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Marquette region, Michigan: [specimens] 21474-21500, 22426-22520. No. 137 1892

Mathews, Edward Bennett, 1869-1944

[s.l.]: [s.n.], 1892

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U. S. GEOLOGICAL SURVEY
FIELD SECTION BOOK

137

Marquette Region
Michigan
C. B. Mathews

21474-21500; 22426-22020

LAKE SUPERIOR DIVISION.

INSTRUCTIONS.

1. Ordinarily at least two pages of this book will be devoted to one section. On the left-hand page, place a map of as much of the section as has *actually been seen*. Denote rivers, lakes, marshes, etc., by the usual topographical signs. 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, with dip arrow and number attached as before. 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 specimen representing it. In mapping the section count each of the spaces between the blue lines as 100 paces, and twenty of these spaces to one mile, or 2,000 paces. Usually the southeast corner will be placed at the bottom of the page, or at the first black line above the bottom of the page, and at the right-hand side. If, however, for any reason, it is desirable to show portions of an adjoining section, the southeast corner may be shifted up, or the map may be turned around and the north placed at the left-hand side of the page. The ruling of the left-hand pages is also arranged so that, if desirable, a larger or a smaller scale can be used, eight inches, two inches, one inch, or one-half inch to the mile. With the two-inch scale, the squares outlined in black represent sections, and those in red, quarter sections and "forties," while the space between the blue lines is 200 paces.

2. 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, the latter always being expressed from the north; for instance 4025, 250 N., 300 W., *Strike, N. 78° E., Dip 50° S.* Then follow with a full description of the ledge. When topographical maps are used for locations this paragraph applies only in part.

3. Collect a specimen from every ledge, or wherever there is a change of rock on any one ledge, taking care to get fresh material, unless for a special purpose the weathered surface is desired. In case of trips made on foot or in canoes, for long distances, neighboring ledges, unquestionably of one kind of rock, need not be specimened. The position and extent of the ledges not specimened should be marked on the map, with notes that each is of a rock identical with specimen so-and-so. Under the same conditions small-sized specimens, trimmed to a uniform size of $2 \times 2\frac{1}{2} \times \frac{1}{2}$ inches will be allowed, but in all other cases *large-sized specimens*, trimmed to a size of $3 \times 4 \times 1$ inches, must be selected, in accordance with section 3, chapter IV, p. 44, Regulations of the U. S. Geological Survey. Specimens should not be placed together without protection in the collecting bag, as the fresh surfaces, important in determining the character of rocks, are thus destroyed. They should be damaged by no temporary mark, but the numbers should be at once marked in at least two places upon the inclosing paper or cloth bags. Specimens may be permanently marked in camp by painting the numbers upon them in white upon a black background, using Silver White and Ivory Black oil tubes for color, with turpentine as a diluent.

4. On the last twenty-five pages of the book give, as may seem desirable, a general account of the examination of the region mapped in the previous pages, correlation of observations, sketches, cross sections, etc.

5. Forward this note book as soon as filled as registered mail matter to C. R. Van Hise, U. S. Geologist, Madison, Wis.

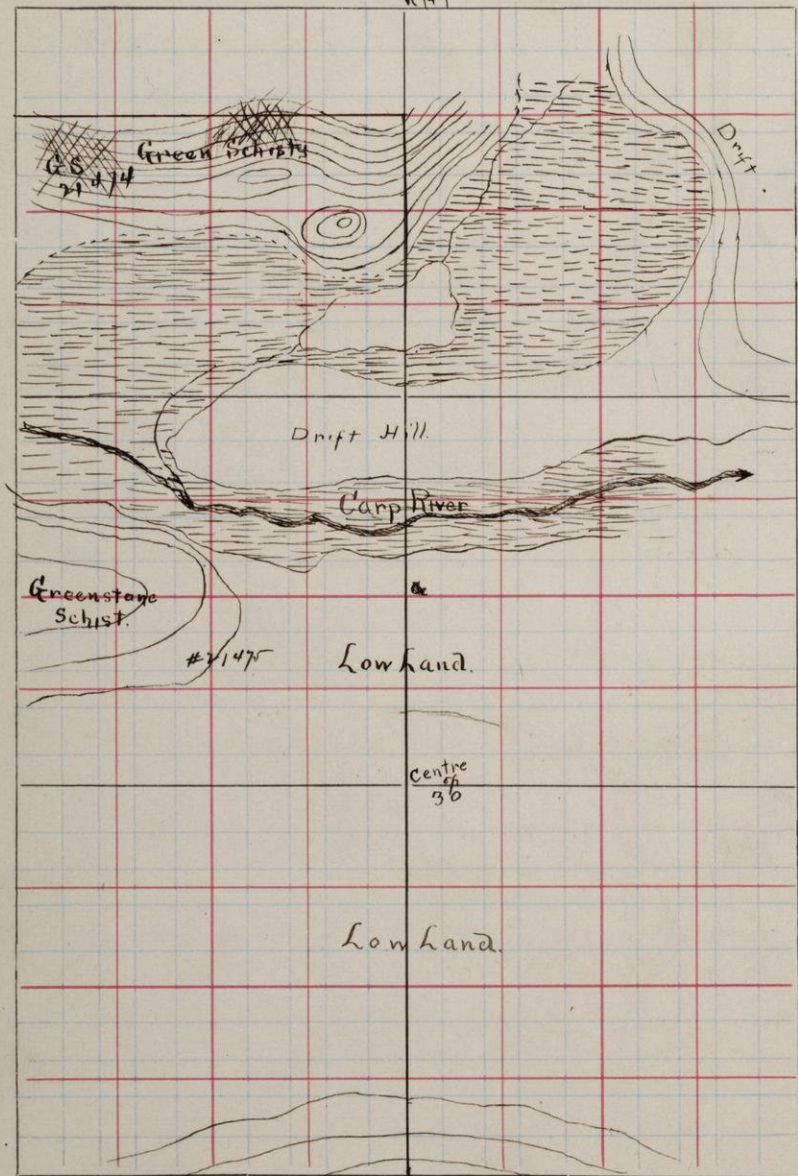
#137

Platted as far as S 3 T 49 R 26. no photo for
this area

E.B. Matthews #2 (94)

The hills when "named" are composed of the rocks indicated. The hills at the present are not all bare outcrop, but in my opinion fires and rain would reduce them to that state. Such was my plan in sketching--i.e. when ledge signs in almost all cases would obscure the contouring by their abundance I used the name of the hill. In such cases the ledge usually extends to the contour above the gradual slope. My contouring was based on 10 foot interval and to this I tried to adhere strictly. The aneroid was not always trustworthy, and, as I had no bench marks, only the minor shape of the county, not it's gradual slope, is trustworthy. If a hill was $X(10)$ plus 5 feet I called it $(X \text{ plus } 1)(10)$ feet.

S. 30 T. 48 R. 26
n 1/4 30



June 14 Rainy till 10 o'clock

1

Running south on quarter line of 30-48-76
to quartzite, thence E to E line of 30 thence
north to Camp etc completing the arc S of
Camp river + N of quartzite.

21474 1750 N 1300 W SE cor 30th 21474

Greenslain schist. This rock is very
badly jointed it being next to impossible
to get anything like a decent specimen.

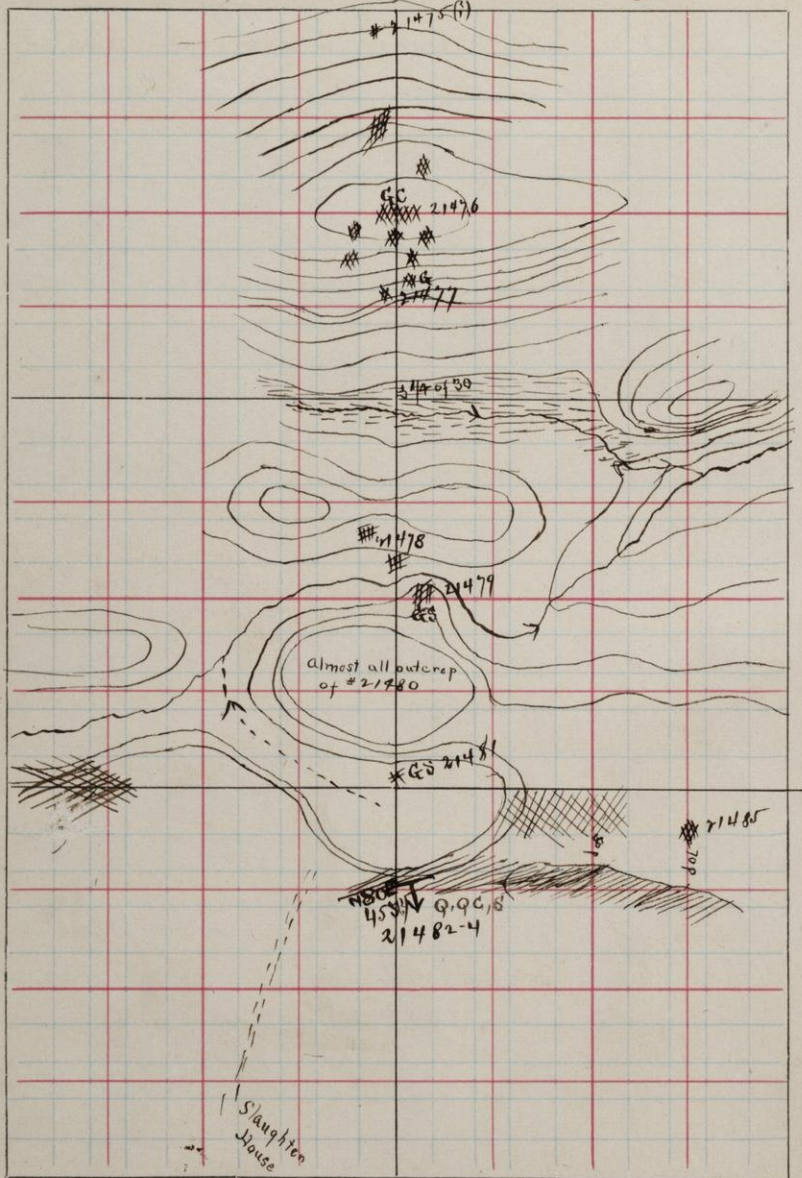
21475 1180 N 1250 W SE cor 30th 21475

Green slate very friable and showing
a foliation of about N 80 W for strike
+ dip vertical.

21476 at 475 N 1020 W SE cor 30 There is a

facies of the rock which looks very
much like a silicious slate and
not a greenslain. The outcrop was small
A specimen of this may be found as I
find I omitted to number it in my
notes. I referred to it as #21475 so there
may be two 21475's.

S. 30-1 T. 48 R. 26



21476 250 x 1000 W Secor 30 # 21476 is from an undoubted greenstone conglomerate if we may judge from the weathering. If this is a conglomerate (pseudo) that possible siliceous slate was only a phase of the greenstone.

~~21477 Taken from 160 x 1000 W Secor 30.~~

21478 1860 x 1050 W Secor 31 # 21478
Greenschist. Missing

21479 Greenschist. Taken just across the creek in the quartzite area of Ramizer

21480 1630 x 1000 W Secor 31 # 21480 a less weathered portion of that which makes up the greater part of the knot.

21481 1500 x 1000 W Secor 31 # 21481 Greenschist

✓ 21482 1400 x 1000 W Secor 31. These specimens
21484 represent the coarse grained conglomerate (# 21483) the siliceous schist or novaculite (# 21484) and the black slate.

The black slate is the lowest. Then comes a conglomerate

S.

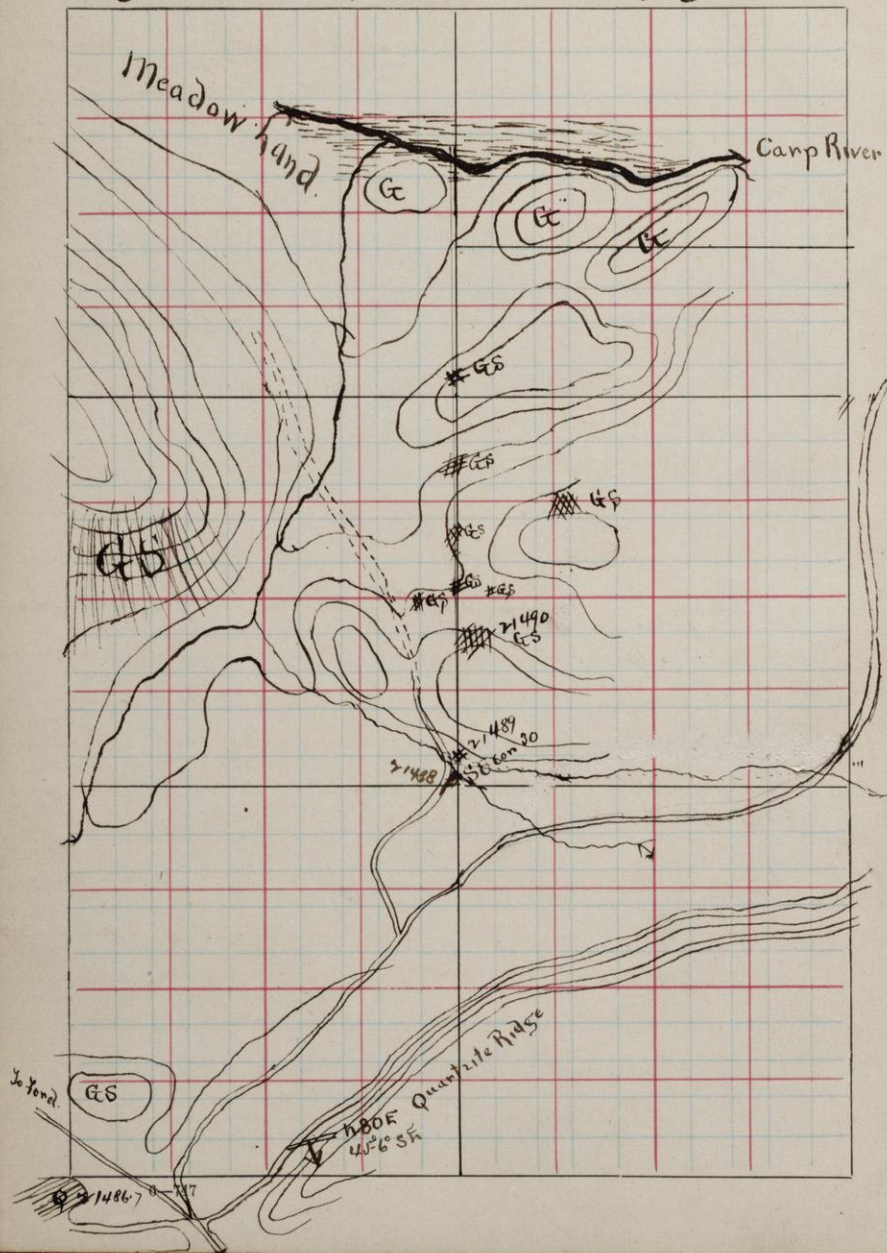
30

T.

48

R.

26

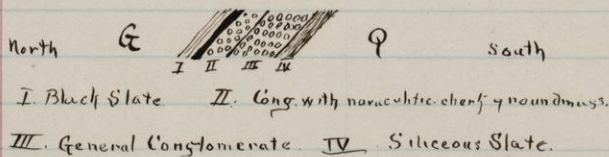


with cherty interstitial masses, following this we have another conglomerate and the siliceous slate following which covers the main mass of the cherty quartzite.

21485 1500 N 700 W Secor 31th 21485
Greenstone schist. 70 paces south
to the quartzite ridge

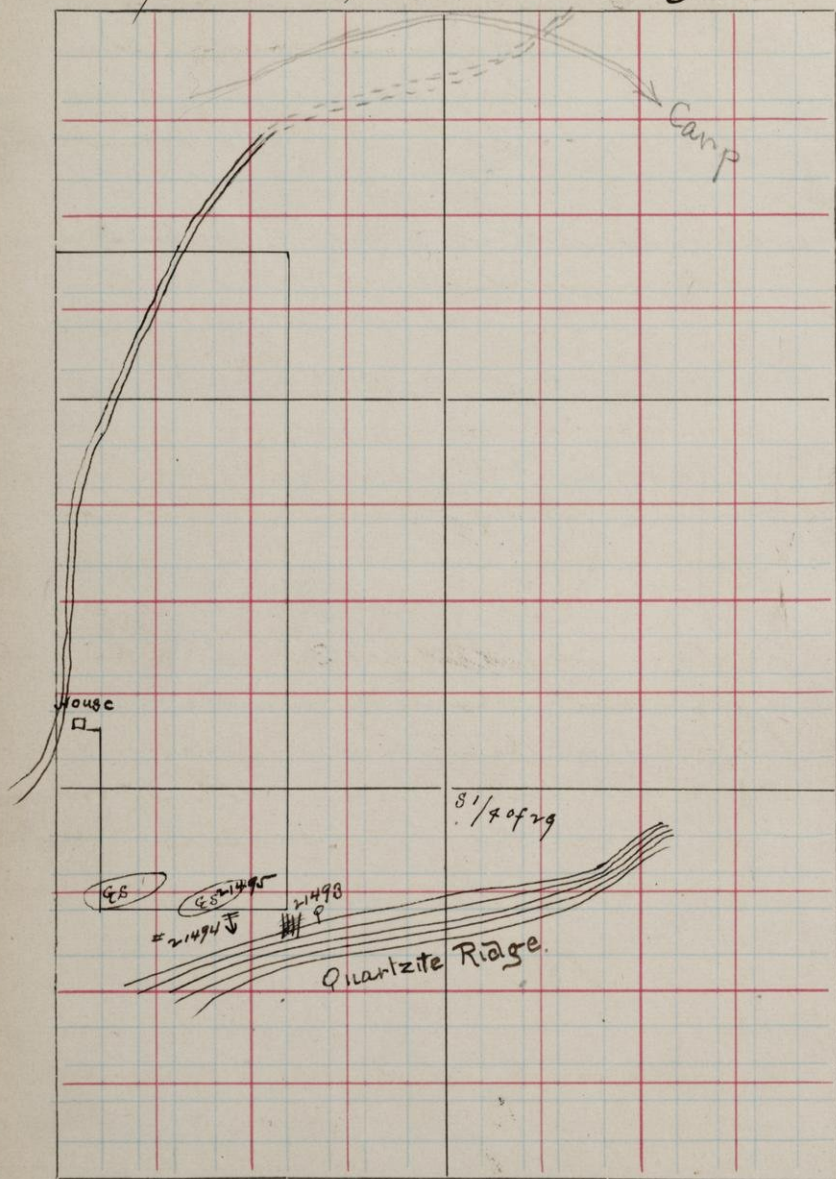
21486-7 1500 N 480 W Secor 31 Quartzite and
magnetiferous slate. This black
slate seems to make a conformable
contact with what I have been
calling my green schist. The same
siliceous slate appears.

