Season 1901 - Mesabe [Mesabi]: [specimens] 46007-46078. No. 370 1901

Newman, Mark H.
[s.l.]: [s.n.], 1901

U. S. GEOLOGICAL SURVEY

FIELD SECTION BOOK

9-891

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 x 2½ x ¾ inches will be allowed, but in all other cases *large-sized specimens*, trimmed to a size of 3 x 4 x 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.

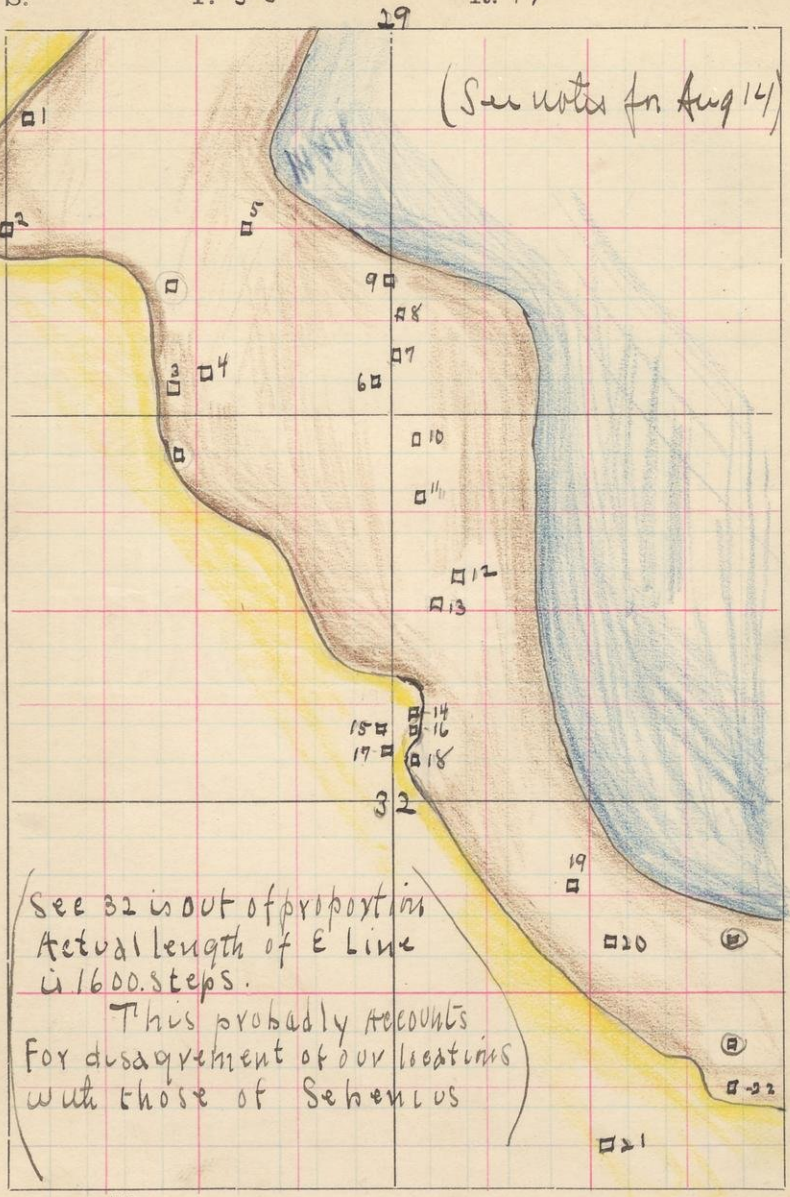
W. H. Hannah.

Season 1901 - Meraki

46007 - 46078 -

Notebook No. 370

S. T. 58 R. 17



6—747

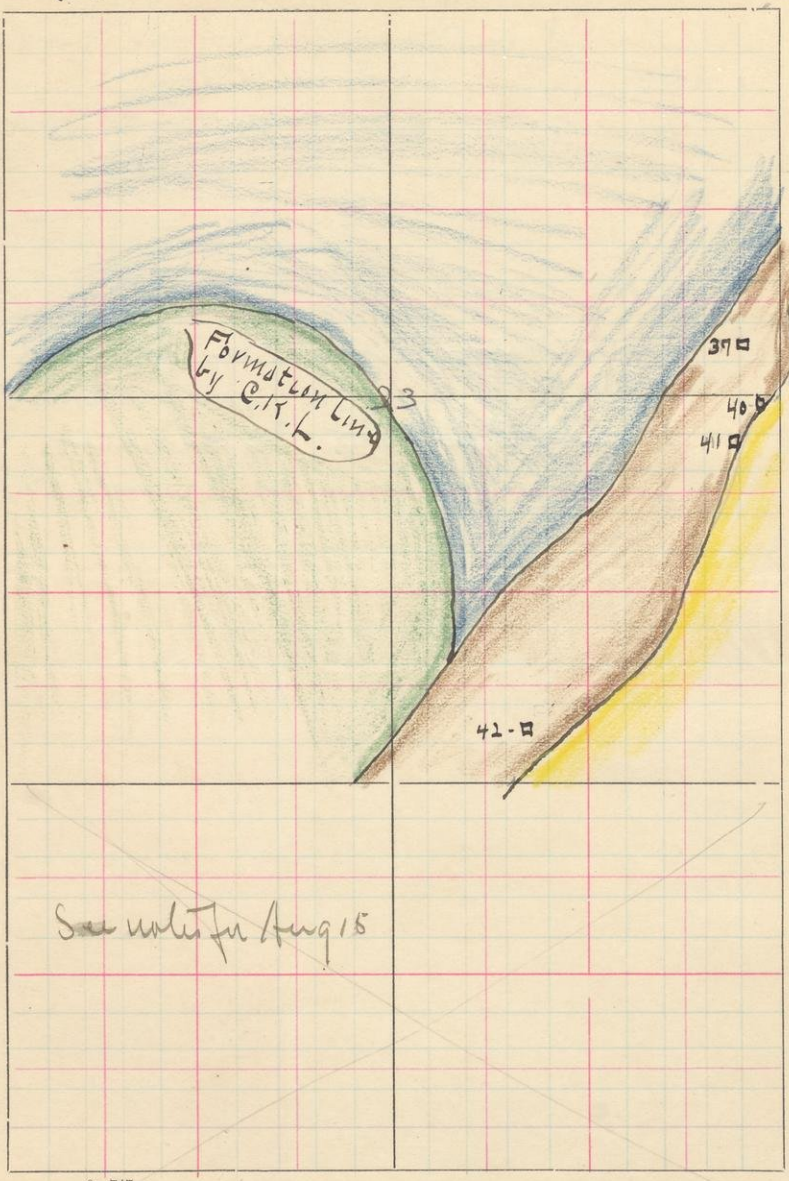
Aug 14 - Test pits in the Dwarsty. ~~Iron formation~~ as mapped in 29+32 - 17-5-8-

1 Pit in quartzite
2. " " hard banded quartzite.
3 - " " slaty micaceous "
A long lower ate composed of large quartz grains and stained to a yellow clay by iron oxide is found here.
4. Pit in drift.
5. " " Massive quartzite.
6. " " banded "
7. " "
8. " " Both banded micaceous q-
9. " " Quartzite - similar to 8.
10. " " 8+9.
11. " " Compact banded quartzite
12. " " " " "
13. " " "
14 " " Iron Formation hat. formed in Quartzite.
15 - Similar to 14!
16 - Pit in Iron Formation and hat-formed in Quartzite. (Same as quartzite by Subways)
17 Pit in Iron Formation hatformed in Quartzite -

18- Pt in Quartzite.
19- Pt in Massive Siliceous Quartzite.
20 " " Slaty Micaceous "
21 " " Iron formation & Taconite.

Note - The pits from 12 to 18 inclusive should be treated 100 steps south from present location on field sheet. This by plane formation line as drawn on map 1-

S. 23 T. 58 R. 17



See note for Aug 15

Aug 15 -

36 - Pit between old logging RR and D.J. RR. tracks - Battened in massive vitreous & banded Quartzite Passes through micaceous, slaty quartzite & ore dumps were found a few small pieces of Tourmaline of the basal sort.

