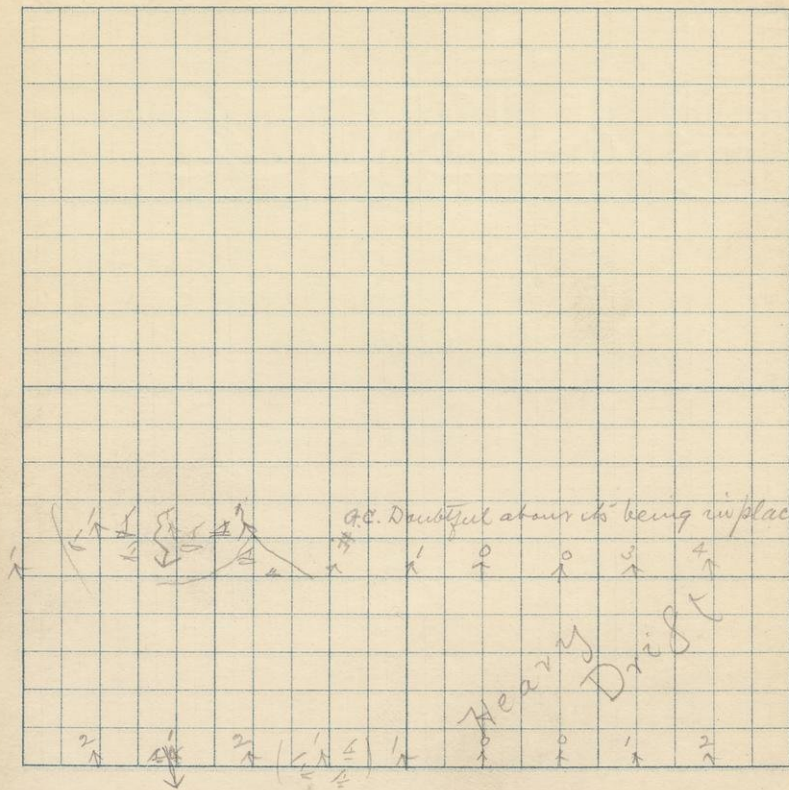
N. 26, 28

S. 28

T. 45

R. 33



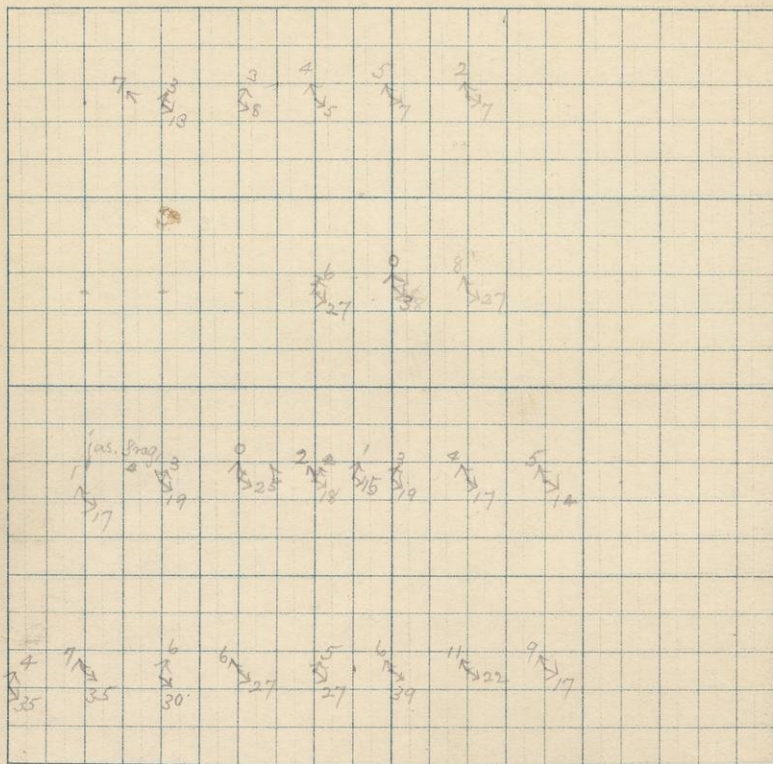


S. 21. 1/4

S. 28

T. 45

R. 33



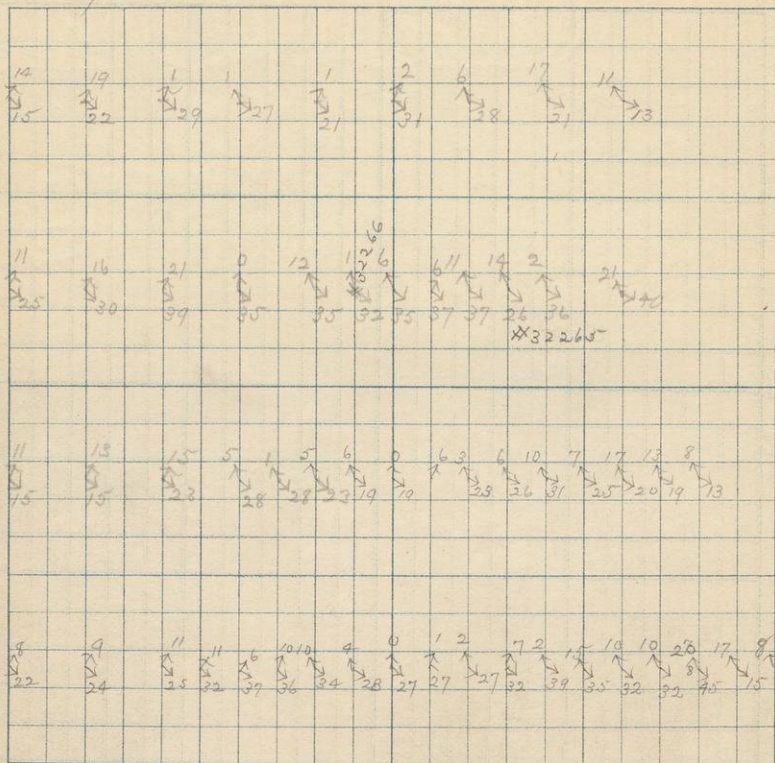
72

S. 21 1/4

S. 33

T. 45

R. 33



8

9

32265 575 N. 1340 N. S. E. 33-45-33

G.A.

A ledge of fine grained, black
 eruptive. In places the rock has
 a scoriaceous appearance grading into
 angles of small amygdaloidal cavities.
 The rock is magnetic.