I made no section in the field
but think that a section would
be about this way.



The strike of the quartzite is N 80° E
dip 45° - 46° SE

S. 29 T. 48 R. 26



21488 40 W SE cor 30 $\neq$ 21488 Small
outcrop of greenstone schist

21489 40 N SE cor 30 $\neq$ 21489 Greenstone.

21490 200 N SE cor 30 $\neq$ 21490 Gneissoid
Greenstone.

21491 615 N 75 W SE cor 30 $\neq$ 21491
Greenstone.

21492 ⁶⁵⁸
~~4148~~ N 1700 W SE cor 29 $\neq$ 21492
Greenstone

21493 1850 N 1200 W SE cor 32 $\neq$ 21493.

We have come again to the quartzite
ridge. I put this location (+ the
others also) down with some
misgiving for we have been
unable to correct any where
since SE cor 41-48-27. However
since this quartzite ridge extends
as a topographic unit it can
be located and its boundary
accurately marked out.

The U.S. Top. sheet is doubtful.
Rominger as good.

21494 1850W 1275W sec cor 37 # 21494

21495 I make this to be a continuation of the same bed of black slate as that represented by # 21482 and that it is in the same relation to the quartzite ridge i.e. below the quartzite.

Further than this it seems very probable to me after a comparison of the specimens 21494-5 that the black slate is much younger than the greenstone.

This greenstone comes from a small ridge running parallel to the quartzite + about 400 ft.

My impression for the moment at least is that at least two orographic movements have taken place in the interval between the formation of the two rocks.

For instance, the cleavage of the two differ and the jointing of the schists as compared with that of the slates seems to be a

R

confused jumble. There seems to be at least two or three more systems of jointing in the greenschists than in the black slates.

Finally the similarity in the constituents of the two rocks appears to be sufficiently marked to warrant the view that both rocks would have been equally affected by the same forces acting on both at the same time.

These ideas are not yet substantiated but have been gradually formed and serve as a line of investigation.

730 N + 89 W from point where we made
1850 N 1400 W S.E. cor 32-48-26 (L.E.
80 N 1489 W S.E. cor 29) we closed
onto the S.E. cor of a house
between quartzite ridge and
the Carp River. On road to
Baldwins Hills.

S.

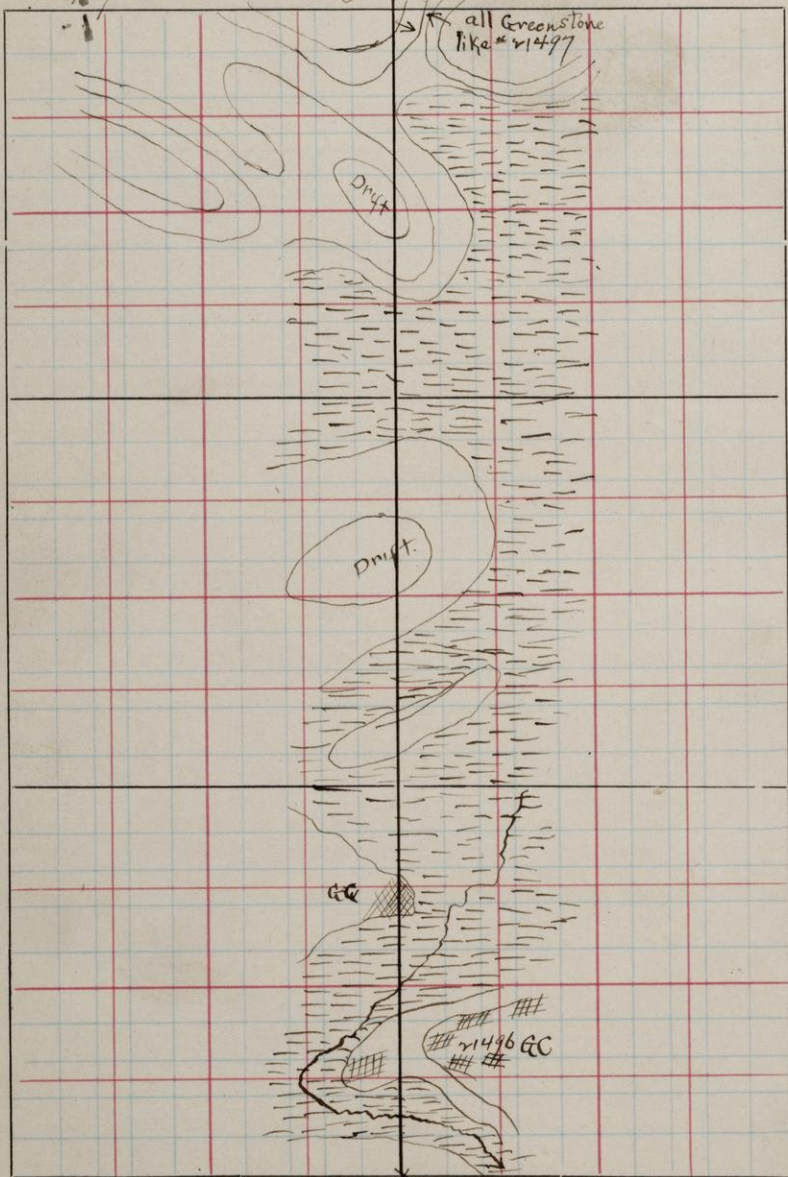
19

T.

48

R.

26



June 15th

Running north on east line of sec 19-
48-76.

21496 165 ft ss cor 19 # 21496 Coarse grained
conglomeritic greenstone.

21497 1400 ft 100 ft ss cor 19 # 21497
Greenstone schist.

21498 1500 ft ss cor 19 # 21498
Banded greenstone schist.

21499 1900 ft ss cor 19 # 21499 represents
the contact between the granite
and the greenstone. The
mass of granite when compared
with that of the greenstone
gives me the impression
that the greenstone has in
some way flowed out over
or else brought up and thus
included the granite. I
looked to see if the granite
could not be some apophysis
from the main mass of
the granite which I expect
to find as I go north, but

S. 19 18

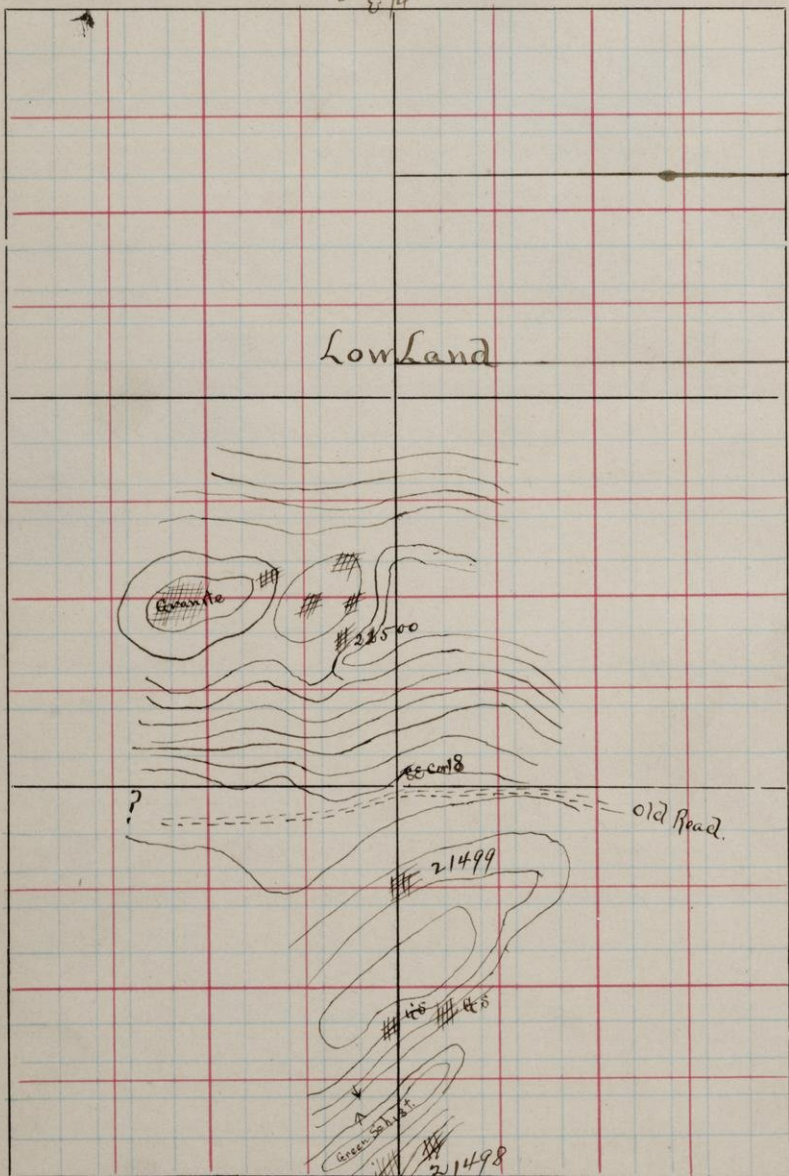
T.

48

R.

26

E 1/4 18



I did not find the granite portions continuing anywhere more than a short distance.

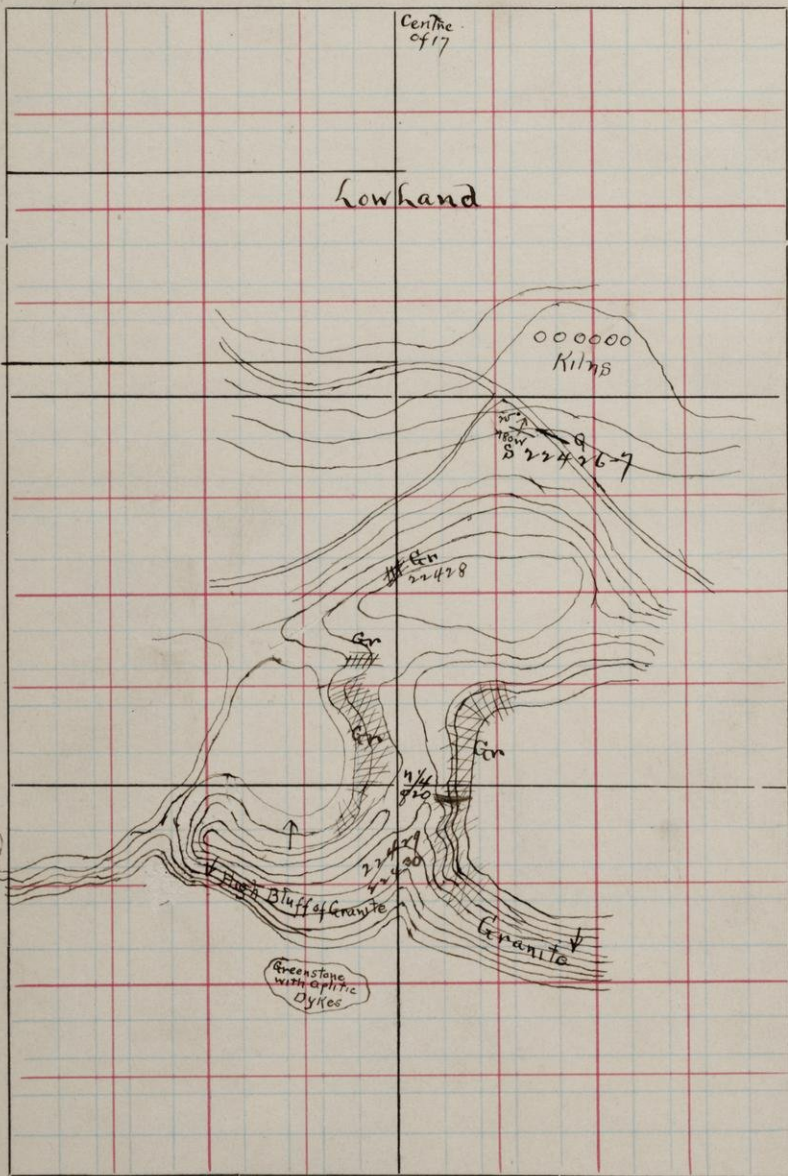
It would also seem as though the granite if intruded in such small masses into the greenstone would have crystallized in a much finer grain than it here appears.

The granite areas seem to be lenses from two to five feet by five to fifteen feet in diameter.

For myself I should call this hill as all greenstone with the exception of those two or three very small areas of granite. Rominger however, prefers to cut the hill in two geologically for which I see no sufficient ground. Greenstone occurs both north and south of the granite.

24500 200N 50W Secor 18 # 2/500

17-20 T. 48 R. 26



9

This is the first outcrop of the granitic mass met with on the run north today.

It is a dark red in the outcrop - its color being due to the colored feldspar.

✓ 22426-7 100 Bl S of Ribs (6) the quartzite crosses the road (about 1450 N 80° W SE cor 17) and a little to the west of this point the flagstone has been artificially exposed. The strike is about N 80° W and the dip low 20-25° N.

22426-7 represent the quartzite and the flagstone. As mentioned by Rominger I found the conglomerate but found in it no pebbles except quartz or quartzite. The interstitial mass seemed also to be of quartz.

The exposures were very poor and the country was very thickly covered with second growth maple.

22428 300 N 100° W SE cor 17 # 22428 Granite

S.

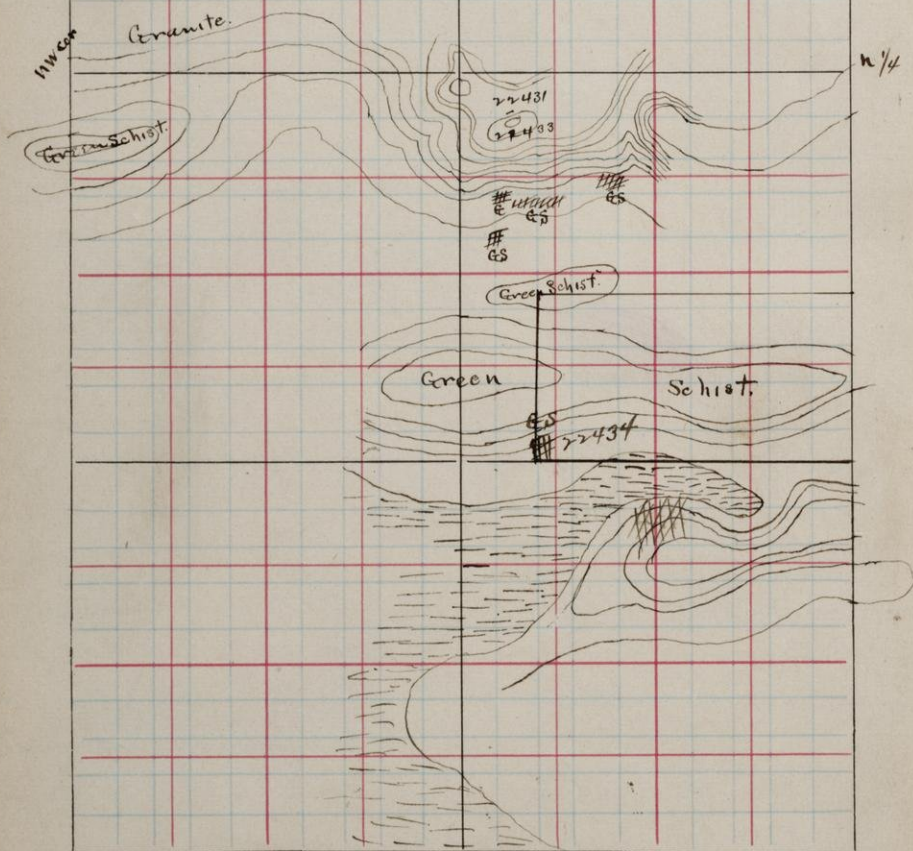
70

T.

48

R.

26



✓
22429.30

Starting just south of the corner is the culmination of a long east and west ridge. The granite here is like #22429 on the whole but is pierced by pinkish finer grained dykes as is shown by #22430 which also shows the contact between the same.

As we pass south we find the dykes more and more frequent till the end of the bluff.

Just below the bluff is a small outcrop of greenschist containing similar dykes of granite though perhaps not as pink.

22431

✓
1855 22/400 W Socorro #22431 shows the general porphyritic character of the granite at this point - very close to the green schists.

22432

Taken from the same place shows what I had inferred, i.e. that the pink dykes, of which I have already made

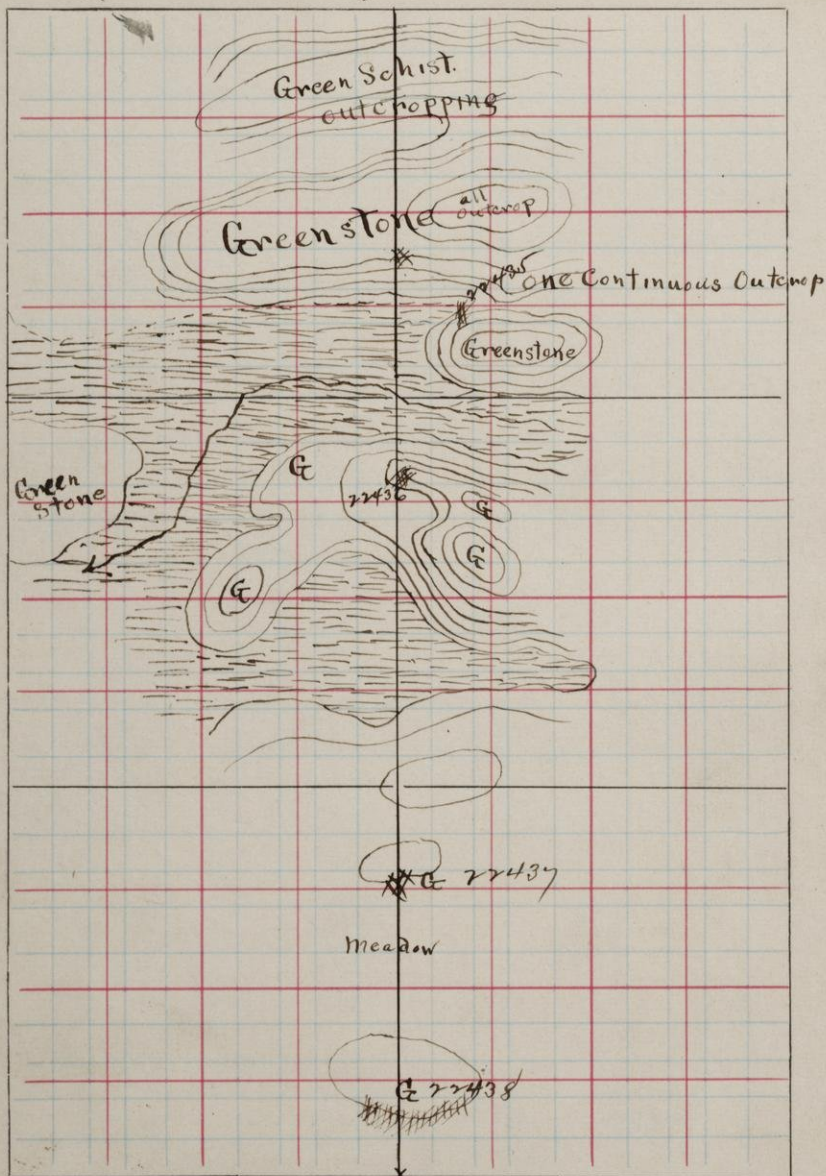
S. 20

T.