37. Pit in Slaty Micaceous Quartzite
38 " " Iron Formation.
39 " " ~~Quartzite~~ " "
40 " " Quartzite
41 " " " - Banded & Micaceous
42 " " Drift - (Reported Quartzite)

S. 26 & 27 T. 6S R. 17

(Milton Aug 16)

27

26

43
46007

44
46008

45
46009

46

47

48

6-747

Aug 16.

43 - Pit just N E - E 1/4 post 27-58-17. Evidently passes through quartzite of both the slaty-micaceous and banded varieties and is bottomed in slaty quartzite

46007

46008 44 - Pit bottomed in slaty phase of quartzite

46009 45. Pit bottomed in quartzite - Both slaty micaceous & massive or dumps - (Reports ~~Slate~~ Greenstone by color)

46 & 47 - Two pits bottomed in micaceous slaty and banded quartzite One of these pits is questioned on map. Location is about 100 steps due W of that given on map.

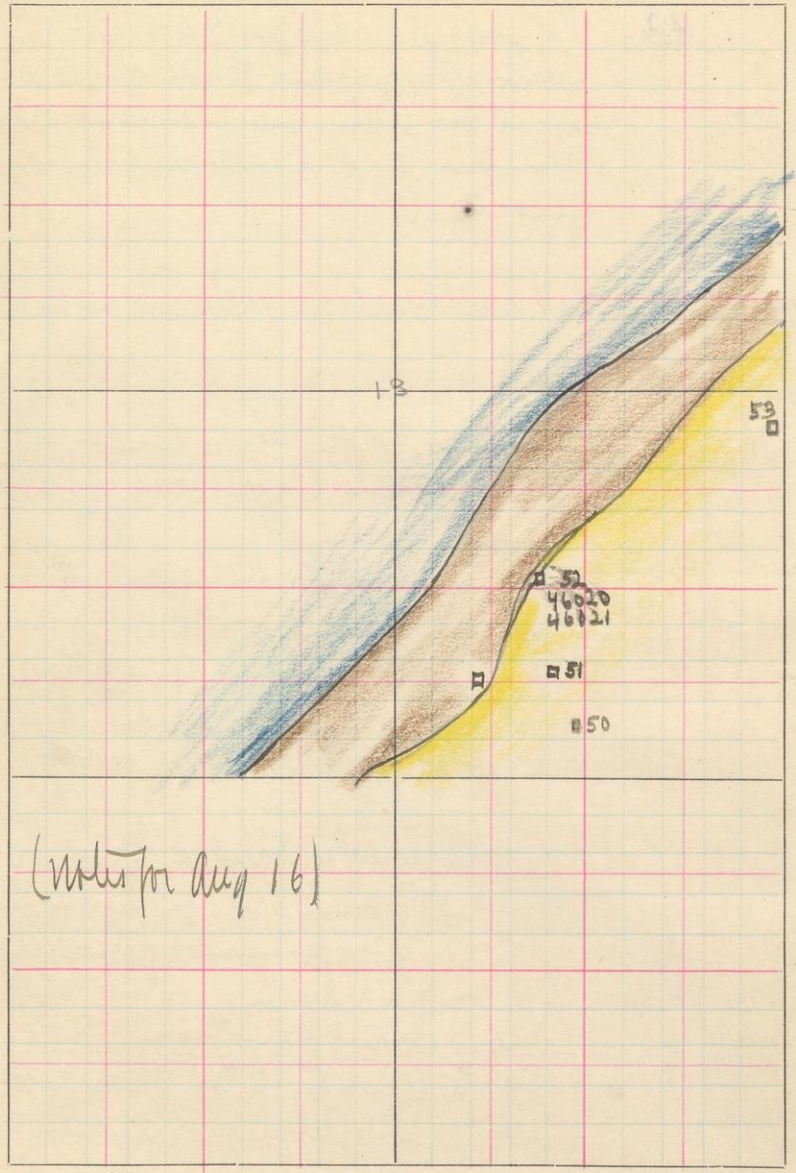
48. Pit in Micaceous & banded quartzite At about 50 paces S.W. from N 1/4 post in 34-58-17 is exposure of greenstone

~~46010~~ 46010 49 - Pit in quartzite.

50. In Sec 4 Iron formation.

51. Both quartzite & Iron formations shown. Relations undetermined.

S. 13 T. 5 S R. 17



(water for Aug 16)

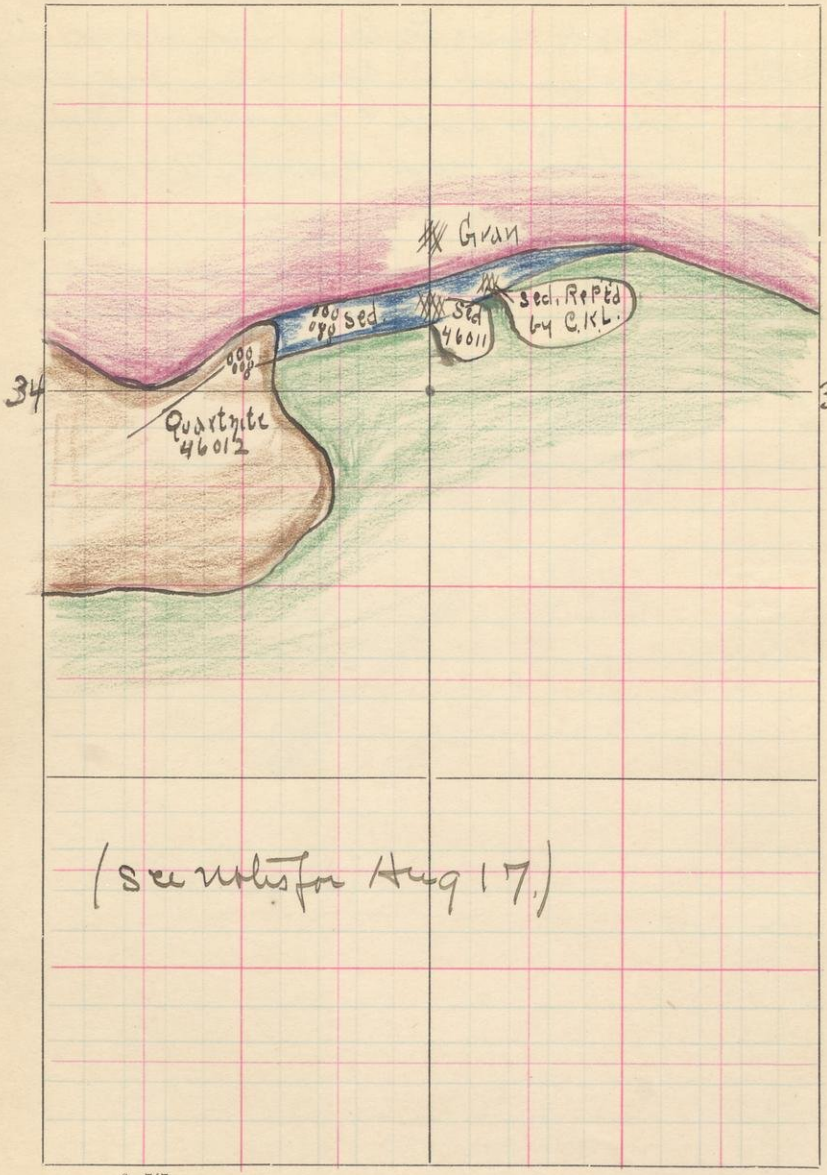
6—747

52. Pt bottomed in massive dark green quartzite - Conglomerate also found in dump - apparently basal Precambrian - Contains pebbles of vein quartz and large quartz sand grains

45020
45021

53. Pt in Precambrian and Tertiary.

S. T. 59 R. 17



(see Mtns for Aug 17.)

6—747

Aug 17 - Starting on road just S of W 1/4 post 35-59-17 - Run North - 800

At 400 N, when line crosses road is an exposure of sediment.

46011 Dip is almost horizontal & strike is a little N of E.

At 200 N of sediment is granite.

At about 1200 N & 300 W from S.E. corner 34 is a mass of broken sediment similar to that shown in the exposure mentioned above - This debris must be near ledge.

At 1100 N & 500 W from S.E. cor is a mass of broken quartz di boulders - This is the base

46012 quartz to & underlying the ledge directly under his it.

(These locations were checked by one by Erick - Running N from S.E. cor 24 - and were found to be correct)

Aug 19 - Started 400S of S1/4 post 36-54-16 Ran N to 400N of 1/4 post - 200 W - S to 400S of line - W 300 - N to 400N of line - W 200 - S to 300S of line - W 300 - N to 300N of corner post - W 200 and S.