32266 1550 N. 625 N. S. E. 33-45-33

G

A ledge of greenstone. It may not
 be in place but from the large
 masses and fragments at this point
 it would seem to be in place.
 It looks and breaks like a newer
 eruption.

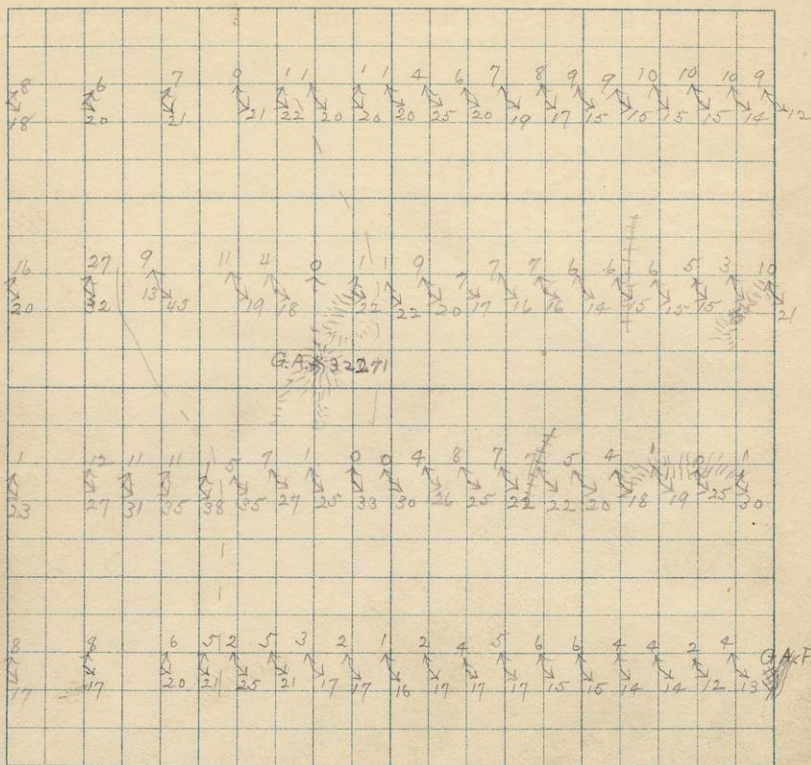
74

N. 7. 1/4

S. 4

T. 44

R. 33

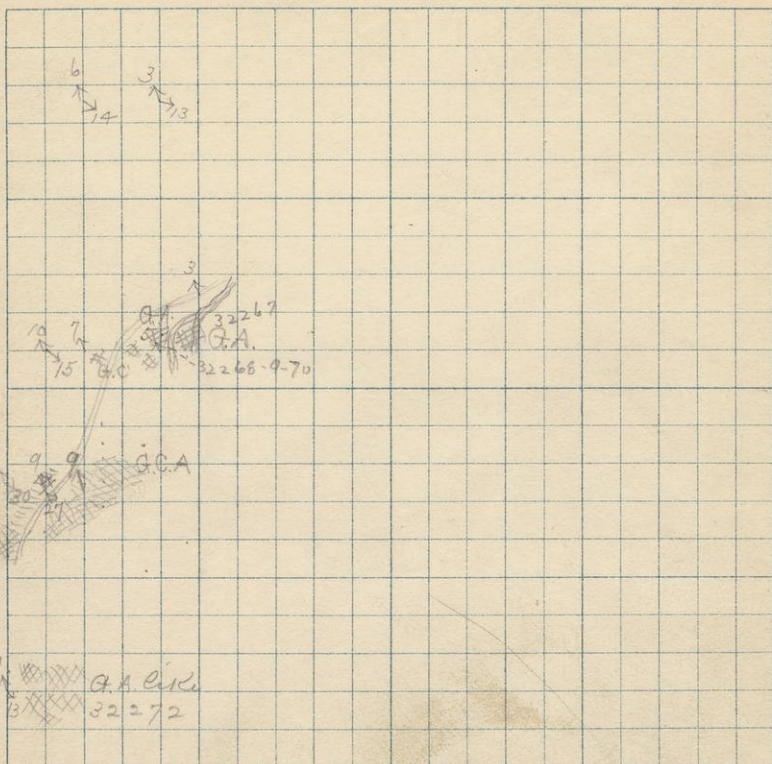


76

N.E. 1/4 S. 4~~X~~

T. 4~~A~~

R. 33



32

G

32

32

32

32

32

32

G

32267 1575 N. 750 W. S. E. 4-44-33

G.A. An amygdaloid from a large exposure east side of Hemlock Riv. The rock is scoriaceous in places, and again the amygdules are well marked; the filling is rarely epidote, calcite, carbonate of iron and rarely quartz.

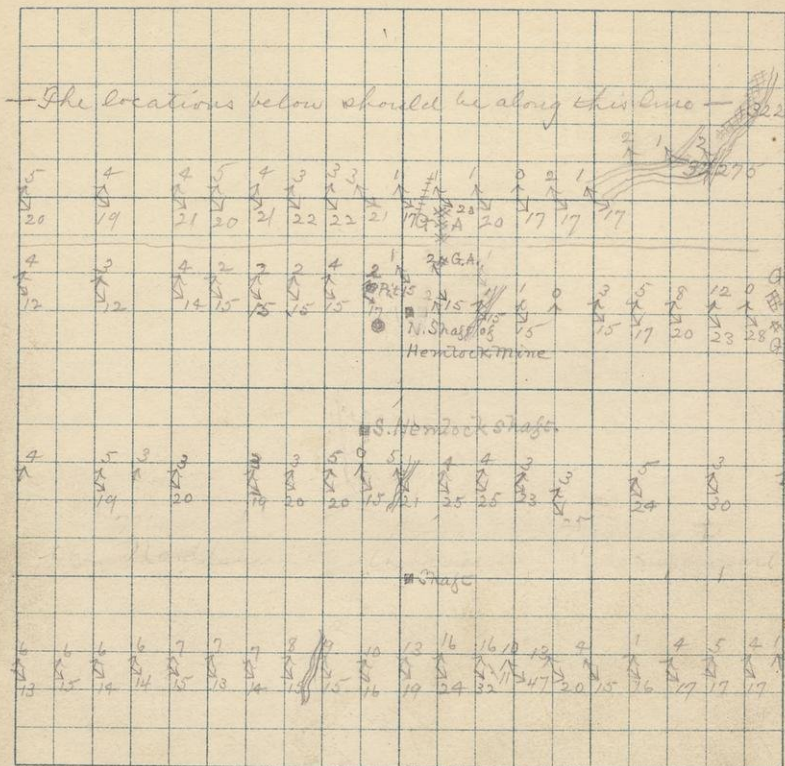
(32268) From the west bank of the Hemlock
 (32269) 500 feet west of 32267, The exposure
 32270) here shows about the same state
 of things as above except there is
 more siderite and oxide of iron
 This rock includes small patches or
 fragments of a red jasper.