48

R.

26



mention, are later than the
granite and later than the
greenstone.

The greenstone in the specimen
is what would appear in the
field to be an inclusion in
the granite. The pink dyke
passes through both.

27433

Taken from the same place is
what appears to be a dyke of
granite about six feet wide
extending NE + SW. It is more
compact is not porphyritic, &
is much more highly colored.

While I have called this a
dyke there are certain phases
which make it look as though
it might be otherwise. The
porphyritic crystals extend
into this mass in an irregular
way and yet preserve a general
line of contact or at least
distinction and separation.

On the side opposite the
porphyritic granite is what
appears to be a much darker

S.

29

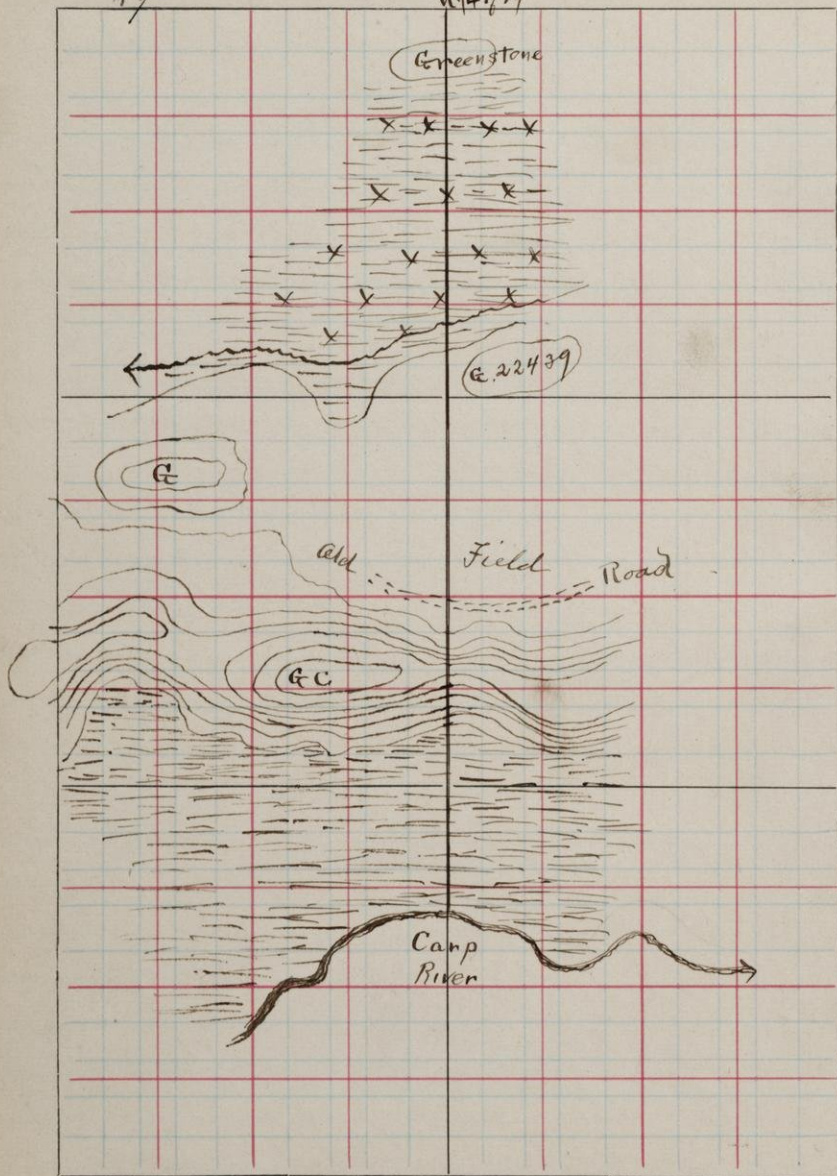
T.

48

R.

26

N 1/4 of 29



and a different sort of granite.

The general appearance of the country is here very rugged, at this point there is a high reddish outcrop and NW from it 100 paces another then there is more or less of a valley till we get to the outcrops along the section line (N+S)

22434 1500 N 1400 W SE cor 20 # 22434
Greenstone.

22435 1172 N 1000 W SE cor 20 # 22435
Greenstone.

22436 900 N 1000 W SE cor 20 # 22436
Greenstone.

22437 400 N 1000 W SE cor 20 # 22437
Greenstone.

22438 100 N 1100 W SE cor 20 # 22438
Greenstone.

22439 1500 N 900 E (3) SE cor 29 # 22439
Greenstone

Since it was raining so hard that I could not take notes and since I had been all over the section line before and could see it all in detail from the bluff west of the quarter line I did not run it. The country is almost all drift covered with but three outcrops of any size.

One the continuation of the conglomerate ridge; a second as marked on preceding map; and a third on the east side of a drift ridge about 400 S of the NW corner of the section.

S. 28

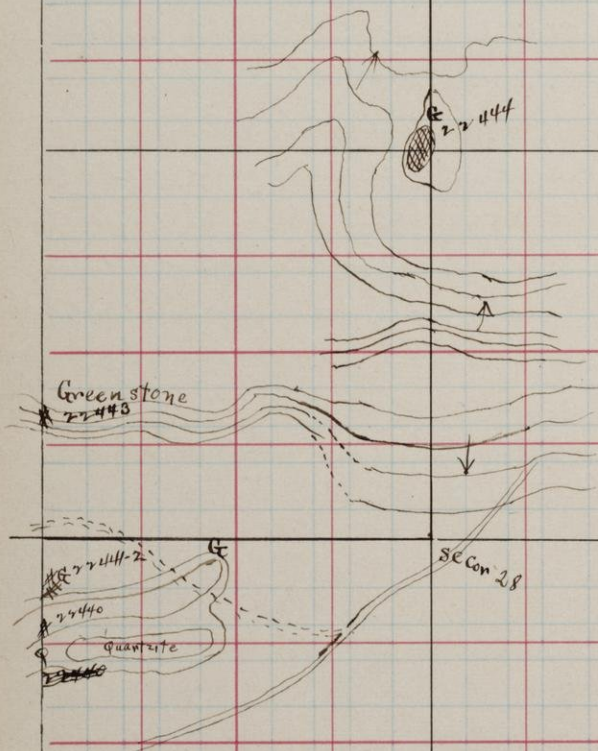
T.

48

R.

26

DRIFT PLAIN



June 16th Overcast.

Rummy north on east line of 78-48-76.

The contact between the greenstone and the quartzite is about twenty-five paces south of the south line of sec. 78 500 W of the SE corner.

The two rocks can be traced within about 15 feet of each other. Some test-pitting has been done in the area between the two rocks. It looks as if the explorers had found either a very ferruginous altered greenstone or else a ferruginous slate similar to that found north of the greenstone above the quartzite. Here it would be below. Strike N 80° E dip 75° S.

22440

1900 N 500 W SE cor 33 # 22440

Quartzite which again outcrops at 1975 N 500 W.

22441

1975 N 500 W SE cor 33 # 22441

represents the intermediate between # 22440 and # 22442

S. 28-

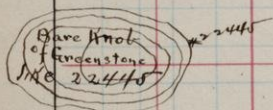
T.

48

R.

26

Drift Plain



5/428

Drift Plain

It is the ferruginous slate or greenstone referred to in the preceding note.

22442 1985 N 500 W SE cor 33 # 22442
representing the greenstone
immediately north of the
quartzite.

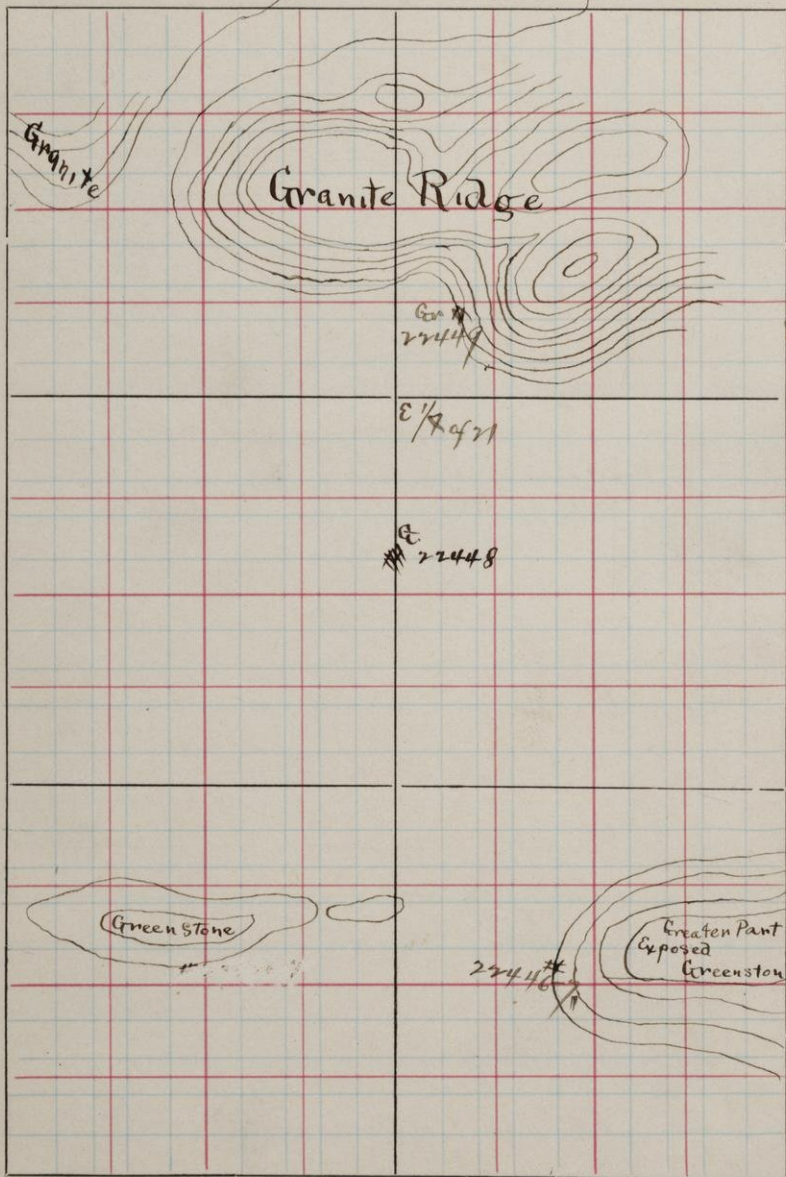
22443 165 N 500 W SE cor 28 # 22443
Greenstone.

22444 500 N SE cor 28 # 22444
Small exploration for gold (?)
in a large quartz vein in
the greenstone which is quite
pyritiferous.

at this point there is a
quar conchoidal arrangement
of the greenstones.



21 T. 48 R. 26



22445 1150 N 325 W Secor 28 # 22445

Bare knob of greenstone. There is another about 800 E of it and also one about 100 paces SW + one about 750 S of it. All are bare with a drift plain between

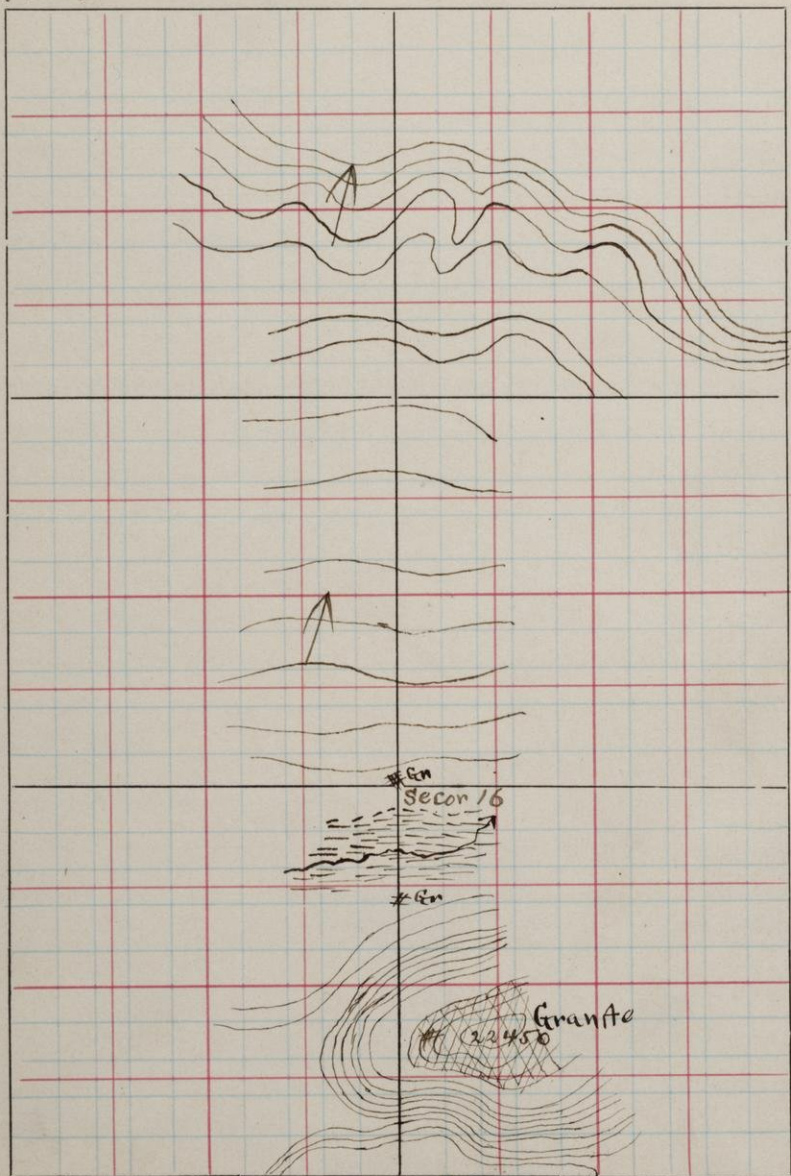
22446-7 275 N 700 E Secor 21 # 22446-7

These represent the only marked outcrop of greenstone near here. There is also a smaller one to the west. # 22447 represents a vein of quartz and serpentine (?) in the mass. This specimen was taken to show the peculiar layer-like structure of the vein - apparently different from the general run of veins.

22448 800 N Secor 21 # 22448 very low and small outcrop of coarse grained greenstone

22449 1100 N 75 E Secor 21 # 22449 Granite. This is a part of the main

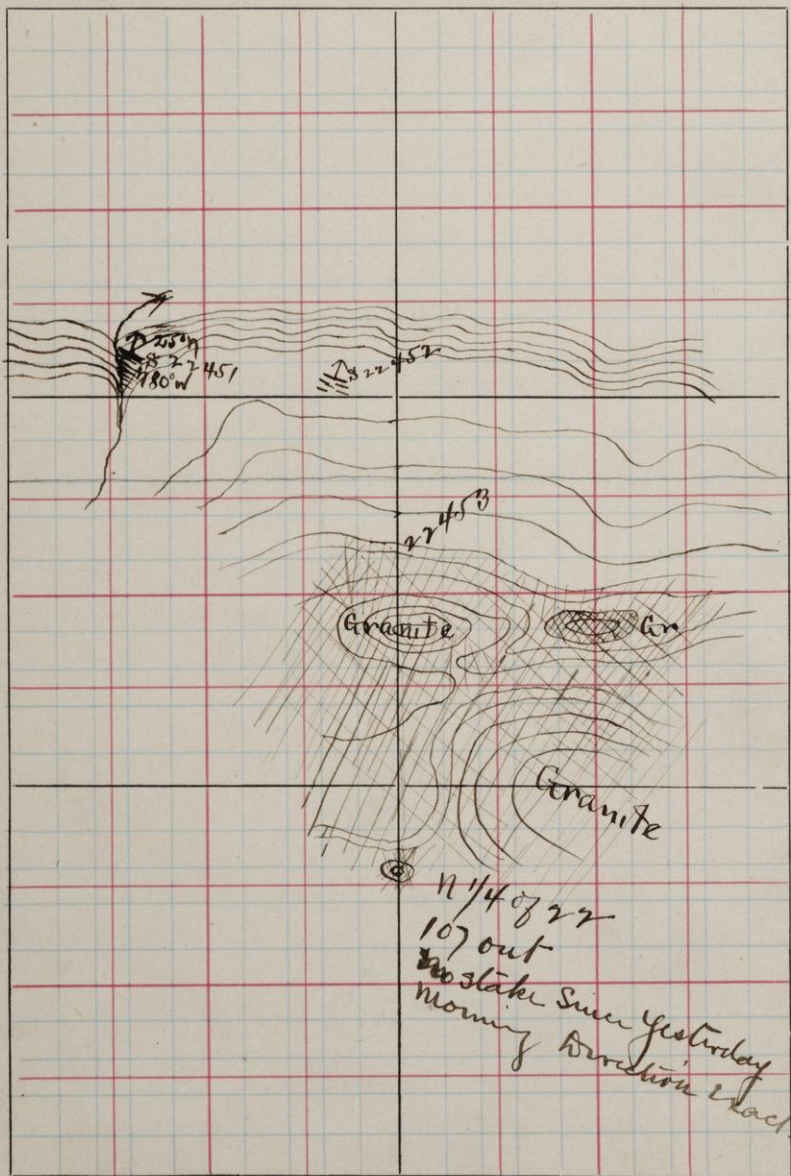
S. 21-16 T. 48 R. 26



ridge between which and
any greenstone is a distinct
topographic break as is seen
by looking at the map.

22450 675 N 75 E S E cor 21 # 22450
Outcrop of granite. This whole
hill is granite but is drift
covered up the first half of
its southern slope.