For location of Quartzite see map.

46013 At 150N of 1/4 post was found a float of conglomerate - The shape size & position of float would indicate that it is not far removed from ledge.

46015 At 2200N & 30E of 1/4 post is outcrop of what appears from the general features to be a ledge of sediment - From the texture of the rock however this seems doubtful.

46014 From Ex pasture at 4000N & 30W of 1/4 post.

46016 Sediment(?) - From large float, worn little or none in transportation - Presumption what ledge is not far distant -

46017 Sediment from float at 400S & 410 W of 1/4 post.

Aug 20. Started at S 1/4 post 36-59-16

Ran E 500 - S 500 - E 500 ⁰⁰/₁₀₀ N to cor. Ran E from cor. 500 - N 500 - W 300 - N 500 to 1/4 line - E 300 N 500 ⁰⁰/₁₀₀ W to N 1/16 post on E line - Ran N to cor - E 500 - N 200 - 500 W to line - Ran N from cor. 800 - Came back 45 E 1/4 post. Ran W 600 ⁰⁰/₁₀₀ S to line - Started at SE cor - Ran SE to road.

For location of quartzite see map.

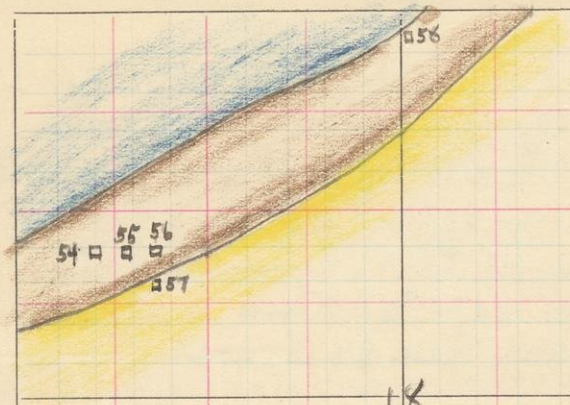
46019 At 440 E of S 1/4 post 36 is exposure of what appears to be qu.-st.-sch - but am not thoroughly satisfied that it is not sediment.

46018 At 500 N ⁰⁰/₁₀₀ 200 E of SE cor 36 is exposure of what appears to be a stringer of sediment in the quartzite

At 230 S of SE cor. 36 was found a float of quartzite and quartz breccia.

Ran 800 steps north of N.E. cor - 34
Found no granite exposures but from the number of granite boulders and the general topography believe that the granite line as drawn is approximately correct.

S. 18 T. 58 R. 16



18

(See writeup Aug 21)

Aug 21 - Starting at pits with Quartzite in NW¼ 18-58-16 followed formation to W½ Robert mine.

54 - Pit in drift.

55 " " Massive green quartzite.

56 " " " " "

57 " " Iron formation - (Failed to reveal remains but pits in this branch)

58 Pit in drift. Thinks this is last pit mapped farther east as that one could not be found.

59 Pit in massive green quartzite

60 " " " "

61 " " Iron formation

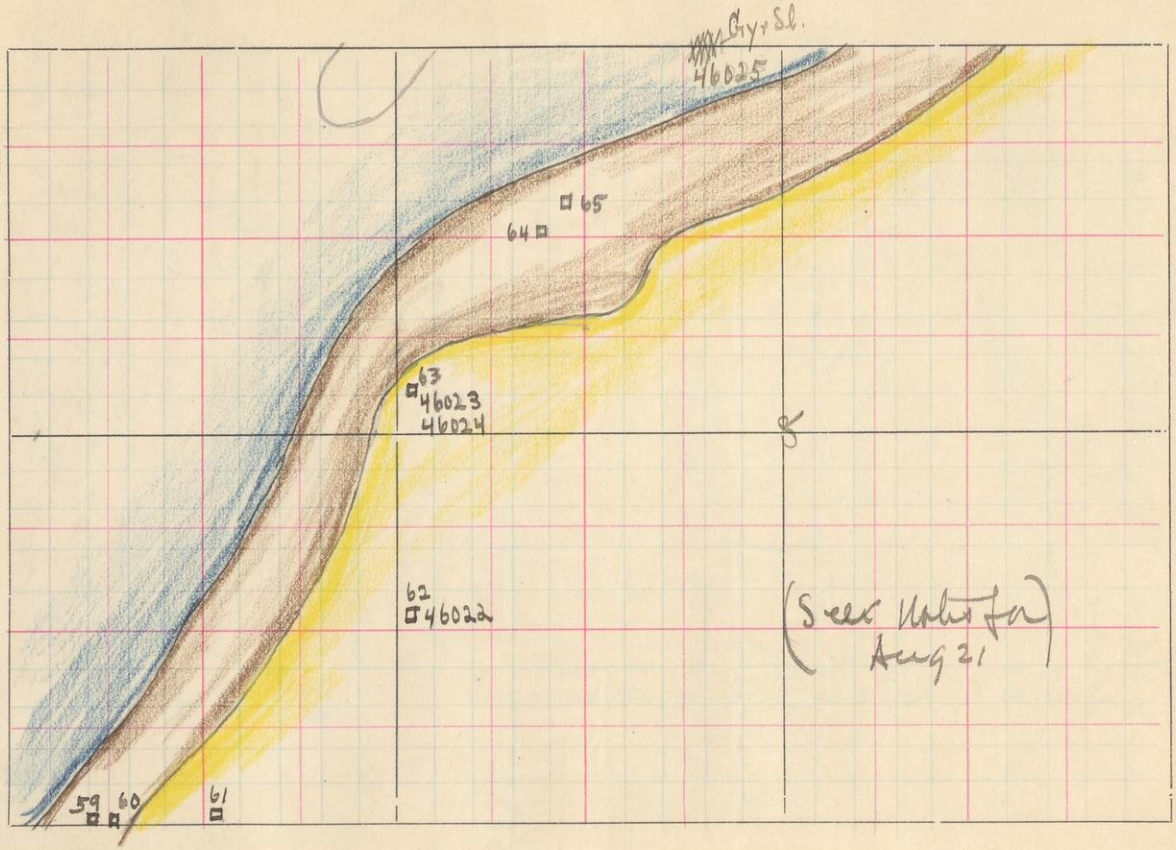
62 " " What is thought to be

46022 Iron Formation - The specimen is typical of the rock of which the dump is formed - Thinks this is the pit indicated near by on the map -

63 Pit believed in Iron formation - Judging from the dumps the Iron

46023 formation lies under the quartzite -

46024 The quartzite is micaceous and banded. The Iron formation is taconite much altered and red earthy ore - The specimens are typical, thinks all is Iron formation


Gry. Sl.
46025
65
64
63
46023
46024
62
46022
59
60
61
(See Water for Aug 21

S. T. 58 R. 16

7

The pits represented near here may be
more or less.