32271 1600 N. 1550 N. S. E. 4-44-33

G.A. An exposure of Amygdaloid in N. N. face of high knob. The amygdules are filled more with quartz than any yet seen

1550 N. 900 W. S. E. 4-44-33

Greenstone congl. The rock shows to be a flowage breccia with a peculiarropy structure. It is also



N. Hancock shaft 50 ft. up for each

amygdaloidal in places

32272 137571.900th. S E, 4-4-33

G.B. Greenstone breccia, amygdaloidal,
The brecciated appearance is due
mainly to flowage, the rock having
aropy structure similar to that
mentioned above. Near this joint
is a rock weathering with a fine
spheroidal surface, whether it is
a debris or a portion of this flow I
am unable to say.

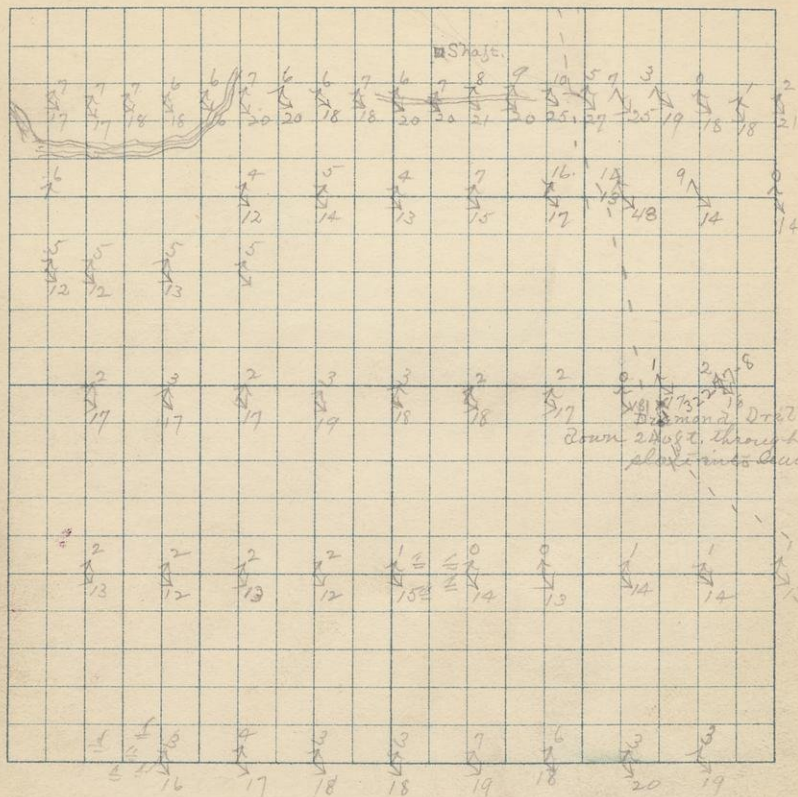
32273 Shows this rock with weathered
surface

32274

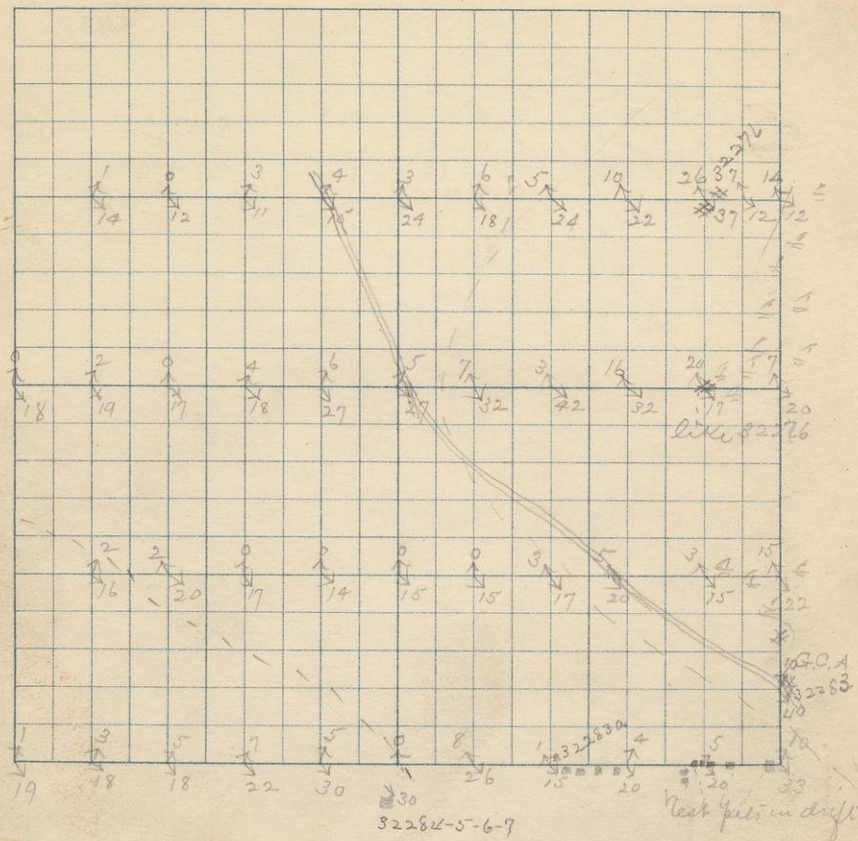
L. A massive layer of ferru. limestone
with these massive portions is a
mass shaly rock very ^{calcareous} carbonaceous
They appear to be inter banded and
to strike about S.W.

32275 From the road 100 steps S.W. of 32275

L. a gray ferruginous limestone, the
larger portion of the massive limestone
of this exposure are of this



nature



32276 100 N. 1750 N. S. E. 9-44-33

G.A. A fine grained eruptive, looking
 on a fracture in places like a
 black slate. It belongs with
 the greenstone congl's carrying
 fragments and in places amygda-
 loidal. It shows pressure from
 two directions the prominent
 schistose structure running E & W
 west. The rock is magnetic
 fragments of it attracting the S. pole
 of the needle. One or two chert frag-
 ments were noted in this rock.