S. 15 T. 48 R. 26



22451 500 N 1350 W SE cor 15 # 22451

Small outcrop of banded slate. Strike N 80° W dip 75° N

This is about as Rominger has it on his map but at

22452 510 N 1090 W SE cor 15 # 22452

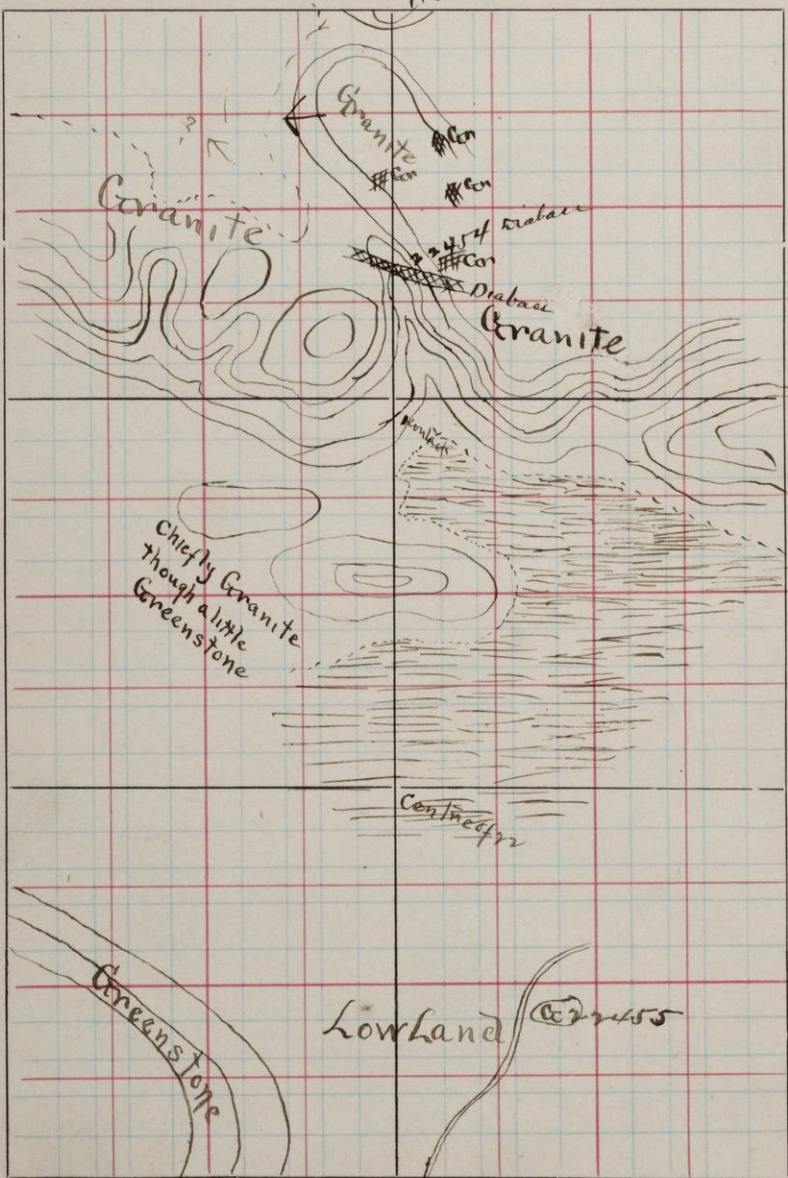
There is another small outcrop of banded slate - in fact two or three outcrops. This is considerably within the limits set down by Dr. Rominger for Greenstone.

I have found not a single particle of evidence for the greenstone except one huge boulder which might have been mistaken for an outcrop. I have wandered up and down the ravines in search of outcrops but the hill is deeply covered with a fine and compact clayey drift sand.

22453 200 N 1000 W SE cor 15 # 22453

Granite. This granite has the

S. 22 T. 48 N. 1/4 R. 26



pink dykes in it as has been
noticed previously of others.

22454 1840 N 955 W SE cor 22 # 22454.

There is here an outcrop which
shows dykes of granite breaking
through the gneiss but
whether these are large "pink
dykes" or are part of the large
granite mass I have not
decided. Besides these
differences (which are in the
main granite area) there is a
dyke of diabase running in
a general east and west
direction through the granite.
This dyke is represented
by spec. # 22454 and is
taken from 1650 N 985 W
SE cor 22.

Phillips

1535 N 965 W of SE cor 22 is the
actual contact between the granite
and the greenstone. The direction
of contact is that of the contour
- a little east of south. I think
the greenstone lies on the granite
in the valley

S.

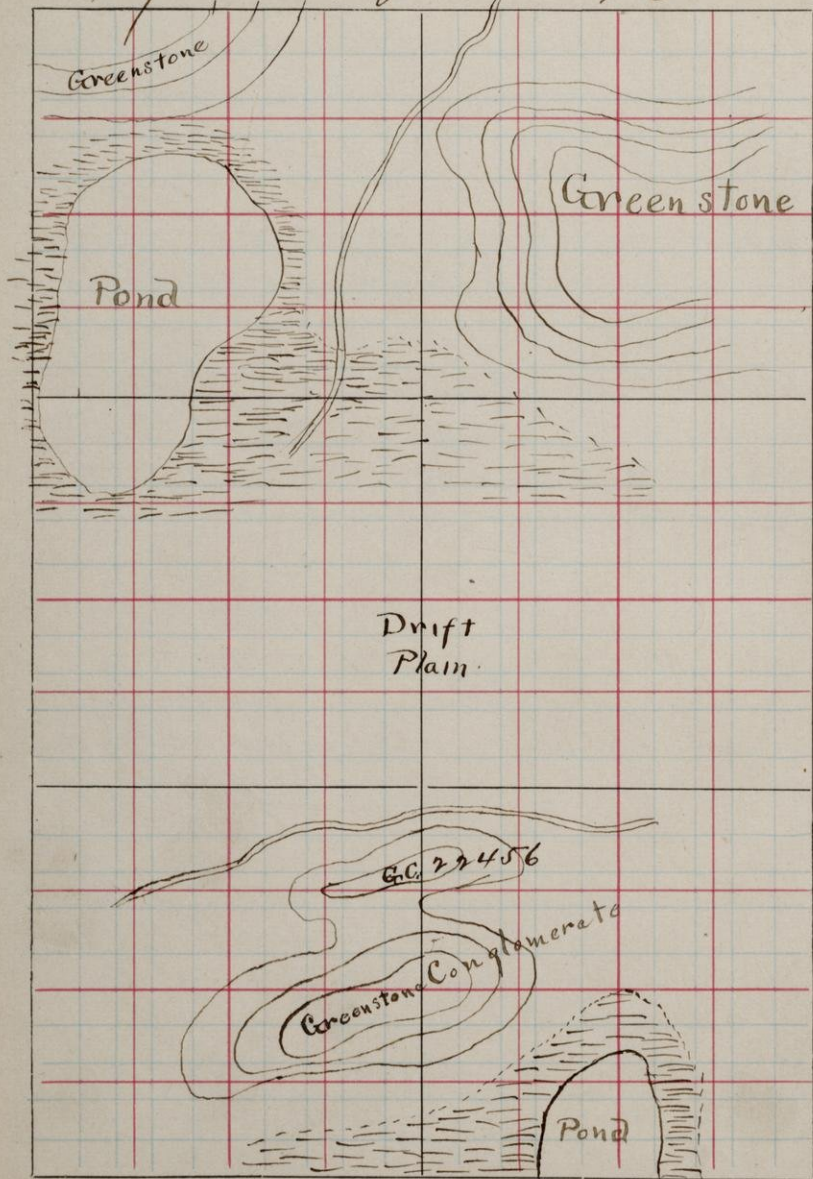
27

T.

48

R.

36



22455 650 N 875 W SE cor 72 # 22455
Small outcrop of greenstone.

22456 1440 N 1000 W SE cor 27 # 22456
Greenstone conglomerate.

22457 775 N 1000 W SE cor 27 # 22457
Greenstone conglomerate.

S.

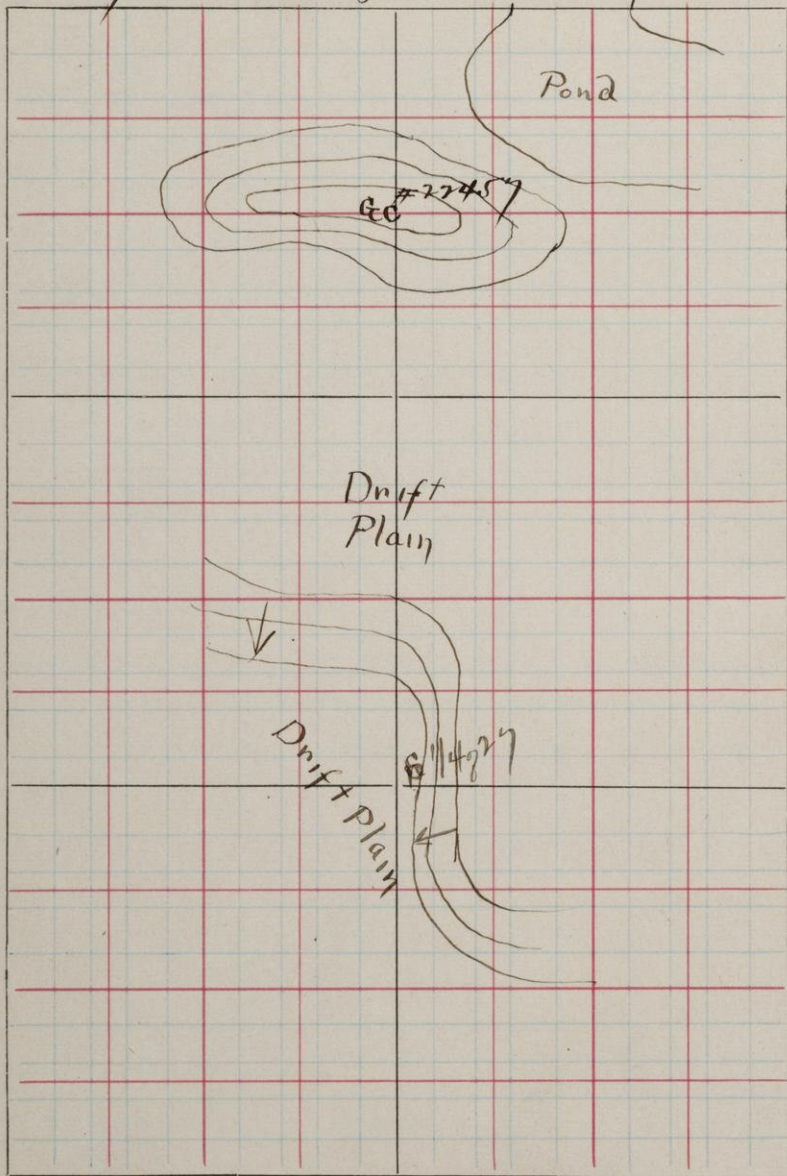
29

T.

H 8

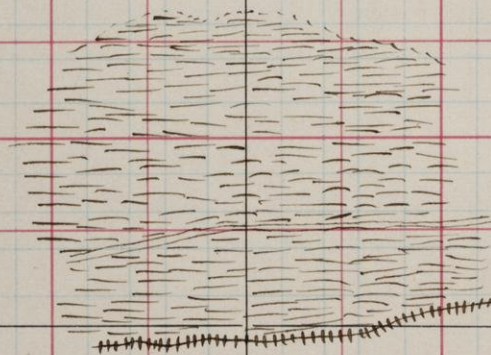
R.

26



S. 34 T. 48 R. 26
w/4 34

Drift
Plain



State Road

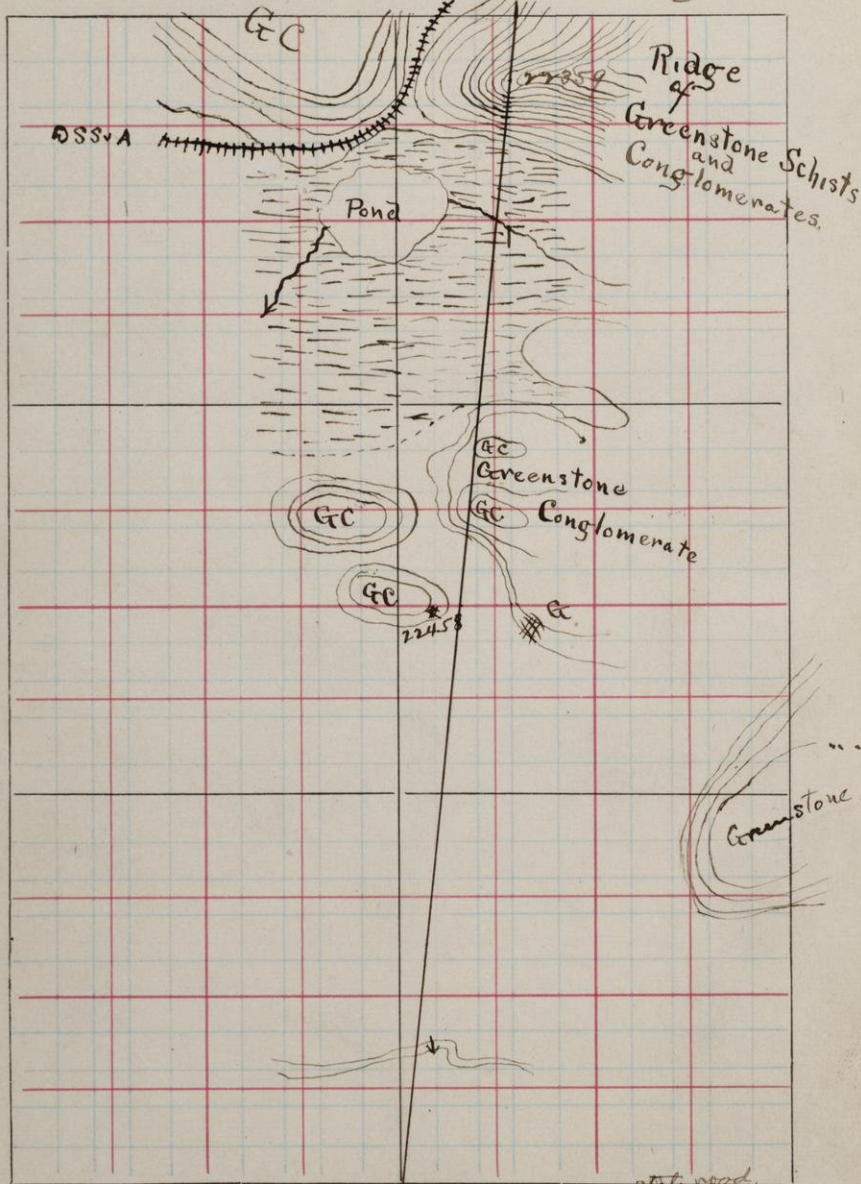
DSS+ARR

S. 25-26 T.

48

R.

26



June 17th Bright

23

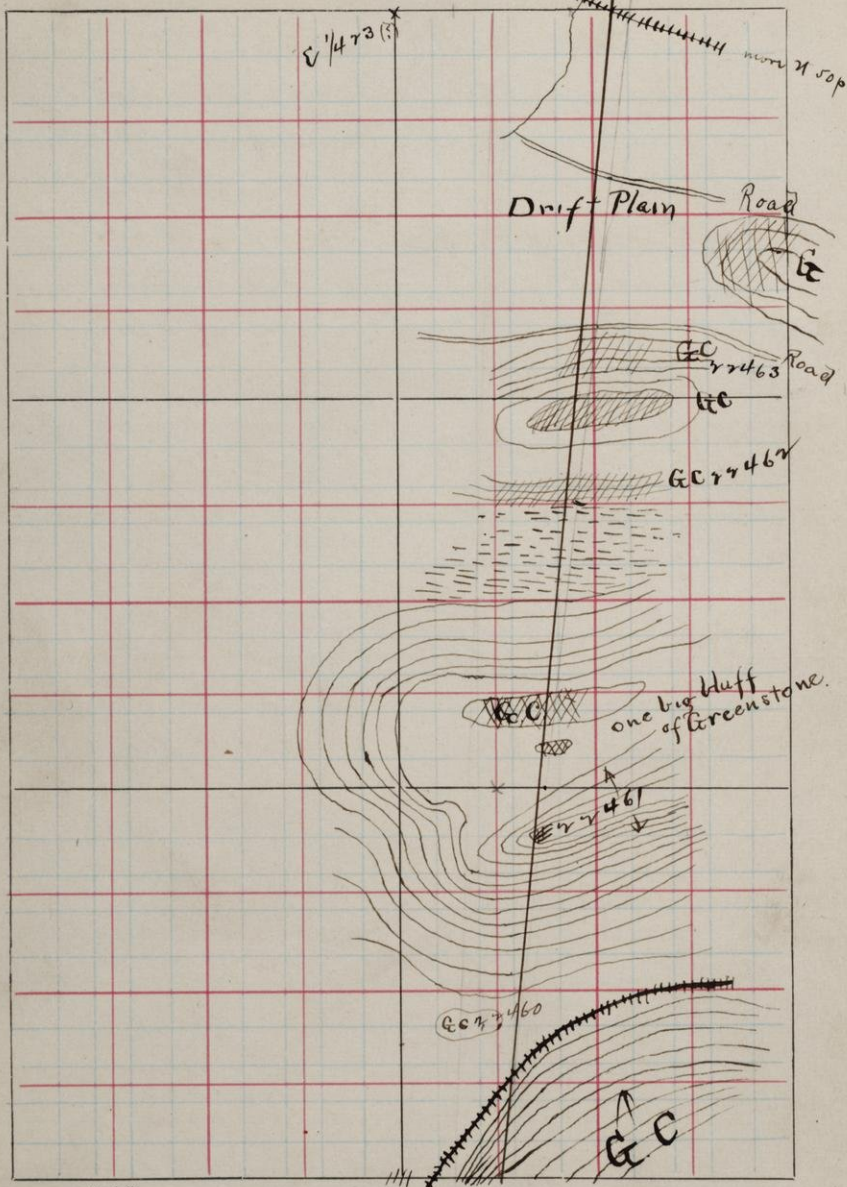
- 22458 730N 40 E SE cor 26 # 22458
Outcrop of greenstone.
- 22459 1440 N 175 E SE cor 26 # 22459
High ridge of greenstone.
- 22460 1690 N 175 E SE cor 26 # 22460
Greenstone conglomerate.
- 22461 1950 N 175 E SE cor 26 # 22461
Greenstone conglomerate
- 22462 375 N 225 E SE cor 28 # 22462
Greenstone conglomerate.
- 22463 575 N 250 E SE cor 28 # 22463
Greenstone conglomerate
- 22464 1250 N SE cor 28 # 22464
Knob of granite in a drift-
plain. The drift here is
at least 25-30 feet
thick as shown by creek
formed by erosion of the
stream.