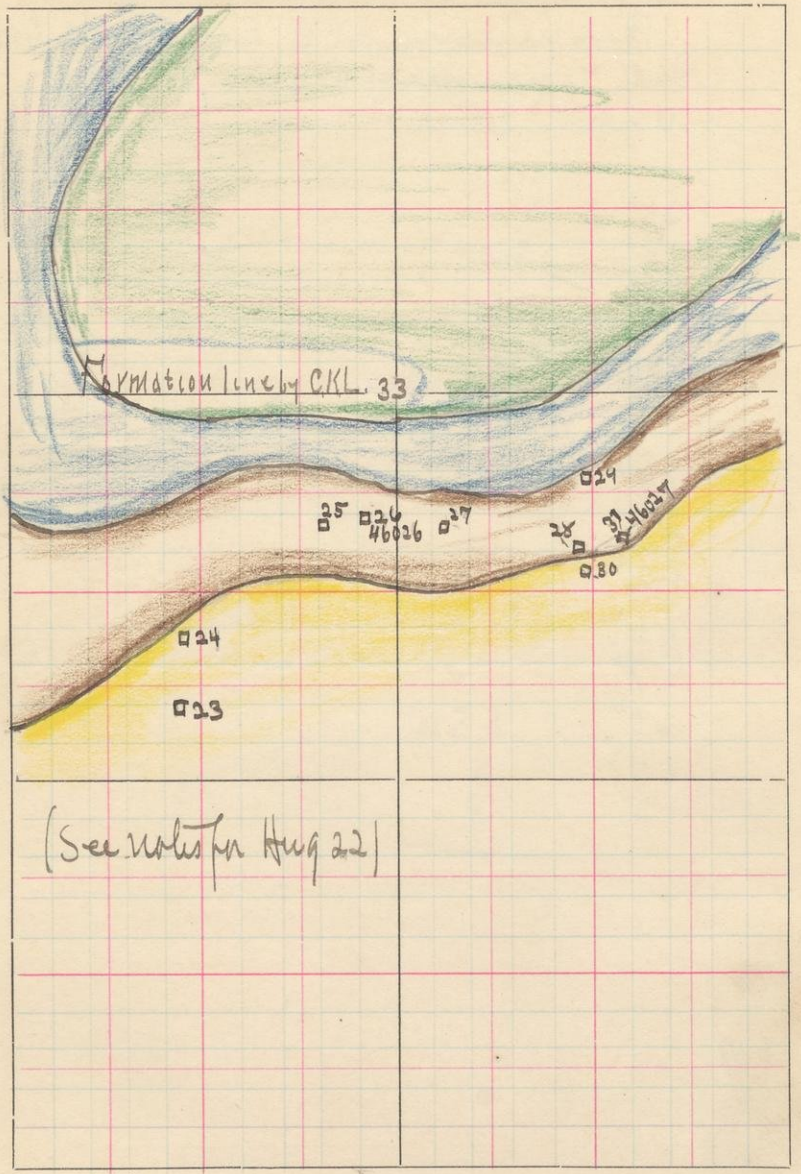
64. Pit in green Quartzite.
65. " " "

46025 At 200 W of 4 1/4 post Sec 8 above Roberts
mine is exposure of Slate & Graywacke.

Dips taken in Bunabik mine.
Beginning at E End of ore body and running W along N wall of Upper level.

28° to S.
18° " S.S.W.
19° " W.S.W.
19° " S.W.
15° " W.
13° " S.S.W.
14° " S
20° " "
12° " S.
16° " "
17° " "
20° " S.S.W.
14° " S.
12° " S.

S. 33 T. 58 R. 17



(See notes for Hwy 22)

6—747

Aug 22. Starting in 32-58-17. in the Quartzite formation traced pits from E side 32 through 33.

See map for location.

22. Drift not penetrated -

the two pits 1 are not in position as given on map and were not located - Most of the pits in the S.W. 1/4 33 represented on the map were not found - Think there must have been drill holes and so have been covered up - Drills have been in this section.

23. Pit in Iron-formation.

24. " " " " Qq bothered in Quartzite

25. Pit in massive green Qq banded quartzite.

46026 26. " " " " Quartzite Qq conglomerate banded Qq micaceous phases represented.

27. Massive Qq banded green quartzite

28. " " " "

29. Green banded, Qq micaceous Quartzites.

30. Pit in Iron formation

46027 31. Slaty Qq micaceous quartzite - Part is much altered.

Looked at some of the pits S of the Sparta mine called slate by Cole. Think

this classification is not warranted by what was found on dump.

32 - Apparently the drift is not penetrating

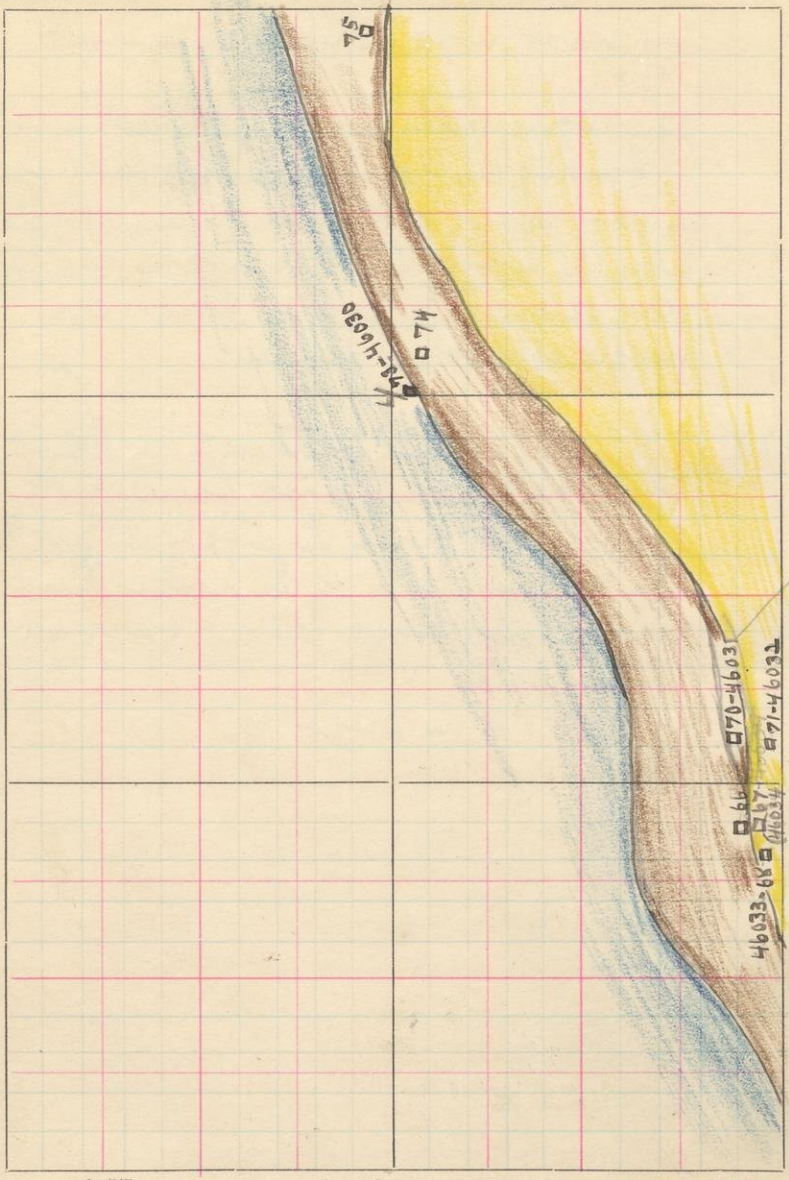
Among the floats on dump were found a number of slaty black quartz to which white borders have an appearance very similar to slate - These are unmistakably boulders.

46028 33 Apparently bottomed in drift - The specimen in was found on dump but from the age of the pit and the appearance of the rock inside this must have been carried there lately -

34 - Pit in drift

35 - " " "

S. 4 5 T. 58 R. 16



6—747

5

Aug 24 - Looked up pits in Quartzite belt in W part 3 through 4 and in S.W. cor 5. All in 5S-16

66 - In Massive green & banded Quartzite with some Micaceous banded

46034 67. In Massive vitreous Quartzite with basal conglomerate of Dove formation

46033 68. In Dove Formation - Showing green mottled basal phase of Tacoma.

69. In Dove Formation.

46031 70. In Quartzite - Quartzite altered in places to sandstone and much iron-stained

46032 71. In Dove formation & bottomed in Quartzite similar to 46031 - Some on on dump which is Magnetic

72. Bottomed in massive green Quartzite - Banded, slaty-micaceous and vitreous quartzite on dump.

46030 73. In Lower Huntsman Slate

74. In banded, micaceous & vitreous Quartzite

75. In massive green & banded & vitreous Q.

76. In banded Quartzite

46029 77 Bottomed in 46029

78 In drift.

Aug 26 - Starting at center of 11-6W-14
run N 1800 steps

At center of section magnetic variation
N 7W.