32277 Borings from a diamond drill
 32278 in Sec. 9. - 44-33 (1450 N. 1150 N.
 Ch.

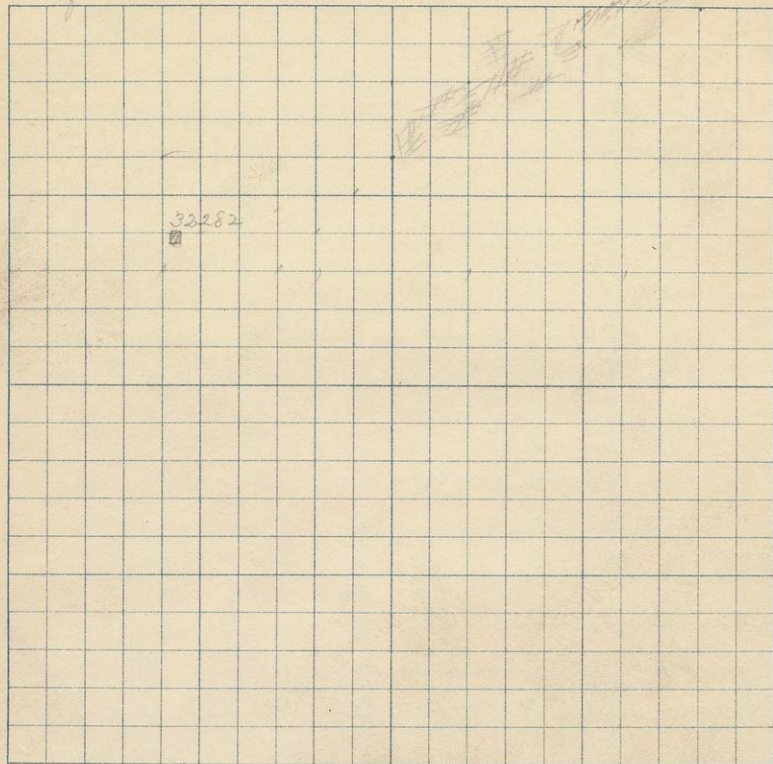
84

n. E of S. H. S. 4

T. 44

R. 33

32279



32
Q

32

32

32

32

Q

32279 1050 N. 1050 N. S. E. 4-44-33

G.A. An amygdaloid that is largely a carbonati. It comes from near the north end of this limestone, but seems to be an undoubted amygdaloid carrying amygdulites both of a greenish mineral and of quartz. A few inches east of this specimen the rock is much more carbonaceous and very shaly being weathered all through to a dull yellow or buff color

32280 15 steps west of 32297 a narrow band of almost pure limestone iron carbonati occurs or ferruginous limestone occurs

w/ pit
32281 A few feet from 32274 showing the more shaly portion of this rock

32282 From a pit 850 N. 1380 West 4-44-33
A red slate

32283 1165 N. 00 W. S. E. 9-44-33

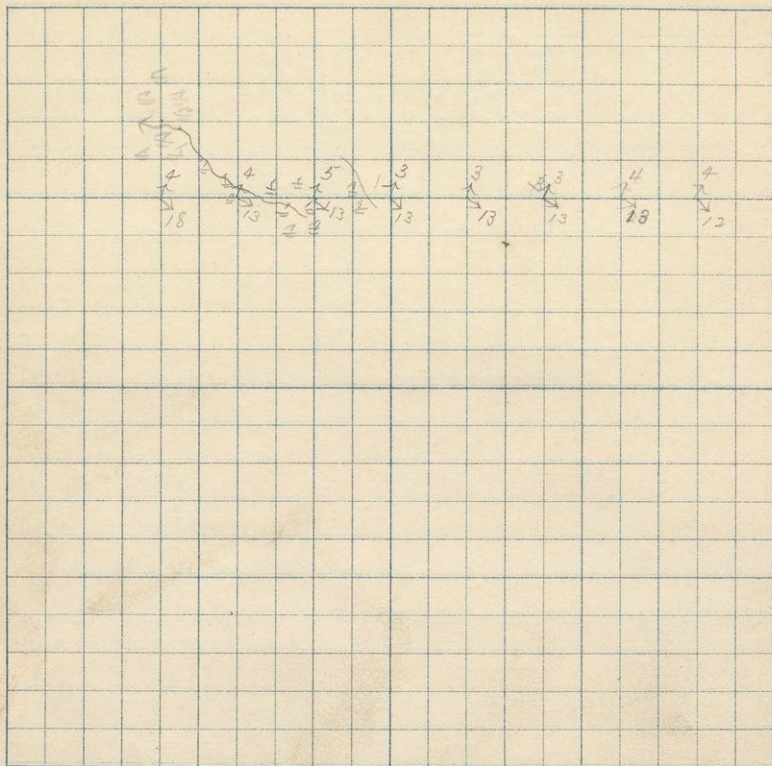
G.A. A fine grained black eruptive similar to 32276

S. 26. 1/4

S. 9

T. 44

R. 35



32
R

3
3
3
3
C

3
A

32283a 300th. 1000th. S. E. 9-44-33

R. Sz. fragments taken from a test pit
are not positive that the rock is
in place in the bottom of the pit
but there has been considerable of this
slate thrown out