S. 26-23 T.

48

R.

26



24

780 π we found the ex-
centric line of 13 610 paces
west of what I took to be
the centric state.

Dead river seems to be
about 50-75 paces north.

at this point (1000 π 1610 W-
Se cor 13) is an outcrop of
greenstone represented by

22465 / #22465.

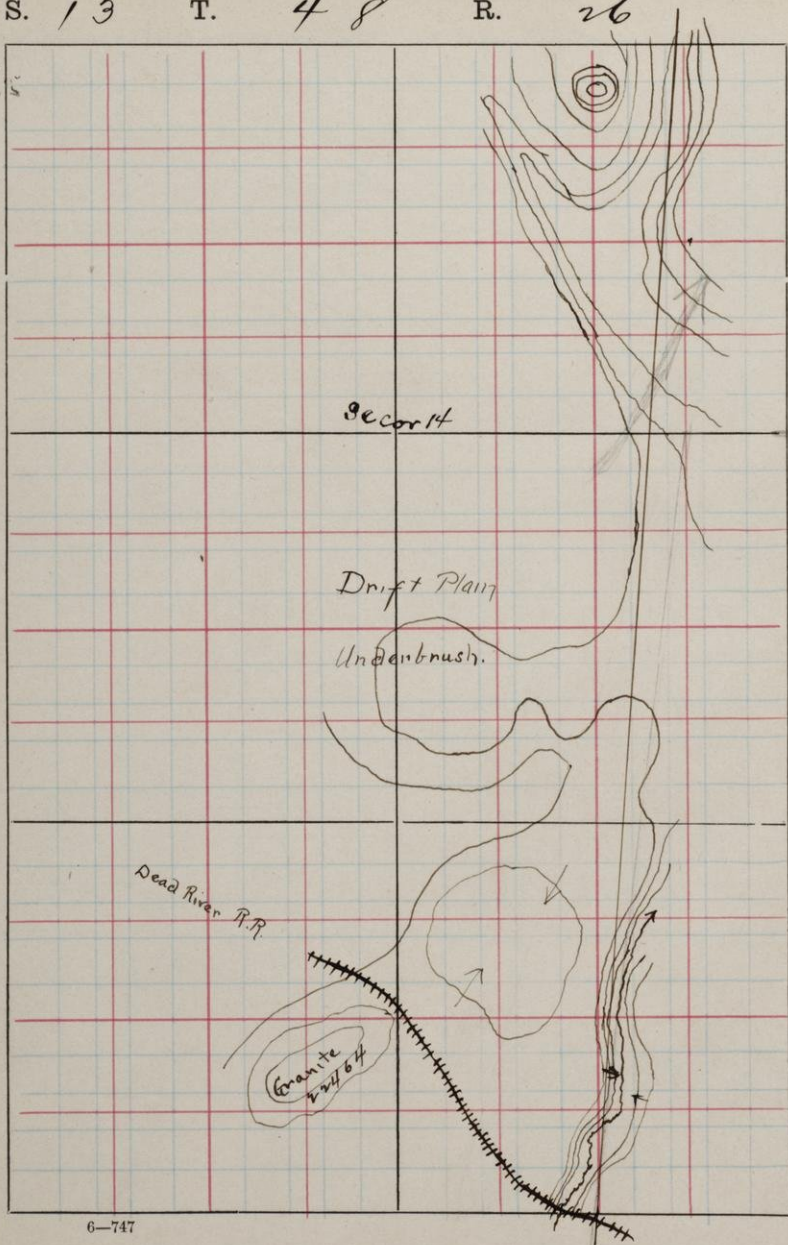
S. 13

T.

48

R.

26



S.

13

T.

48

R.

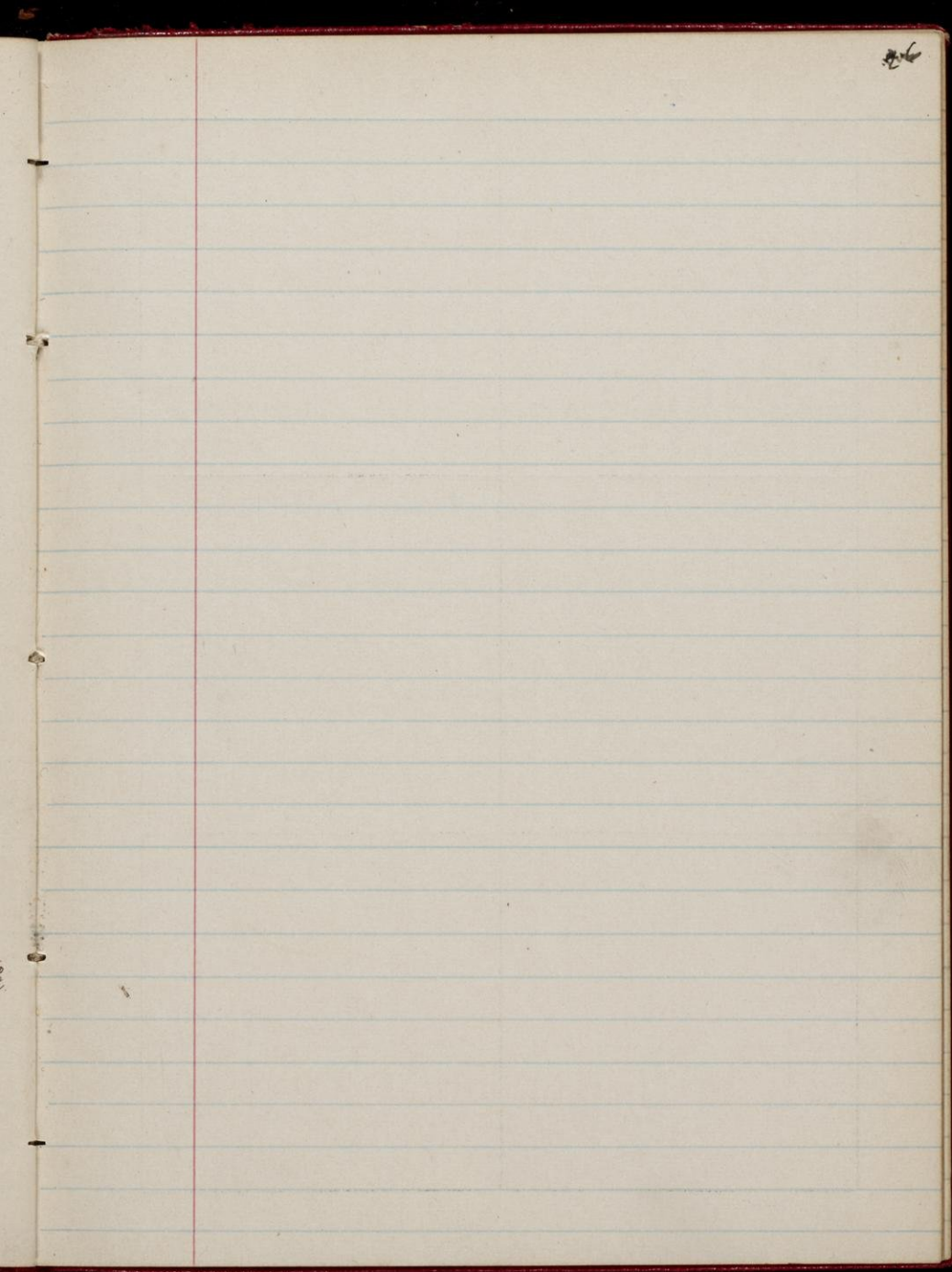
26

w 1/4 8/13

Dead River

465

→ 2060
for south



S.

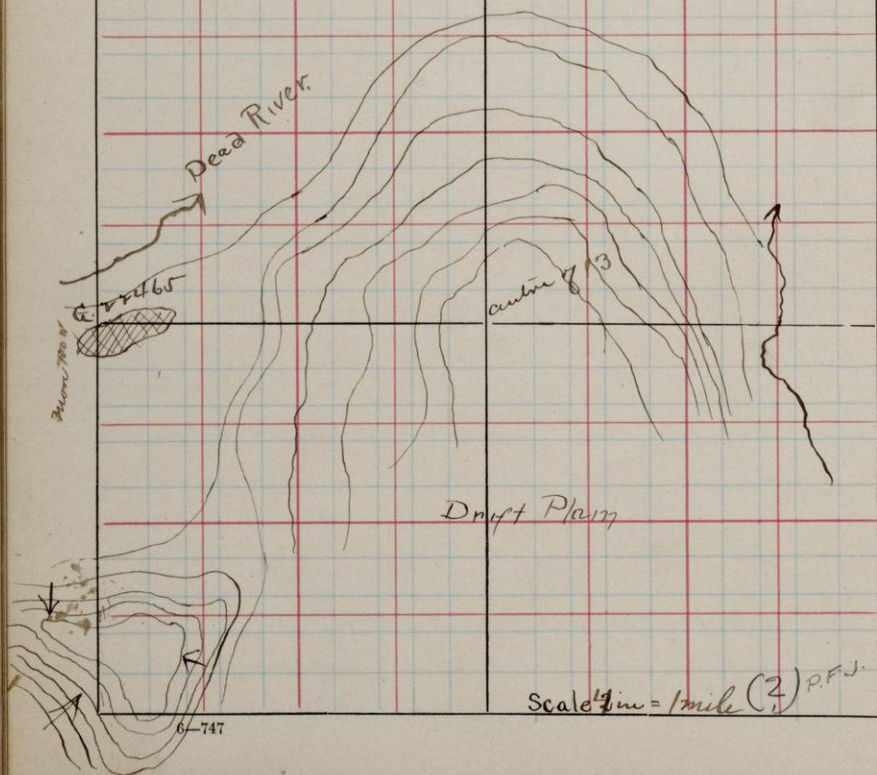
13

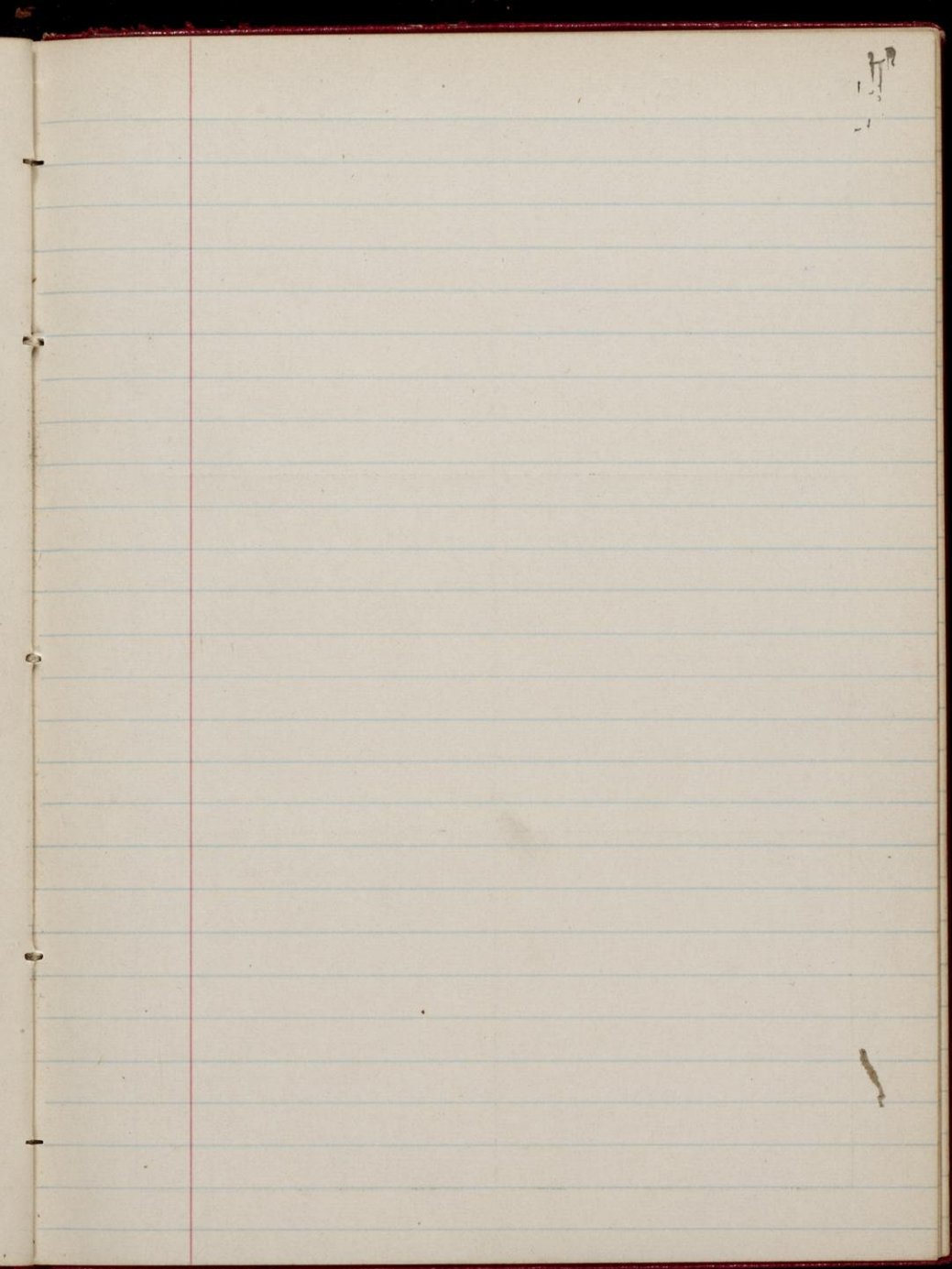
T.

48

R.

26





R.F.J.

S. 24-25 T.

48

R.

26

Scale 4 = 1 mile (2)

Drift.

center of
rd Road

Dead River RR

G. 22466

G.C. 22467

G.C.

G.C.

G.C.

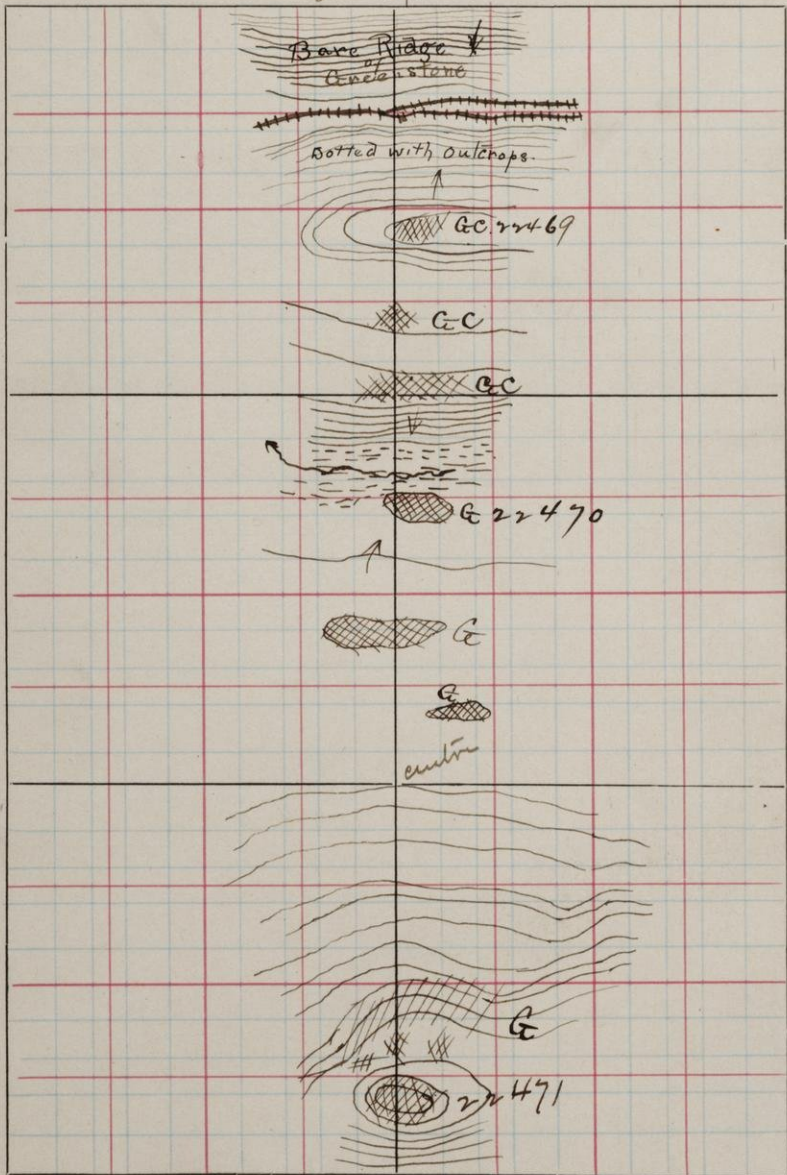
G.C.

22468

all outcrop of G.C.

5/4 of 24

26
1
1



- 22466 740 N 97.5 W SE cor 24 #22466
Greenstone in R.R. cut. All
the country so far south
has been heavily drift covered.
- 22467 530 N 100 W SE cor 24 #22467
Greenstone from one of a series
of low parallel ridges. I should
say that these rocks are
the conglomerate phase.
- 22468 100 N 100 W SE cor 24 #22468
Greenstone conglomerate.
- 22469 1700 N 100 W SE cor 25 #22469
Greenstone conglomerate.
- 22470 1360 N 100 W SE cor 25 #22470
Small outcrop of greenstone.
- 22471 1570^{(2) P.F.I.} N 100 W SE cor 25 #22471
Greenstone

S. 25 T.

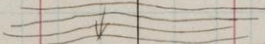
48

R.