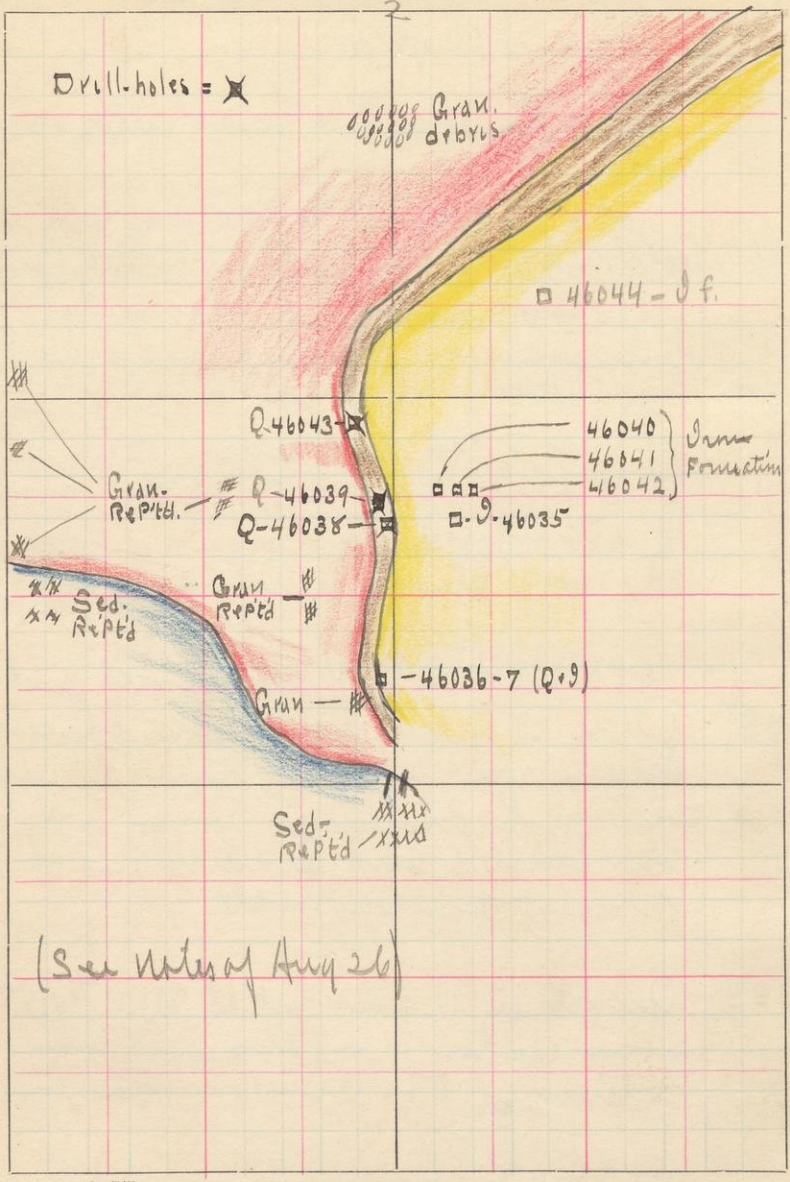
At 275 N of center 11 3/4 just W of line is pit
46036 bottomed in beautifully banded quartzite
It passes through a small thickness
of the massive cherty phase of the Iron
46037 Formation. The rock is oxidized in
places to red and yellow oxide giving
it at first glance the appearance
of unaltered taconite. This iron-
bearing phase is not wholly magnetic

At 600 N of center of section and just W
46038 of line is a drill hole. The specimens
taken are from a trough into
which the drillings were washed
The banded and siliceous
varieties predominate

46035 Quartzite(?) from pit at 700 N 3/4 150 E
from center 11 — (This has been
determined by Thin section by C.K.L.)

At 760 N 3/4 25 W of center N is drill hole -

S. 11 T. 59 R. 14


Drill-holes = ✕
Gran. debris
□ 46044 - d f.
Q-46043
46040
46041
46042
Dunn Formation
Gran-Rep'td.
Q-46039
Q-46038
□-d-46035
Sed. Rep'd
Gran Rep'd
Gran
□-46036-7 (Q-9)
Sed. Rep'd
(See notes of Aug 26)

46039 On dump is typical banded quartz ite

46040 At 760 N 9W 1185 from center N is test pit in Iron formation. The specimen is of black, heavy, siliceous, magnetic iron.

46041 At 760 N 9W 1685 is pit in clayey phase of Iron formation.

46042 At 760 N 9W 2005 is pit in brown slaty phase of Iron formation.

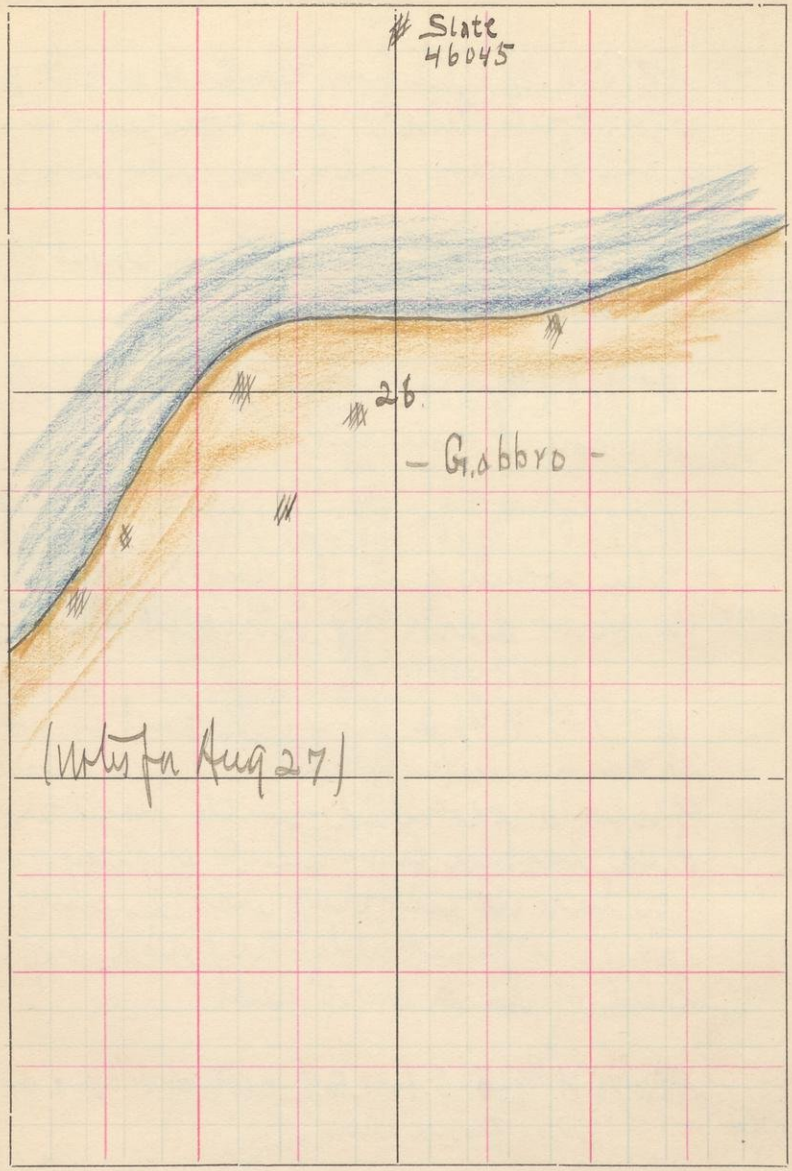
46043 At 950 N 9W 1005 from center N is drill hole. The wash from the drill shows massive dark and siliceous quartzite.

At 700 N in 2 from S 1/4 post is an escarpment the whole southern edge of which covered with boulders and broken fragments of gray quartz. Which as outcrop was found the ledge is probably marked by the line of the escarpment.

46044 At 275 N 9W 1405 from S 1/4 post of 2 is a pit in Iron formation.

At 55 S from N.W. cor 23 is a pit on black magnetic Iron.

S. 26 T. 57 R. 14



(visit on Aug 27)

Aug 24. Starting at NW corner 23-59-14 ran S 3300 – E 1000 ft of about 4000.

46047 Looked up out crop of slate reported to be at about 1000 S & 150 W from NE cor 27
I think it doubtful that this was an outcrop. The specimen was taken from the S slope of one of the inner ice glacial hills in this vicinity. The rock from which it was taken appeared to me to be a large float half buried in the drift. rather than an outcrop of ledge as reported. The slate has evidently been metamorphosed by the gabbro.

Outcrops of gabbro were found at the following points in place.