32284 510th. 950th. S. E. 9-44-33

32285 From a shaft in lean cherty iron ore

32286 The dump shows banded altered carbon-

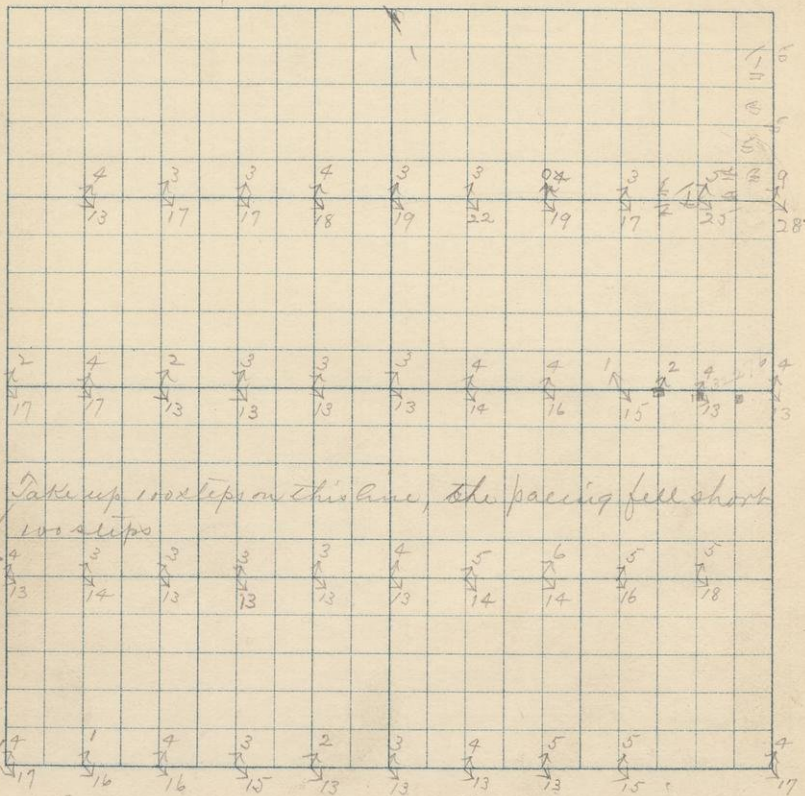
32287 alite, banded actinolite(?) schist

Ore. cherts and lean ore with a little
rich ore

At the test pits 500th. and 50-100-150
west of S. E. 9-44-33 there are numerous
fragments of slate similar to 32283a
but the pits were caved so it was not
possible to tell whether they were bottomed
in these slates or not

32288 500th. 1580th. S. E. 10-44-33

G.A. A black fine grained slaty ^{or schistose} rock
that I think is a squeezed eruption
It is too badly covered to get a good
look at it. The strike of the schistose



Take up 100 steps on this line, the pacing fell short
100 steps

The dip needle reads 40° less in going east
than in going west

Move locations on this line 100 steps east

structure is N. N. & S. E., and the dip about vertical

160 steps south and 50 east of 32288
The same rock shows again, but here the amygdaloidal character of these rocks is shown in places

32289 1060 N. 385 N. S. E. 15-44-33

G. C. a large ledge of greenstone congl

32290 1700 N. 250 N. S. E. 10-44-33

G. A large ledge running a little west of south. The rock looks more like a younger eruption than the amygdaloids being more massive and breaking with a different fracture. The surface is too much covered to work out any contact. 75 steps west a small ledge of the same rock shows

32291 1800 N. 220 N. S. E. 10-44-33

G. A. A black schist very similar to those found about 600 steps N. E. It belongs with the amygdaloids

90

32289

P. E.

11A

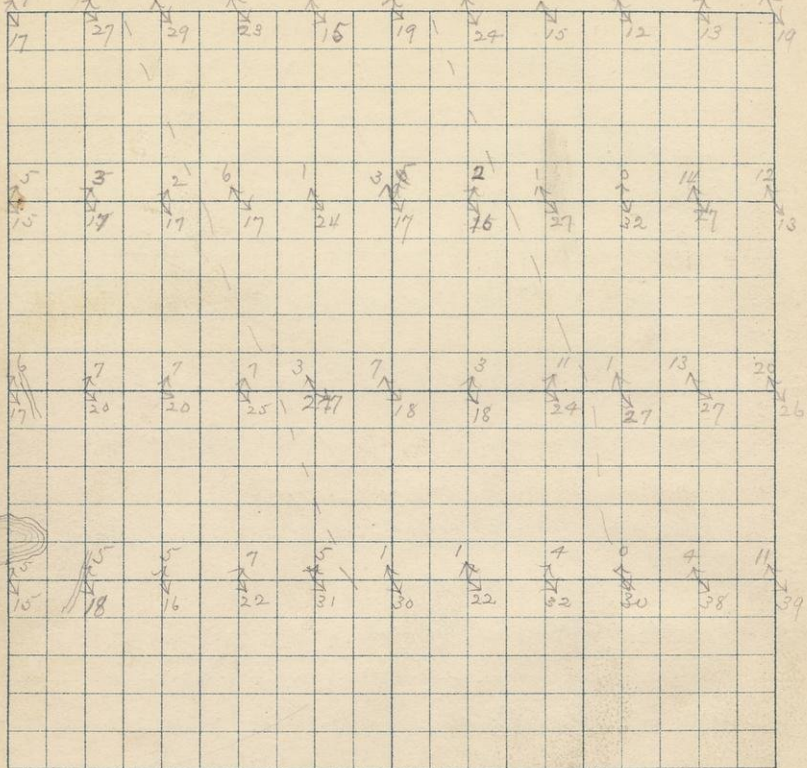
S. 15

4

T. 44

A.C.

R. 33



I think This schistose structure runs about N.W. & S.E.

32292 1860 N. 250 N. S.E. 70-44-33

G.A. A schistose rock in places of a slight reddish tinge. It is very similar to other schistose rocks in this region which seem to belong with the eruptives, but I saw no evidence of eruptive origin here. Strike of schistose structure S. 15° E. Dip vertical

32293 1600 N. 00 N. S.E. 10-44-33

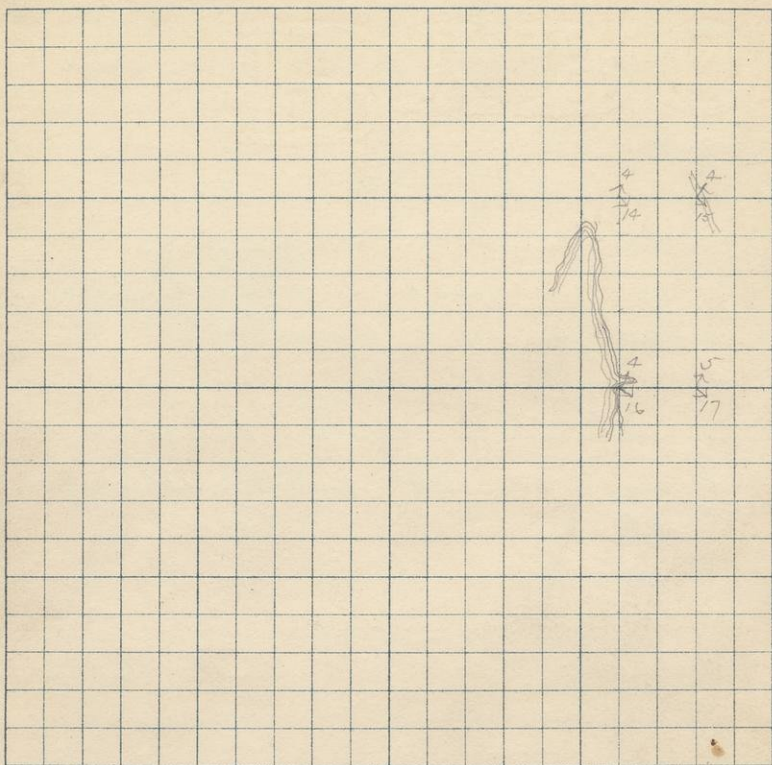
G.A. A small ledge of the black schist. Here the rock however shows its eruptive origin from the fine amygdaloidal cavities filled with quartz and a greenish mineral (epidote?)