26



State



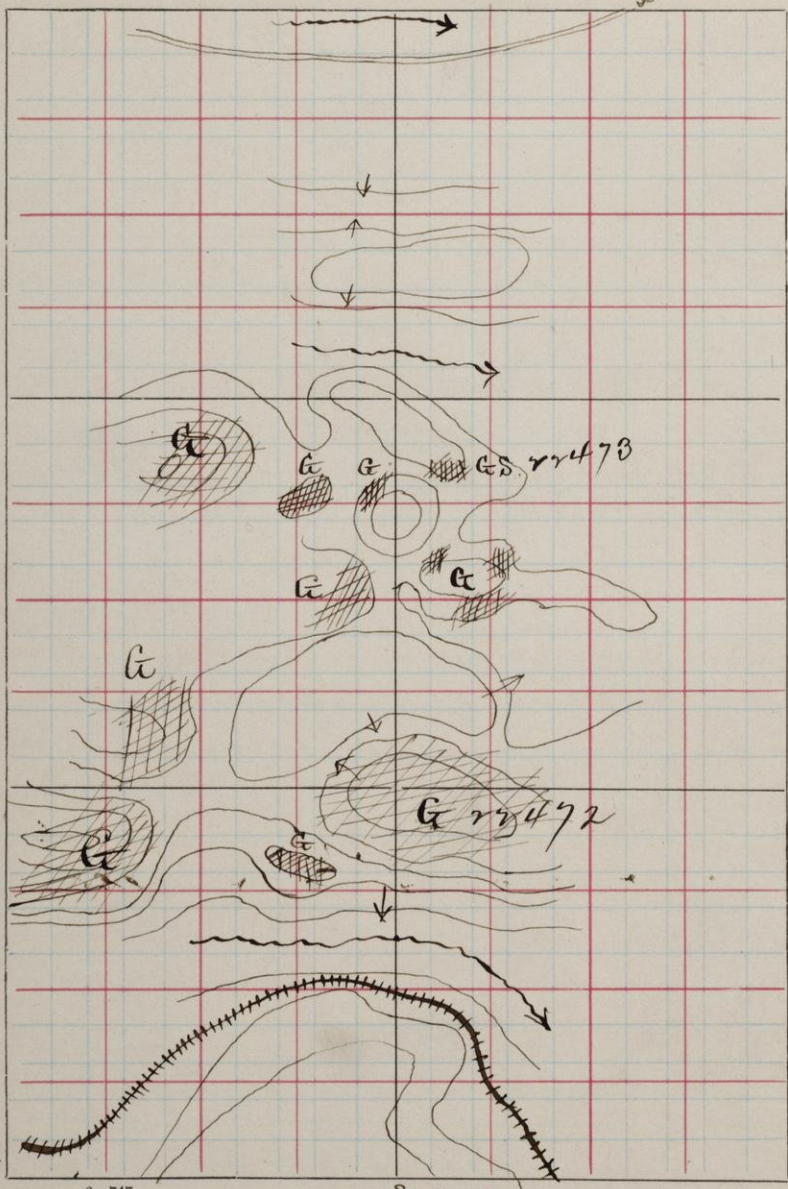
Road

SS&A

R.R.

5/4/25

S. 30 T. 48 R. 25 Iron Road.



QSS.A.

June 20th Bright

31

Running north on east-line of 30, 19⁺
18 and south on the $\frac{1}{4}$ line next
east.

22472 500 N SE cor 30 # 22472 Greenstone

(1950) 1000 N 1950 W SE cor 29 # 22473
Greenstone.

22474 550 N SE cor 19 # 22474 An
abrupt, long, and narrow
ridge of greenstone.

22475 1310 N 1975 W SE cor 20 # 22475
Greenstone. Like the rest much
jointed and also locally
tending towards the development
of epidolite seams and
conglomeritic facies.

S.

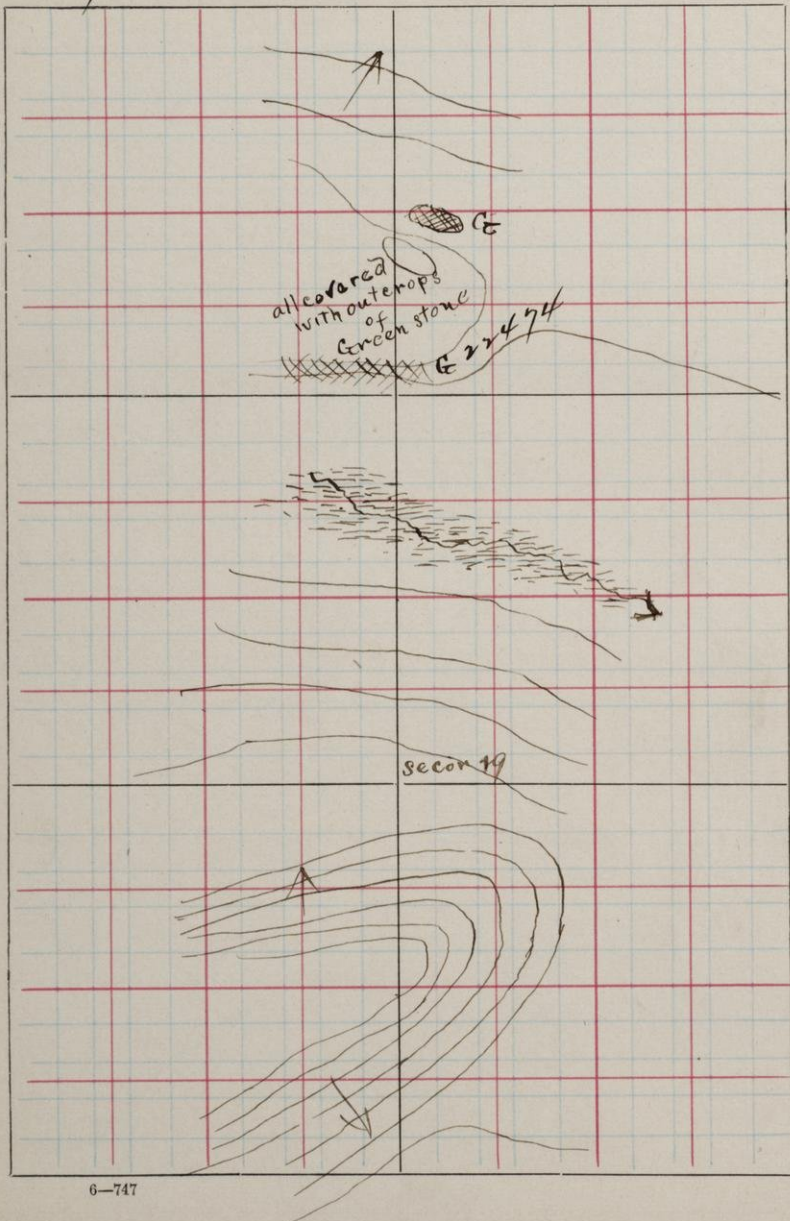
19

T.

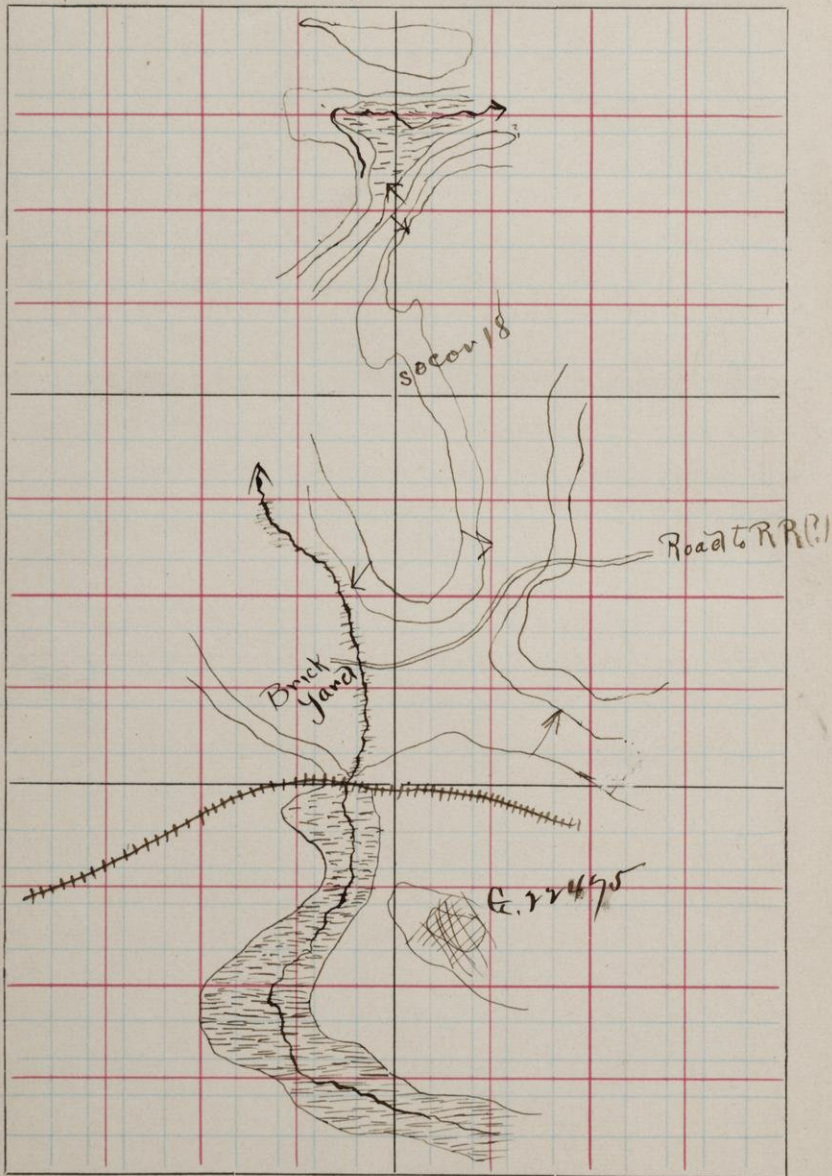
48

R.

25



S. 19-18 T. 48 R. 25



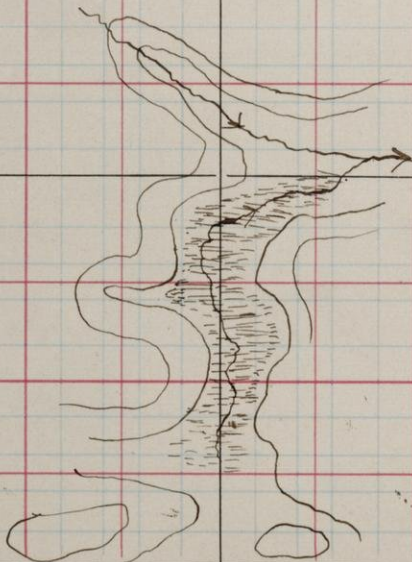
S. 18

T. 48

Secor 18 R.

25

Greenstone
and 2476-7
Granite



22476-7

16102 secor 18 # 22476 represents the character of the main mass while on the top of the outcrop occurs a peculiar phenomenon the first of the sort which I have noticed so far. The general impression is that of a dyke of the "pink" nation but upon even the most superficial examination the granite is found to be in the shape of lenses embedded in the greenstone as specimen # 22477 shows. It would seem that the most probable explanation is that of brecciation in place or a friction breccia; that the granite entered the greenstone as a dyke and was subsequently brecciated along with the enclosing greenstone. There seem to be indications of age or structure which are not shown in the specimens.

16

S.

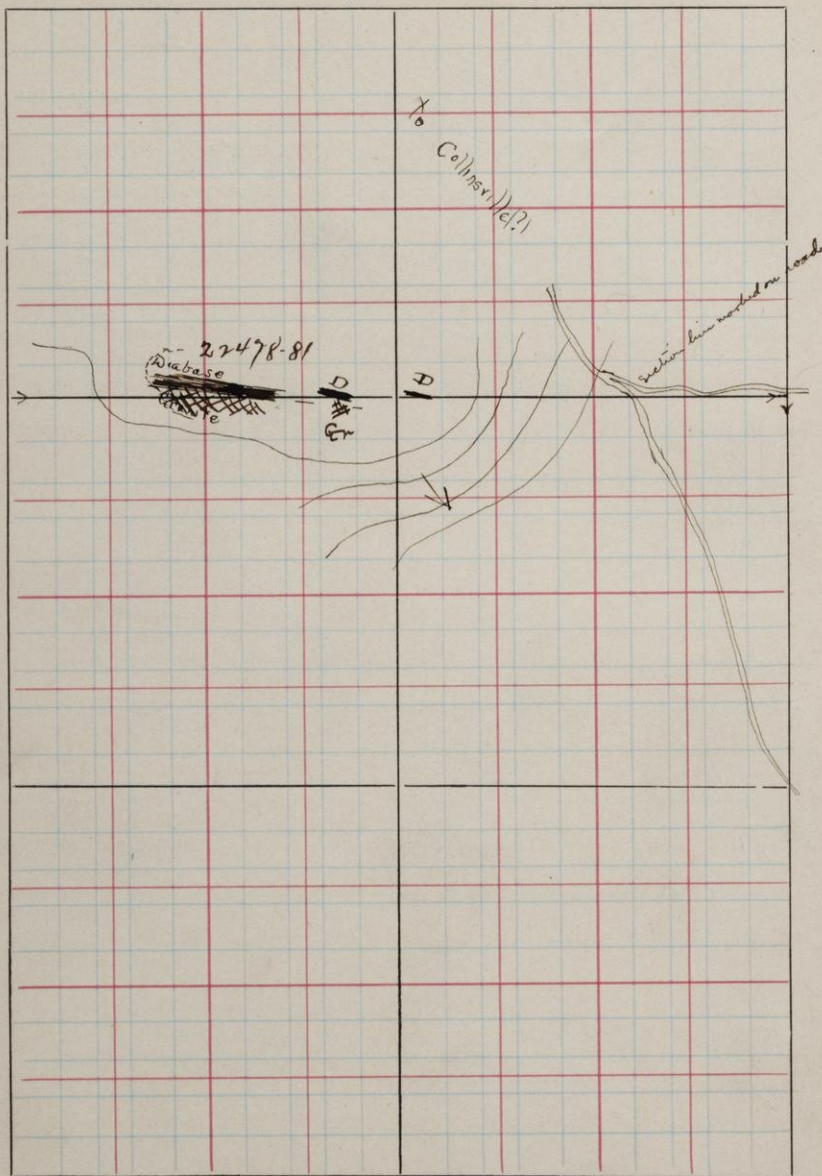
8

T.

48

R.

25



22478

5

22481

22480

1800 W SE cor 8 is an exposure of granite (#22478) which on its northern side is flanked by what appears to be a dyke of diabase (#22479). The contact between these is more or less marked though both rocks at that point tend to disintegrate. #22480 represents the contact-facies of the granite while #22481 shows that of the diabase. These last two are not good hand specimens but I thought they might help in the study.

The quartz of the granite near the contact weathers in more or less parallel ridges whose strike is that of the contact.

There are lenses of granite in the diabase but whether these are inclusions or are merely "pink dykes" I am unable to say. If the latter this exposure will aid in the determination of age of both rocks.

The granite ceases at about

S.

17

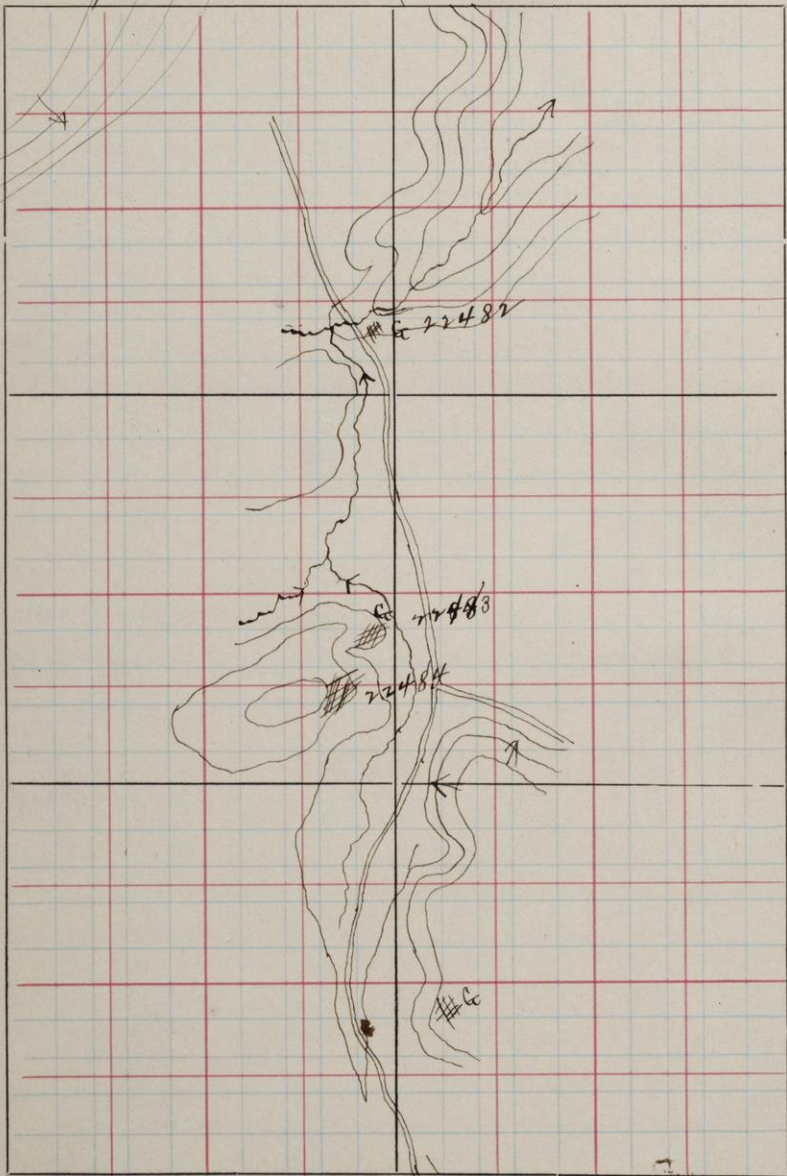
T.

48

n 1/4 sec 17

R.

25



1775 W Secor 8 while the diabase continues a little farther. The granite appears alone at 1700 W and then both granite and diabase at 1560 W. The diabase occurs alone at 1472 W.

At this last point may be seen a small "pink dyke" intersecting the diabase normal to the general trend of the diabase.