From N.W. cor

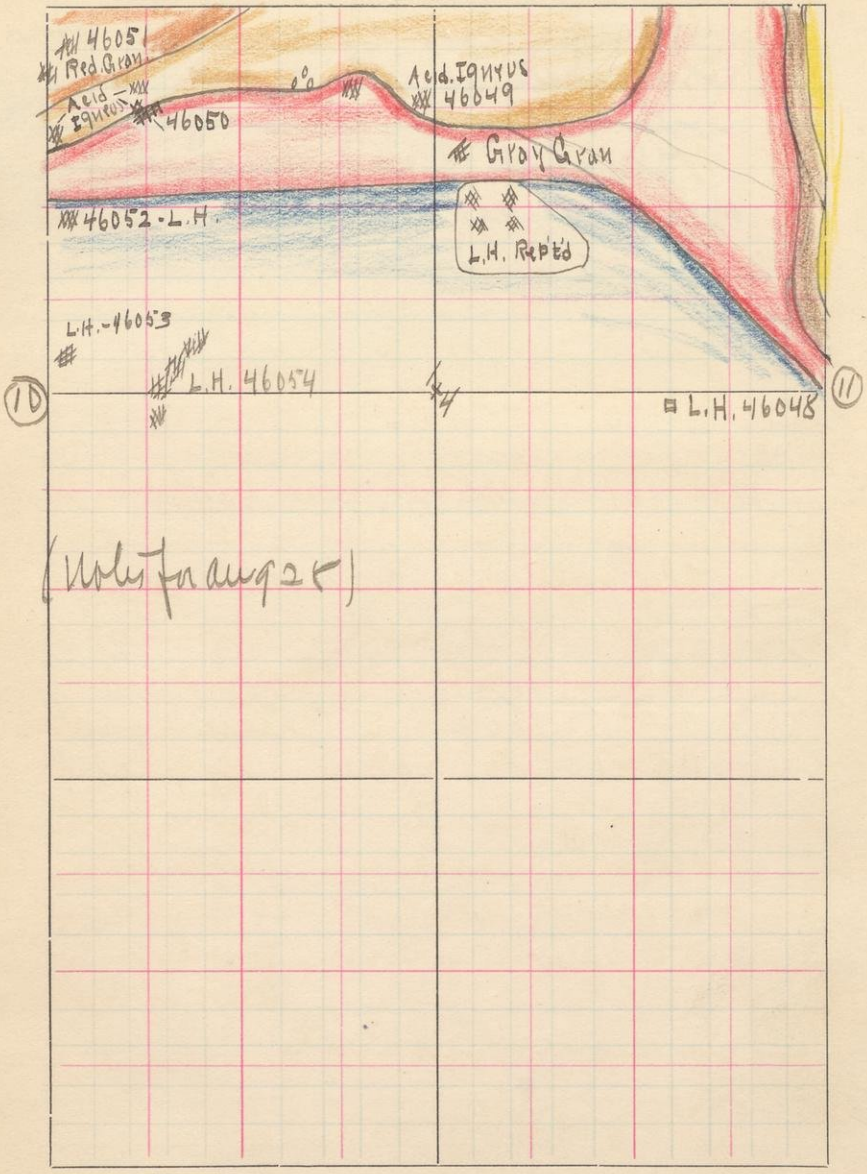
1550 S & 150 E
1300 " " 300 "
1250 " " 700 "
1100 " " 850 "
1000 " " 600 "

46045 At 50 S & 1700 E of NW cor was found an out crop of slate much altered by the gabbro – Dip 20° S.E.

46046

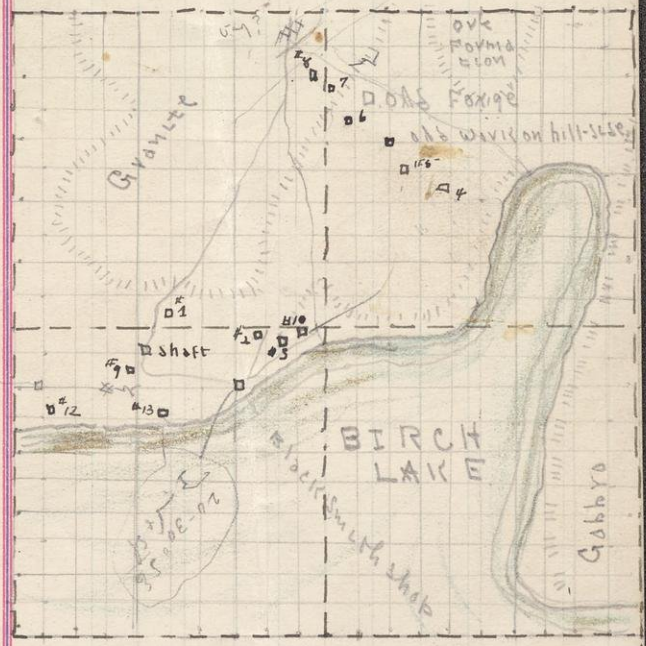
In 23 - 700E & 300S N.W. end is outcrop of Iron formation. It is composed mainly of magnetite rich with a mixture of amorphous silica. The rock has a grey banded appearance - Dip - 9° to the S.

S. T. 69 R. 14



(Not for aug 2 K)

S.E. 1/4 of S.W. 1/4, Section 24.



Plt. #4 In gravel 15 ft, bottomed in ledge. Sec. specimen #4

Plt. #5 In gravel 8ft - not bottomed. — Old working on hill side

Plt #6 - In gravel 7 ft. not bottomed.

Plt #9 In gravel - not bottomed.

MESABI.

(Continued)

Description of Deposit. (Note size and shape, pitch and dip, nature of bottom and walls, kinds of ores, their composition, texture and distribution)

Aug 28 - Starting at E 1/4 post 10-59-14 Ran N 1000 - W 1000 - S 1000 & back to 1/4 post.

46048 At 370 W from center 11 is pit in L.H. Quartzite -

At 650 N & 50 E from W 1/4 post 11 is exposure of a coarse grained quartzoid gray hornblendic granite.

46049 At 770 N & 50 W from E 1/4 post 10 is exposure of an acid igneous rock - The rock has a secondary structure giving it a quartzoid appearance The surface weathering is somewhat similar to green-stone - At 800 N & 200 W is exposure of gray granite - This is but slightly quartzoid and has not so much hornblende developed as the granite in the exposure at 650 N & 50 E in 11 - but is apparently the same granite -

At 8 N N & 350 W from E 1/4 post 10 are a number of large rough

of the acid igneous rocks before Mentioned
There are doubtless many dykes.

At 750 N and 750 W from E 1/4 post 10 is
an exposure of the contact of the acid
46150 Igneous rock and the Massive gray
Granite -
The latter appears to be intrusive
in the former - The massive
texture of the Granite, the banded and
contorted appearance of the Igneous
Rock and the dikes of the Granite
seen running through it with
the secondary structure of the latter
following them, all tend to show
that this is the relation which
exists between the two.
At 800 N and 800 W from 1/4 post is
an exposure of Acid Igneous Rock.
At 800 N and 950 W is exposure
of Acid Igneous Rock.

At 900 N and 950 W and at 850 N and
1000 W from 1/4 post is exposure
46051 of a very coarse grained red
Granite
At 700 N and 1000 W from E 1/4 post

is an exposure of Acid Igneous Rock.