92
N. 21. 1/4

S. 15

T. 44

R. 33



32
G

32
G

32

32
G

32294 1450 N. 1425 N. S. E. 36-44-33

Q.C. A large ledge of greenstone congl.
It contains many fragments and
is much like the congl. first seen
in the lower north. The fragments
are both rounded and angular.
The rock is slightly schistose

32295 1930 N. 500 N. S. E. 36-44-33

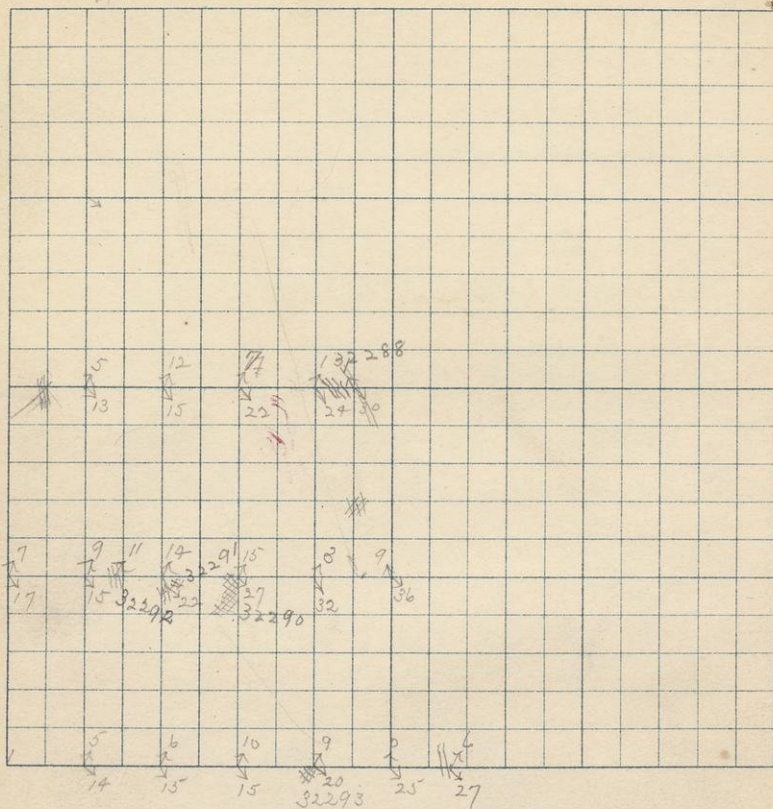
Q.A. A ledge of Amygdaloid that seems
to be ~~part~~ of the magnetic line or
to be the cause of this line. If this
line coincides with this ledge
the line which follows the iron forma-
tion has been lost

32296 1875 N. 500 N. S. E. 36-44-33

A fine grained eruptive

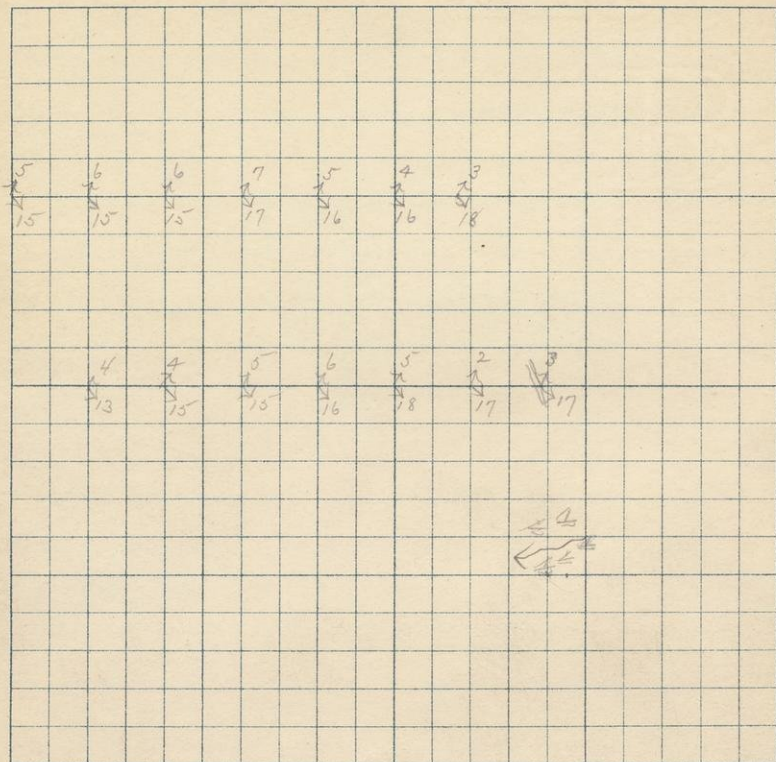
32297 1820 N. 500 N. S. E. 36-44-33

Q.C.M. like 32296 a very fine grained
eruptive breaking with a
conchoidal fracture