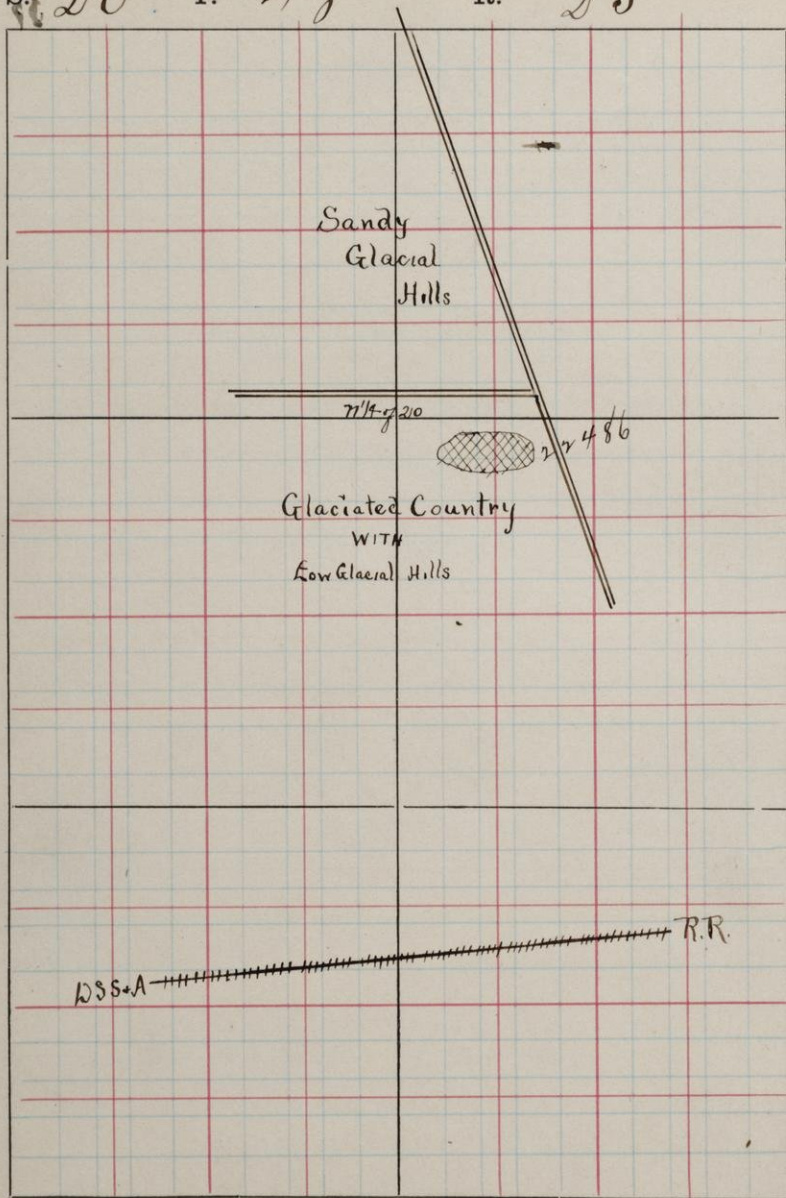
22482 1565 N 1010 W Secor 17 # 22482
Outcrop of pyritiferous greenstone.
The bed of the creek is full of large granite boulders.

22483 1200 N 1000 W Secor 17 # 22483
Greenstone.

22484 1100 N 1000 W Secor 17 # 22484
Greenstone.

22485 740 N 1000 W Secor 17 # 22485
Greenstone schist.

S. 20 T. 48 R. 25



22486

800 W 32 cor 17 # 22486.

a small outcrop at the
forks of the road and wing
westward.

35.

S. 20-29 T.

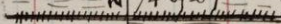
48

R.

25

Farming land

Drift Covered.

Town  N $\frac{1}{4}$ of 29 Road

29

T.

48

R.

25

Town

Road

Swampy

State

Road

Greenstone

Lake

~~22587~~^x 420 N 1000 W secor 29 # 22587.
Greenstone schist.

~~22588~~^x 325 N 1125 W secor 29 # 22588
Greenstone schist.

~~22589~~ 320 N 1125 W secor 29 # 22589
Greenstone schist

~~22590~~[✓] 315 N 1125 W secor 29 # 22590
This is the conglomerate in which the pebbles are granite and the ground mass seems to be the adjacent greenstone

~~22591~~ 315 N 1125 W secor 29 # 22591
This is a granitic pebble from the conglomerate or breccia.

~~22592~~ These two specimens (# 22592
~~22593~~ and 22593) were taken from the same area and hence were not carefully located.

~~22594~~ Shore of the pond. This is an undoubted sedimentary

44

possessing a strike of $N 90^{\circ} E$ and
a dip of $85^{\circ} S$.

The shores of the lake are
formed in a great part by
outcrops of this rock.

With this whole phenomenon
I was not able to do much
and hence deem it worthy
of careful study. I visited
this outcropping twice and
it was more thoroughly
examined by Mr. Phillips.

Very few fossils were
taken since we were at
a loss to more than record
the occurrence.

From what I saw in the
morning (# 22476-7) the most
probable explanation seems
to be that of brecciation
in place. If this is the
true explanation the
brecciation did not extend over
as large areas as that suggested
among the greenstones by
Dr Williams. At no place

S.

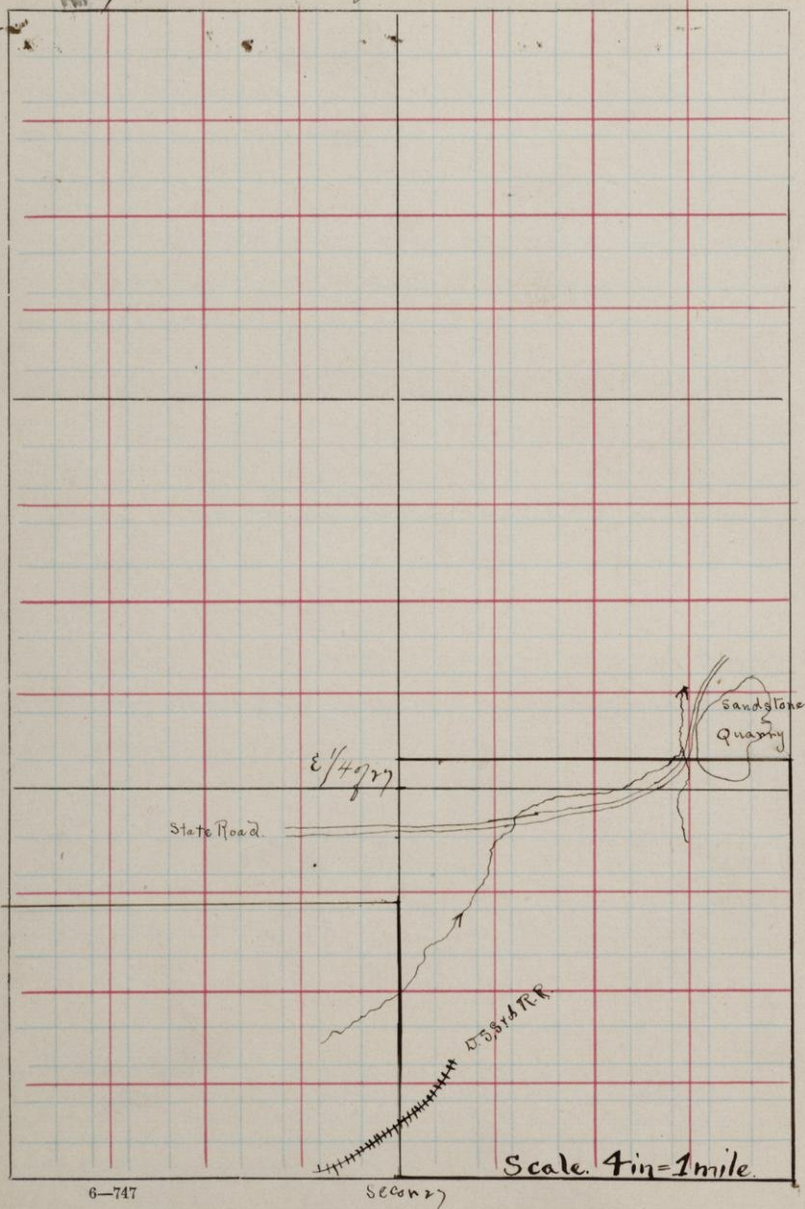
27

T.

48

R.

25

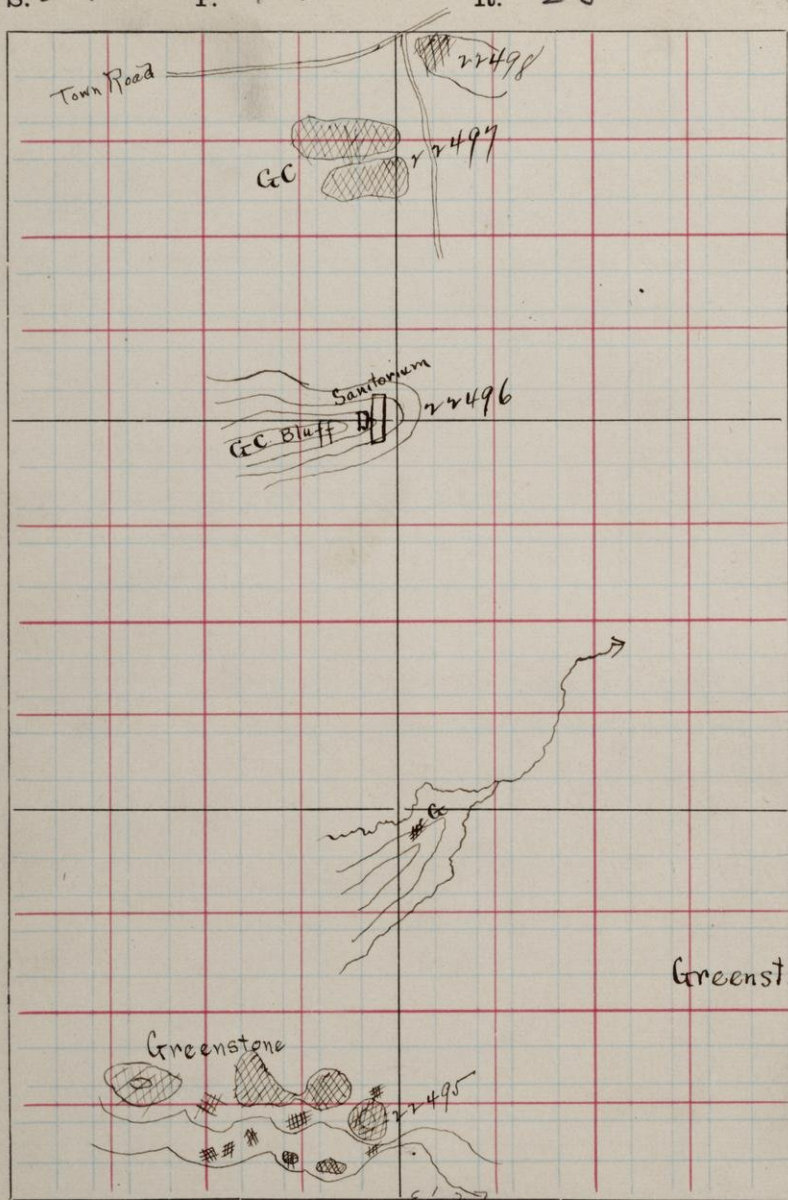


410
did the rocks suggest to me
that they were sedimentary.

S. 27

T. 48

R. 25



12495 1850⁽²⁾ N - 100 W SE cor 27 G.

44

4th April

S.

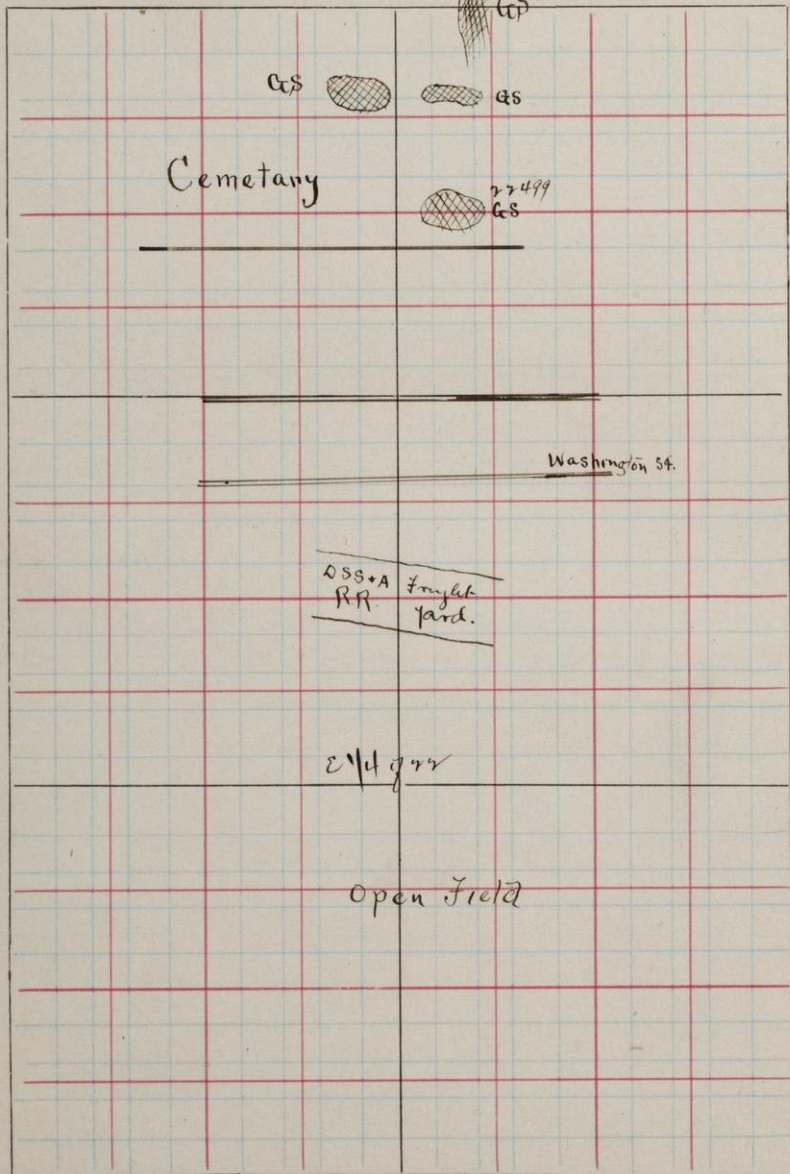
22

T.

178

R.

75



22499

1750 N SE cor 22 # 22499

(Inside the cemetery) Greenstone
schist.

The specimens in blue between 1474
both inclusive should receive
the numbers 22486-22499 inclusive.

I had sent in and had packed all
of these specimens before my numbers
came + it seemed inexpedient to
re-number at this time.

S. 3 T. 49 R. 26

South Head

Road

Platted out to this page

Secor 3

Gradually rising to the Westward (6%)

Scale 4 in. = 1 mile

June 23rd 92.

44

Running west on section line 1 mile south of north town line of 49 beginning at the road which is 1300 east of the SE cor of 3.

Crossed Garlic River at 1530 west of the SE cor of 3. The east bank about 70 feet high is of red sandstone.

The numbers in parentheses give approximate height of locality above the sea.

Garlic river (670)

S¹/₄ Sec 4 (810)

1100 W SE cor 4 (880)

22500 1500 W SE cor 3 # 22500

Sandstone. The sandstone is not very well exposed but seems to lie almost horizontal dipping slightly to the north.

22501 1150 W SE cor 4 # 22501

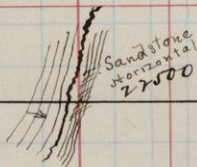
This is a high bluff of what seems to be an indiscriminate

S. 4-5 T. 49 R. 26

S 1/4 of 4

More or less level

Sec 4



S 1/4 of 3

Scale 4 in = 1 mile

Contour Interval = 20 feet

Sec 5

H.S.

H.S. + 2200

S 1/4 of 4

457

mixture of hornblende schist
and greenstone or else
hornblende schist of various
varieties

22502 1850 N Secor 8-49-26 Hornblende
schist. This specimen # 22502
represents the general
character of the hills shown.

The hills are not all exposed
yet if a cross were made for
each outcrop most of the
contouring would be obscured.

22503 1500 N Secor 8 # 22503 Hornblende
schist. This rock again
shows the character of the
character of the underlying rock.

South of this the outcrops
are practically wanting.

If there is any difference
between # 22502 and # 22503 it
merely shows the general char-
acter the better for the specific
character is constantly varying
in the same outcrop & even in
the same specimen. The range
of variation is small.

S.

8

T.

49

W. 208

R.

26

Hornblende Schist.

HS 22503

HS 22502



6-747

46

72

S. 8-17

T.

49

R.

26

More or less
level Country.

Section

(700)

June 24th

47

Running south on east lines of 17+20,
thence west on south lines of
20+19 and north on east-range
line of 49-27 to the SE cor (2-49-27)

22504 Just SE of SE cor 17. # 22504
all the rest of the hill is
like the specimen.

Here the case is as before if all
the outcrops were found and
platted the whole hill would
appear as an outcrop or if
the timber were cut and
burnt the whole hill would,
I believe, be an outcrop like
22504

22505 1125 N 25 W SE cor 20-49-26
Hornblende schist # 22505.
The strike of ^{the schistosity of} these rocks is
N 55° E with a dip of from 15°-18°
North

These rocks are earlier than
the pink dykes which penetrate
them more or less parallel
to their schistosity.

S.

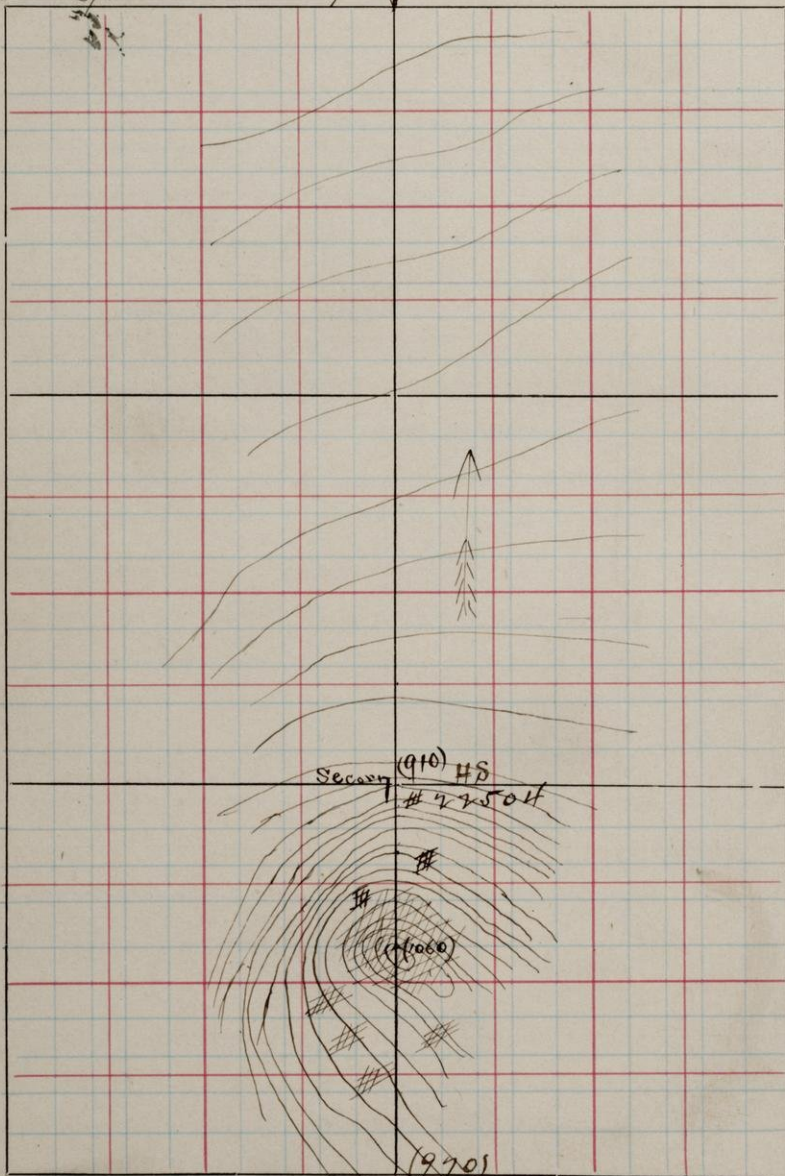
17

T.