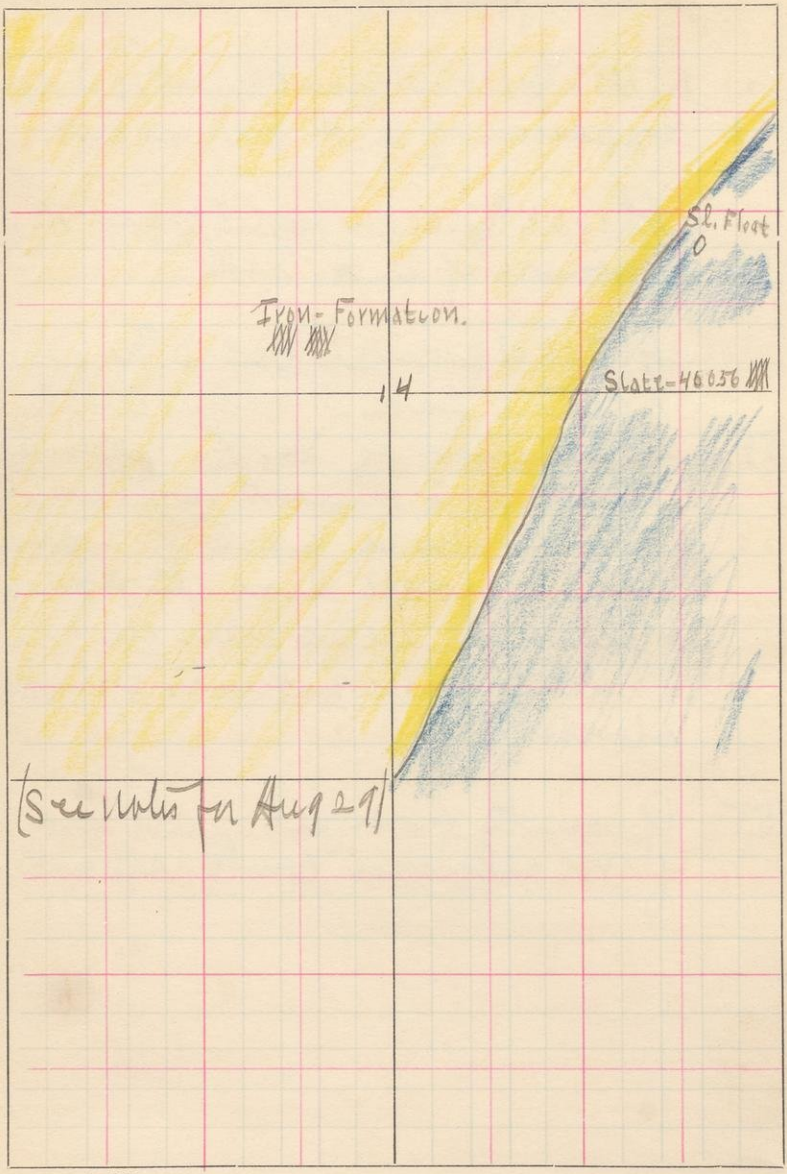
46052 At 450 N/S 1000 W from E/4 post 10 is an Exposure of L. H. Sediment.

46053 At 1004 N/S 1000 W from E/4 post 10 is exposure of L. H. Sed

46054 At 700 W from E/4 post 10 N/S forming Eastern face of valley wall is an exposure of L. H. Sediment The dip is almost vertical - The strike is E.N.E. The whole rock has the appearance of having been much crushed It breaks out into irregular blocks

46055 Granite from pit just back of Mallman Creek Shanty.

S. 14 T. 59 R. 14



6—747

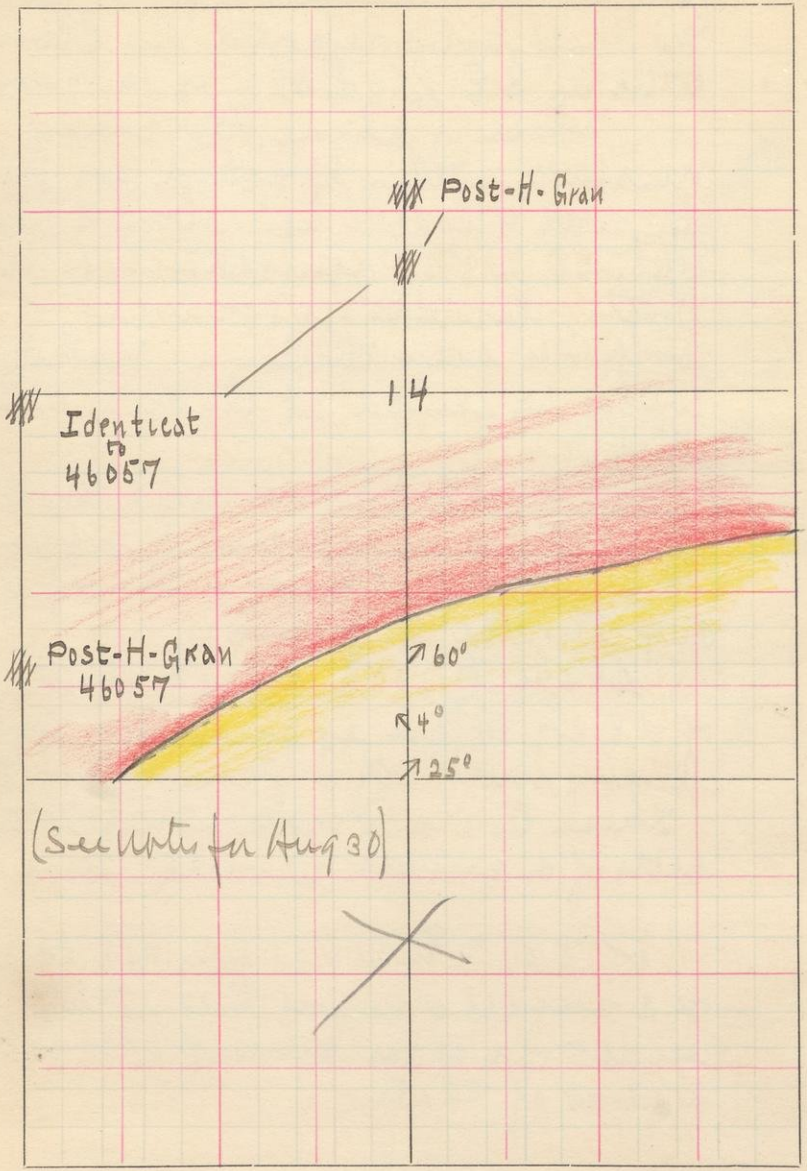
Aug 29 – Attempted to find pits and drill holes reported by Crow to be in S.E. ¼ of the S.E. ¼ of 11 – 59 – 14. There is evidently some mistake in this location for, while the road to the drill holes along E line of the N.E. ¼ of 14 runs through the forty there are no evidences of work to be seen there. Nothing could be found at the drill holes in 14.

46056 At about 950 S from the N.E. cor 14 and about 50 W is an exposure of slate – It is almost flat lying – the dip if any is toward the South.

At about 1200 S and 1300 W and about 850 S of N.E. Cor 14 are exposures of black heavy magnetic iron formation. These two outcrops form either side of a small ravine here.

At 600 S and 200 W from N.E. Cor. 14. on a small glacial hill in the midst of a cedar swamp was found a float of slate.

S. 14 T. 60 R. 13


Post-H-Gran
14
Identical
to
46057
Post-H-Gran
46057
60°
4°
25°
(See note for Aug 30)

Aug 30 - Starting at W 1/4 post 23-60-13 ran N to W 1/4 post 11 - E 1/2 mile - Thence S to trail on N & S 1/4 line 23.

At 50 Steps S of E 1/4 post 22 is put in ferruginous slate.

46057

At 270 N of S.W. cor. 14 is exposure of Leith's blue quartz-eyed - Granite It forms a cliff on the S.E. escarpment of the hill at that place and rises abruptly from the Swamp.

At 990 N from S.W. cor 14 is exposure of same purple - quartz-eyed granite At 1000 N from S.W. cor 14 is same Granite.

Many boulders of this granite are to be seen between the exposures at 270 N on W line of 14 & 11 At 1000 N on W line 11.

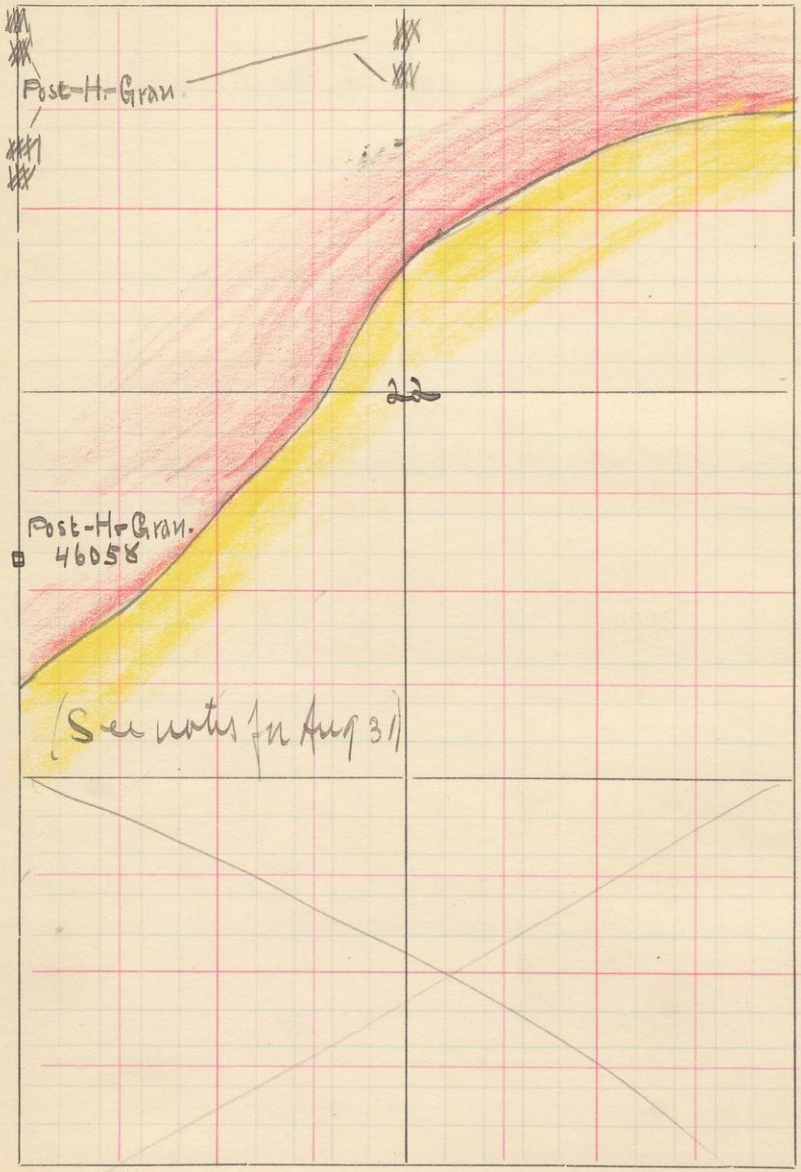
At 888 E from W 1/4 post 11 is exposure of quartz granite.