32298 1200 W. 200 N. of S. E. 31-44-32

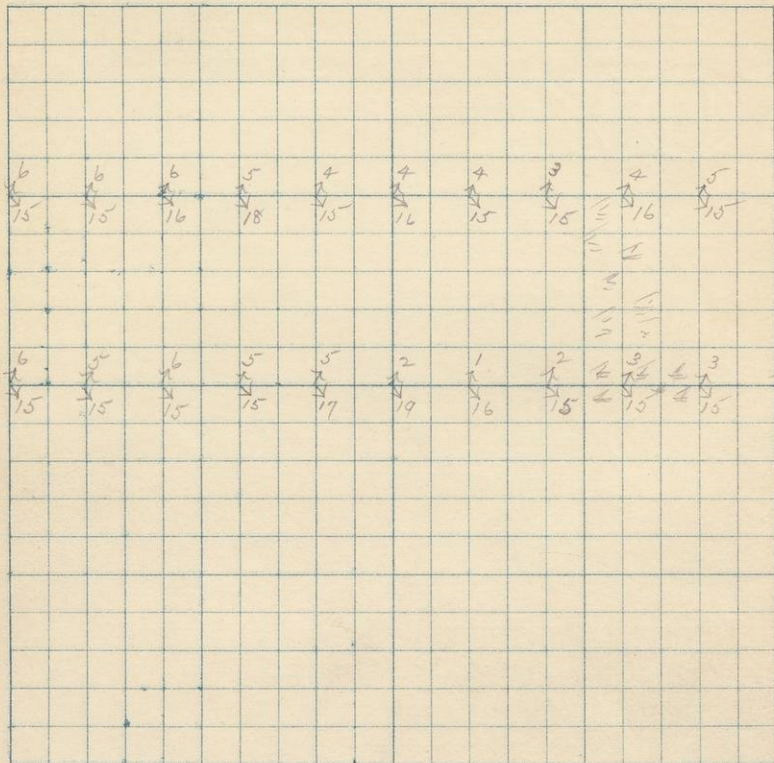
A large ledge of greenstone slightly
ferruginous

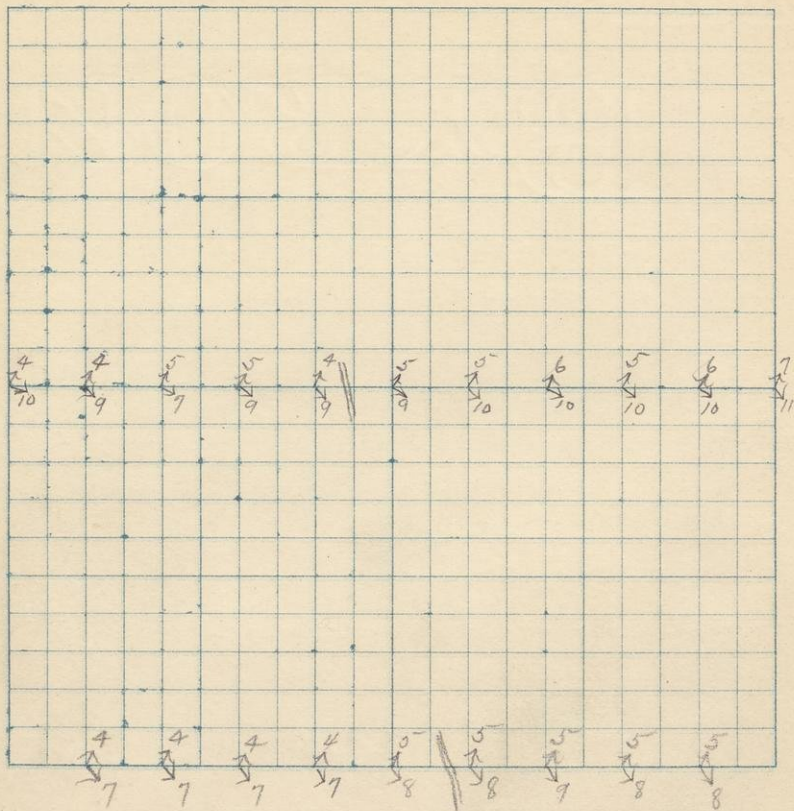


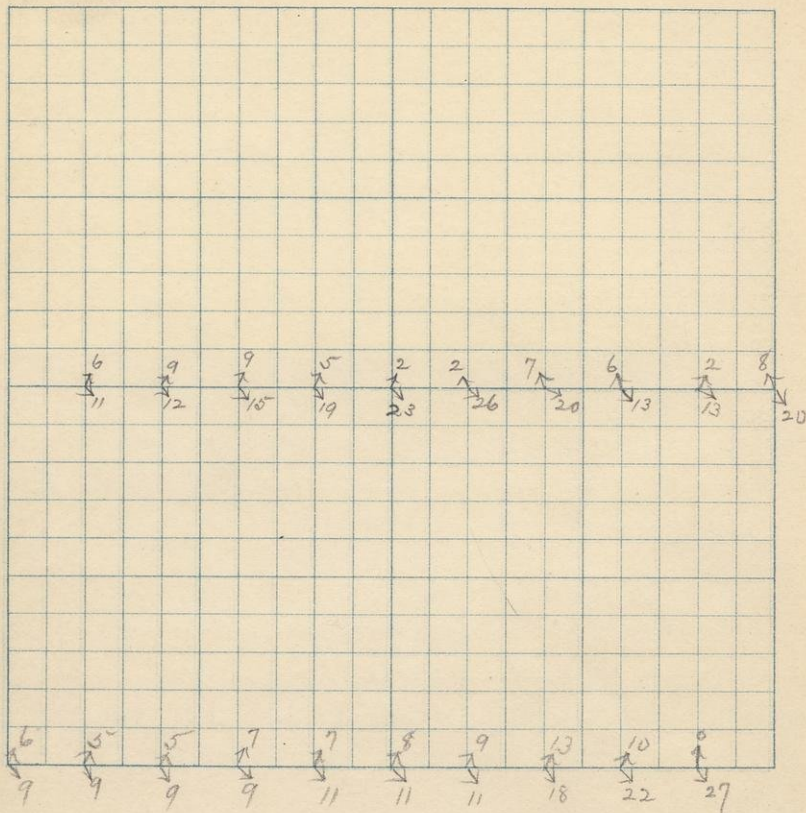
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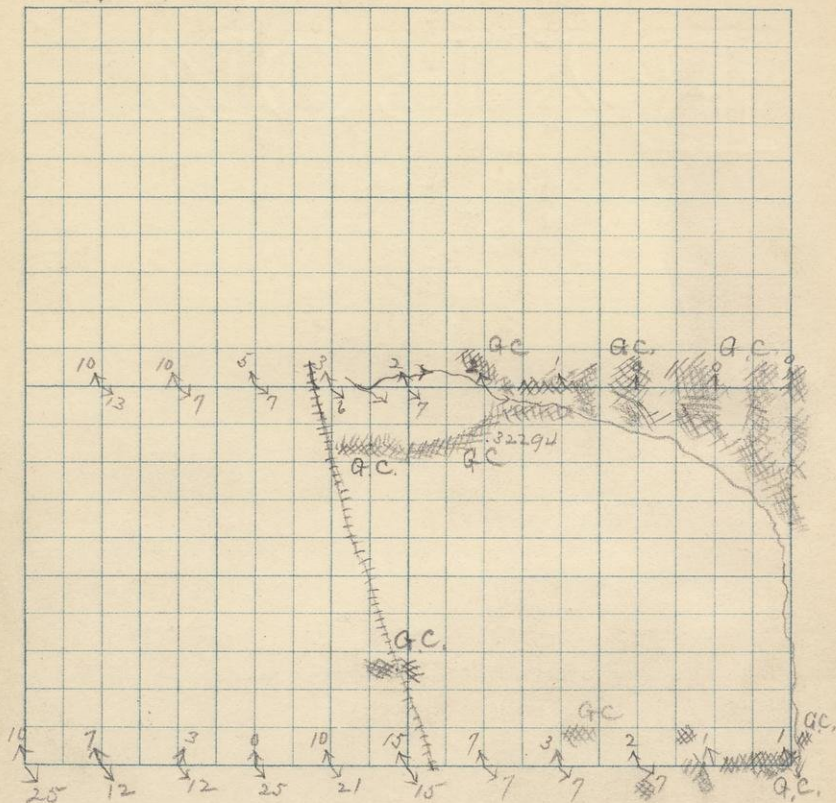
97-107