49

R.

26



48

I don't believe these rocks to be sedimentary but am hunting for any evidence of this. The rocks appear to be like highly foliated banded greenstone. They are much jointed and broken and have the gnarled appearance of some gneisses.

22506 400 W SE cor 70 # 22506

This rock while looking entirely different is the specimen presents the same general appearance as the preceding. At first sight the outcrop suggests granite

22507 Taken from bluff at the SE cor of 70.

The corner stake could not be found.

22508 1000 W SE cor 70 # 22508

Quite an extensive exposure of schist at this point. No corner but E-W & N-S lines

S.

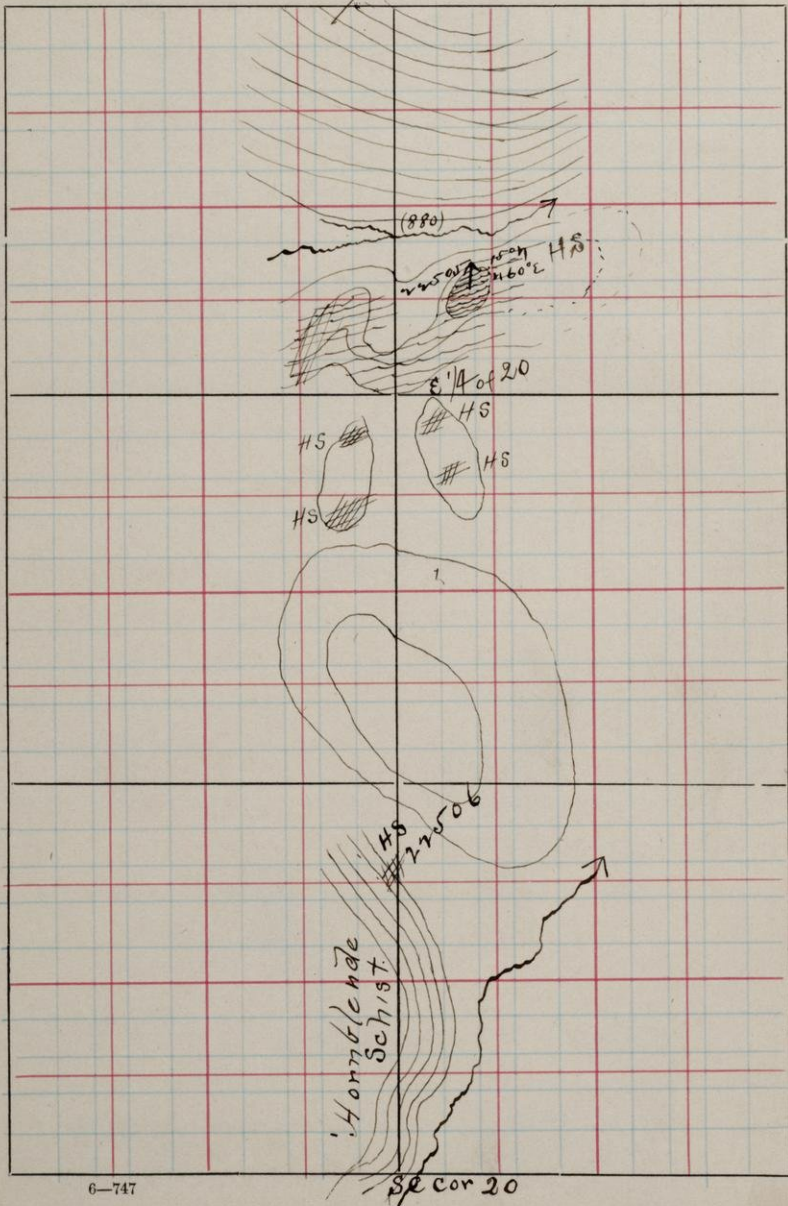
20

T.

49

R.

26



S.

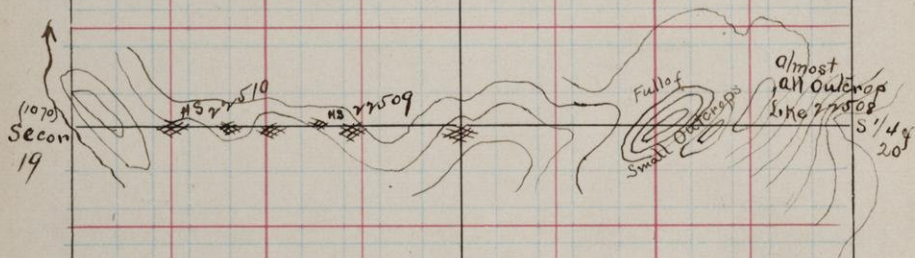
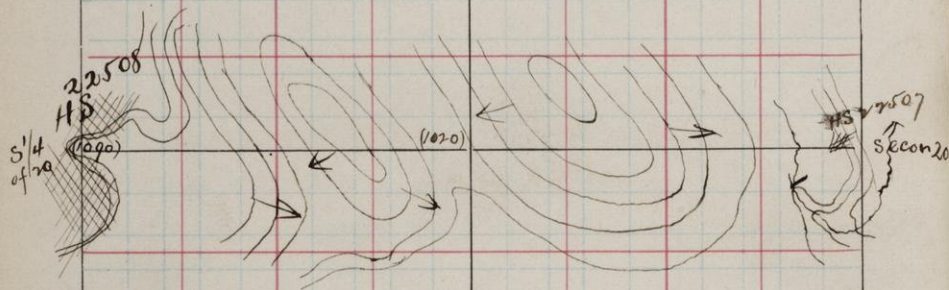
20

T.

49

R.

26



- 22509 1640 W SE cor 20 # 22509.
Hornblende schist.
- 22510 1850 W SE cor 20 # 22510
Hornblende schist.
- 22511 343 W SE cor 19 # 22511
Basic rock something like gabbro
- 22512 550 W SE cor 19 # 22512
Hornblende schist.
- 22513 850 W SE cor 19 # 22513.
Hornblende schist. G.D. #5.P.
- 22514 50 N 1150 W SE cor 19 # 22514
Hornblende schist.

The last three are in all
probability too far east.

- 22515 410 N SE cor 24-49-27
22515 Hornblende schist.
- 22516 1120 N SE cor 24. # 22516
Hornblende schist.

S.

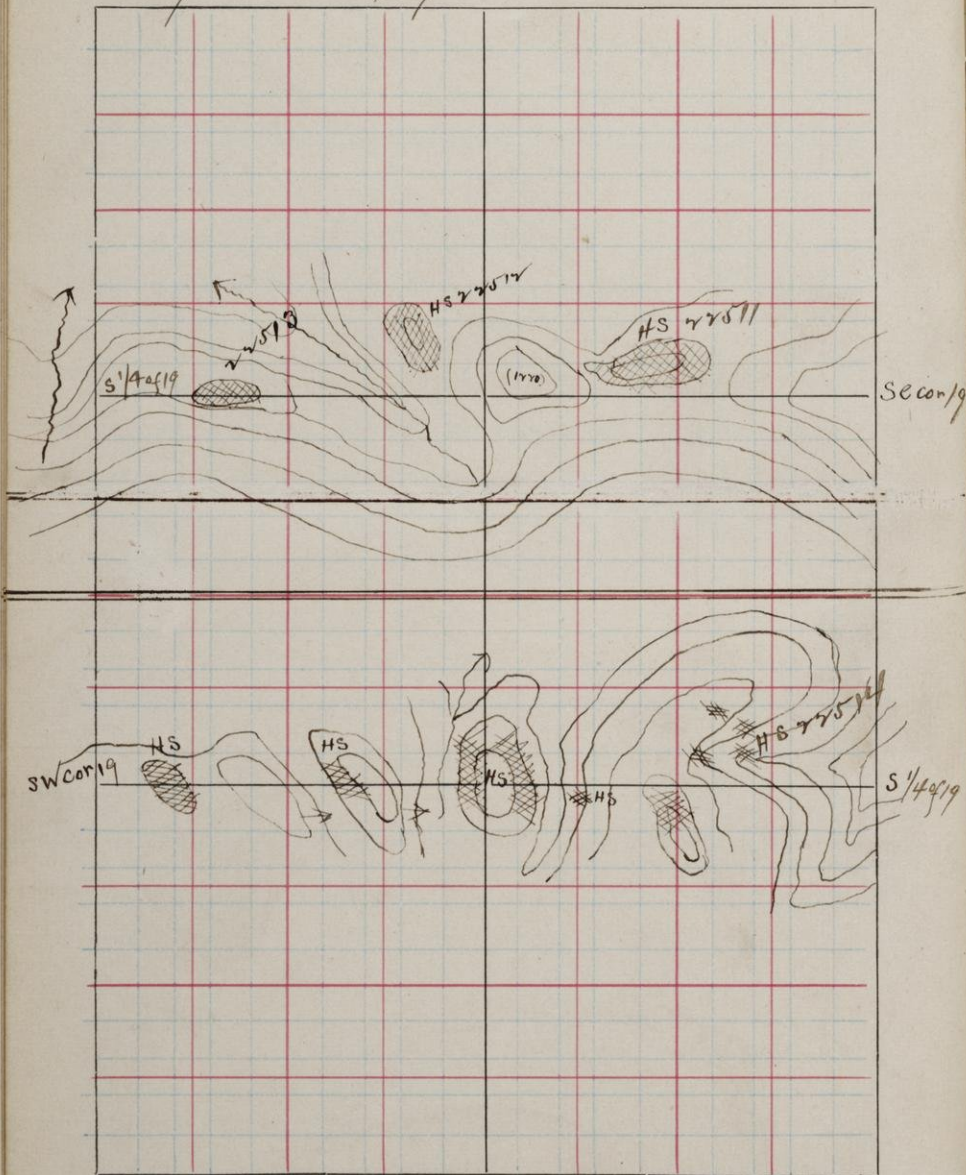
19

T.

49

R.

26



22517 1600 N SE cor 24 # 22517
Hornblende schist.

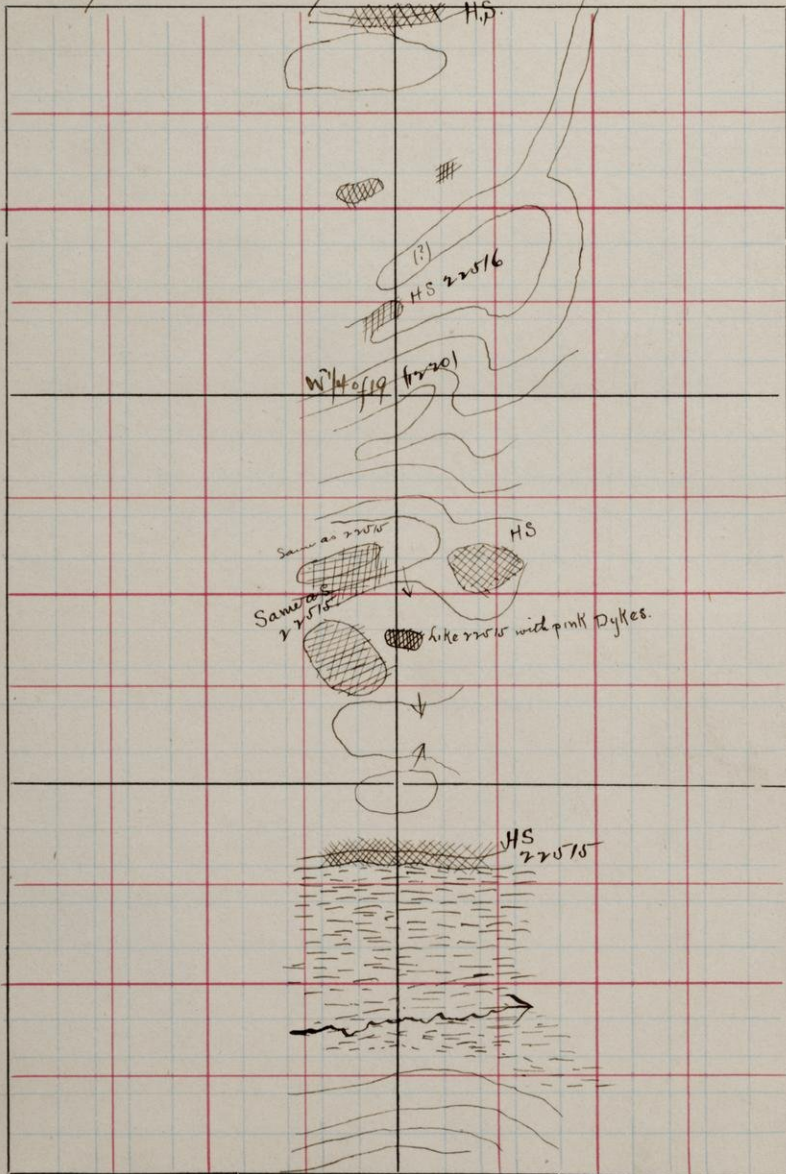
22518 25 N SE cor 13-49-27 # 22518
Some basic granitic rock
perhaps a hornblende
syenite.

22519 273 N SE cor 13 # 22519
Hornblende schist.

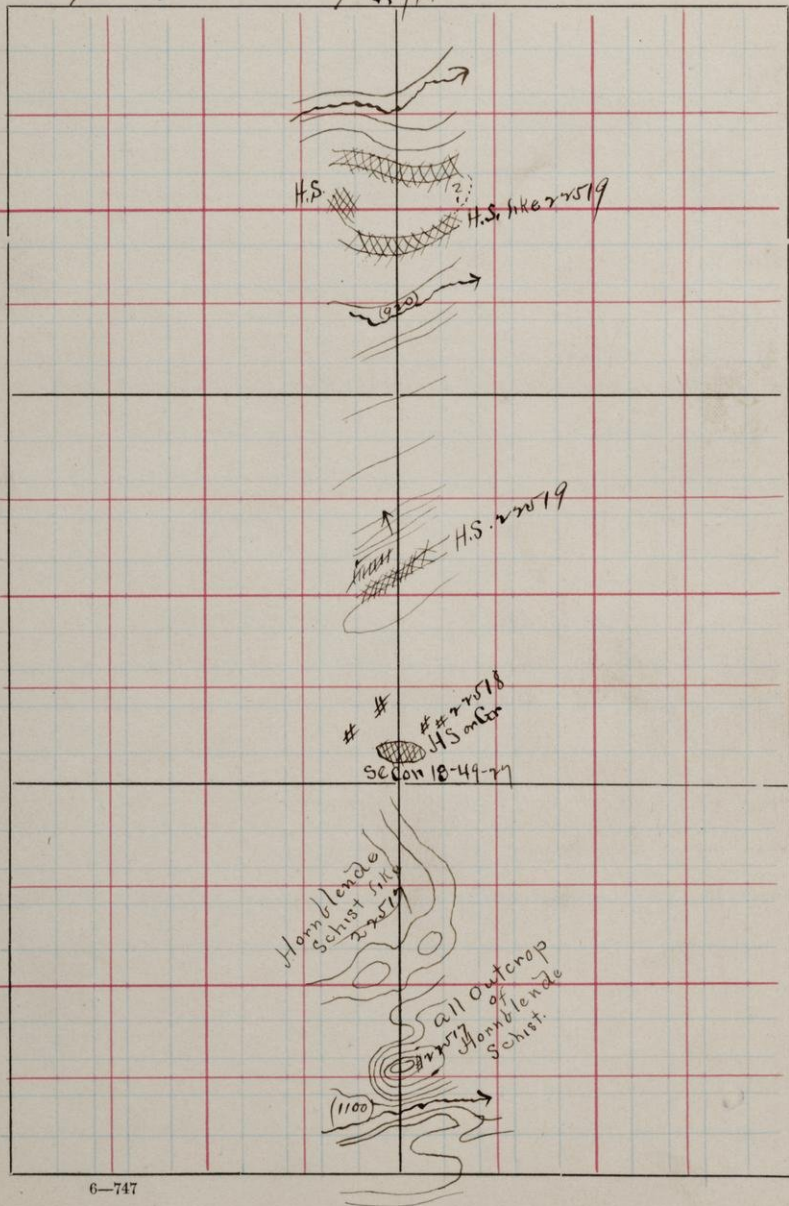
22520 1600 N 75 W SE cor 13 # 22520
Called "Syenitic Granite"
on township plat.

15
20

S. 19 T. 49 R. 26

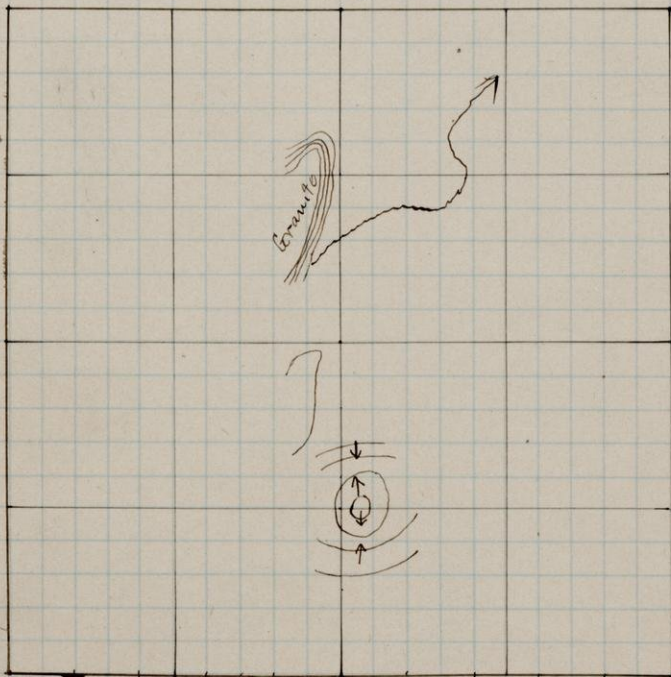


S. 19-18 T. 49 R. 26 NW 1/4



S. 18 T. 49 R. 26

nw cor
18



H. E.

Gramer

Gruenewaldt

48 on grandt & really Tenn