Skipped









No. of Half vibrations in 15 sec.

250 S. of N. line Sec. 34-45-33

W 9 8 9 8 8 8 9 9 9 9 8 8 Vi. 9
 11 12 13 14 15 16 17 18 19 20 21 22

250 S of N. line Sec 33-45-33

W 9 8 9 9 8 8 8 8 8 8 9 9 8 8 8 8 8 8 9 8 9
 19 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45

750 S of N. line Sec 33-45-33

W 10 10 9 9 10 9 9 9 9 10 10 9 9 9 9 9 9 9 9
 20 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44

X

750 S of N. line Sec. 34-45-33

W 9 9 9 9 8 9 10 9 9 9 9 9 9 9 9
 7 8 9 10 11 12 13 14 15 16 17 18 19 20

300 N. of S. line Sec 34-45-33

E 8 8 8 8 8 9 8 8 8 9 8 8 9 8 8 8
 6 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

500 N. of S. line Sec 34-45-33

10 10 10 9 9 10 8 10 9 9 9 9 8 9 9 9
 7 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

1000 N. of S. line Sec 34-45-33

250 N. of S. line Sec 16-45-33

8 8 8 8 8 8 8 8
 11 12 13 14 15 16 17 18 19 20

8 8 9 9 9

S. line

S. line

S. N. $\frac{1}{4}$ Sec. 36 - 44 - 33 $\frac{1}{4}$ part.

x

~~2~~
8~~2~~
7~~3~~
7~~3~~
7~~2~~
7~~4~~
8~~4~~
8~~3~~
8~~3~~
8~~3~~
9~~4~~
8x
 $\frac{1}{4}$ part.

A. E. 1/4 Sec 36-44-33

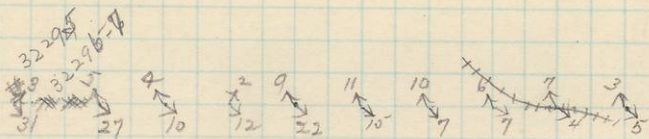
109

x

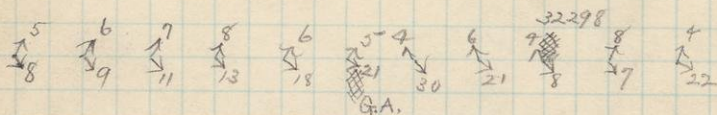
x
1 2 3 4 5 6 7 8 9 10
7 7 8 7 7 7 7 7 7 7
20

~~1~~ 1 1 1 1 1 1 1 1 1 1
7 7 7 7 7 7 7 7 7 7 7

S. H. 1/4 Sec 34 - 44-33



Q.C.



East end of these runs 200 steps farther south than indicated by the rolls

Blank Pages

111-117

Skipped

Ah-nin-a-pe-chog-	How far is it
O-do-to-go-go-ne-ne-ba-ski-me-na-su-gun-ne-ba-gua-she-gun	Is there a road there
Me-ka-ha-oue-e-nough	trail or road
Me-ka-na	let us take a smoke
Suc-a-swa-da	mile, yard, measure
Dā-byi-ā-gon	dollar, metal
Habitik	half dollar
Ā-bit-ā-wahik	quarter of a dollar
Ne-sh-shor-ne-ā	black
Mukā-dā	meat
Ne-ās	cold
Lon-ā	one
Bāzik	two
Ne-sh	three
Ne-swi	four
Ne-win	five
Non-non	six
Nein-go-dwa-si	seven
Ne-swā-swa	eight
E-swa-swe	nine
Sha-gwa-swe	ten
Me-da-swa	eleven
Me-da-swa-a-she-bazik	twelve
" " " " " neish	thirteen
" " " " " ne-swi	fourteen
Neish-te-nā	fifteen
" " " " " a-she-bazik	sixteen
" " " " " neish	seventeen
" " " " " a-she-bazik	eighteen
" " " " " neish	nineteen
" " " " " a-she-bazik	twenty
" " " " " neish	twenty one
" " " " " a-she-bazik	twenty two
" " " " " neish	twenty three
" " " " " a-she-bazik	twenty four
" " " " " neish	twenty five
O-gom-ne-be-wā	too much
O-gom-bun-gze	too little
Ch-dā-ā-she-yon	where are you going
O-zā-wā	yellow
Th-bis-ka	white
Ma-ze-nā-e-gun	paper
Gā-bhā-tā	what
Gze-di-oue-e-nough	Have you got any
Mu-das	corn

Gomin

Ote-wap

ge-ga-a-sa-gr-go-min

Ka-wim-ne-ne-se-do-ta-se

Ka-wim-ne-se-do-ta-se

here

quick

we will make cache here

I don't understand

He don't understand

800 N. } Strike 10 N 70 W. Dip +
460 N. }

O-da-ta-ga-go-me-ne-ba-ski-me-aa-se-gu-ne-to-gua-shi

Body 1 inch long, white, six brownish
red legs yellow antenna $\frac{1}{2}$ inch
long, well feathered, spread of wings
3 inches, pale sap green color, 4 spots
rays, one on each wing



2/5280
260