At 480 S of N 1/4 post 14 is exposure of blue-quartz-eyed - Granite.

At 630 S of 11¼ post 14 is corner of same.

At 1700 S of 11¼ post 14. Mag. variation is 60° E.
" 1870 " " " " " " " " 4° W.
" 1980 " " " " " " " " 25° E.

S. 22 T. 60 R. 13



6—747

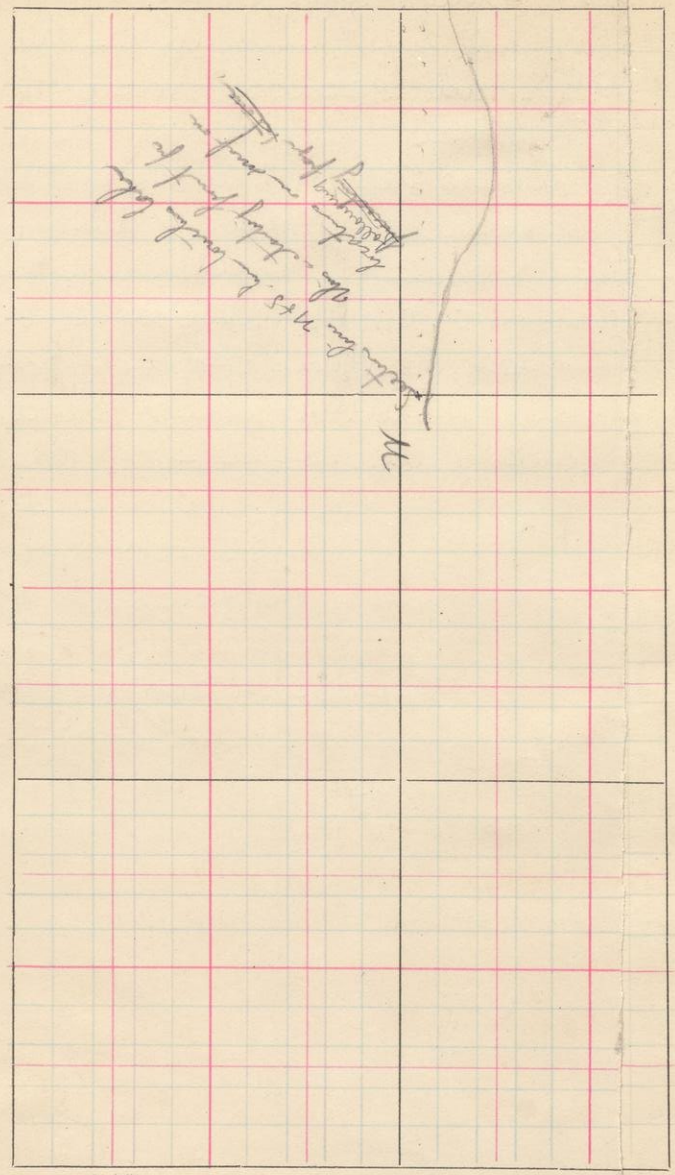
Aug 31 - Starting at W ¼ post 27-60-13, ran N to W ¼ post 15 - Thence E to center 15 - Thence S along ¼ line to center 22.

46058 At 590 N of S.W. cor 22 is a pit bottomed in blue-quality-eyed - Post H. grants - The gravels on the dump is broken showing rough fragments in large numbers - It is possible that these fragments are from bedrock but it seems more likely that they are from the ledge itself.

At 1592 N of S.W. cor 22 is exposure of Post H. Gran.
" 1640 " " " " " "
" 1900 " " " " " "
" 1960 " " " " " "

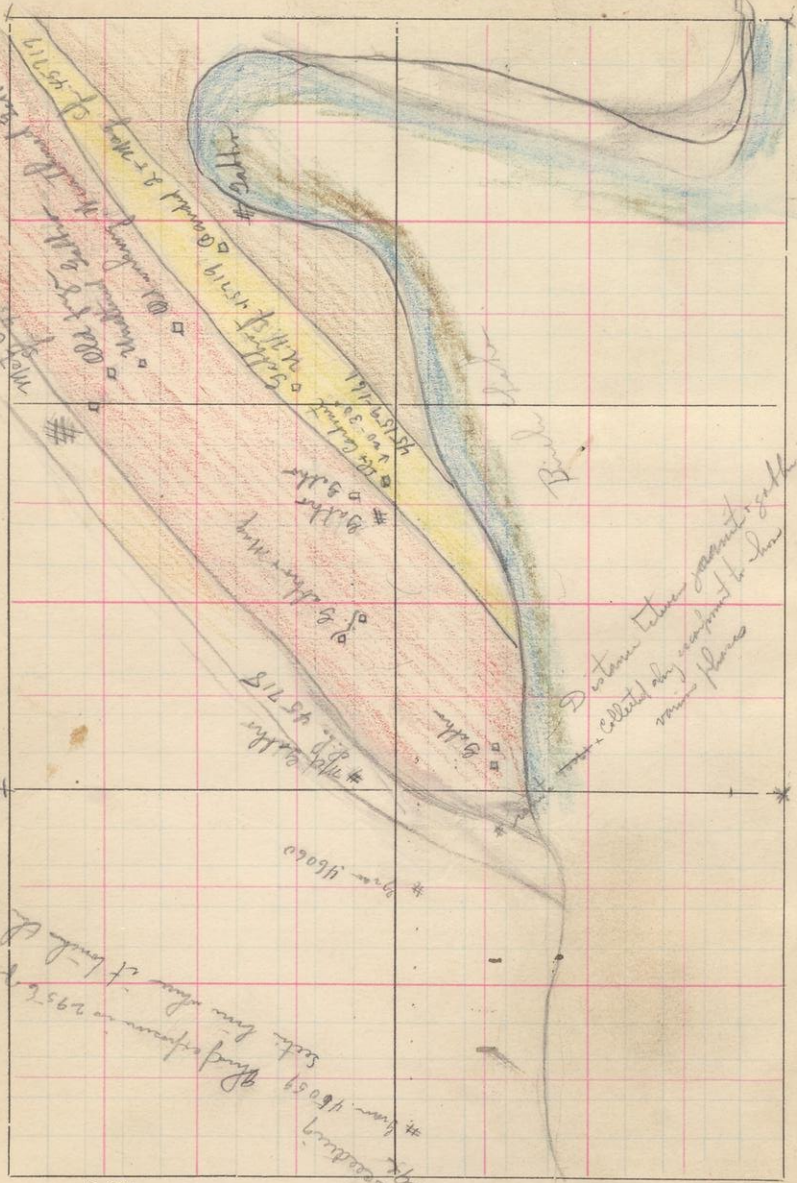
At 1000 W & 1935 N of S E cor 22 is another exposure of post Hurricane granite and at 1000 W & 1862 N is still another -

S S. T. 3e R.



6—747

S. T. R.



6—747

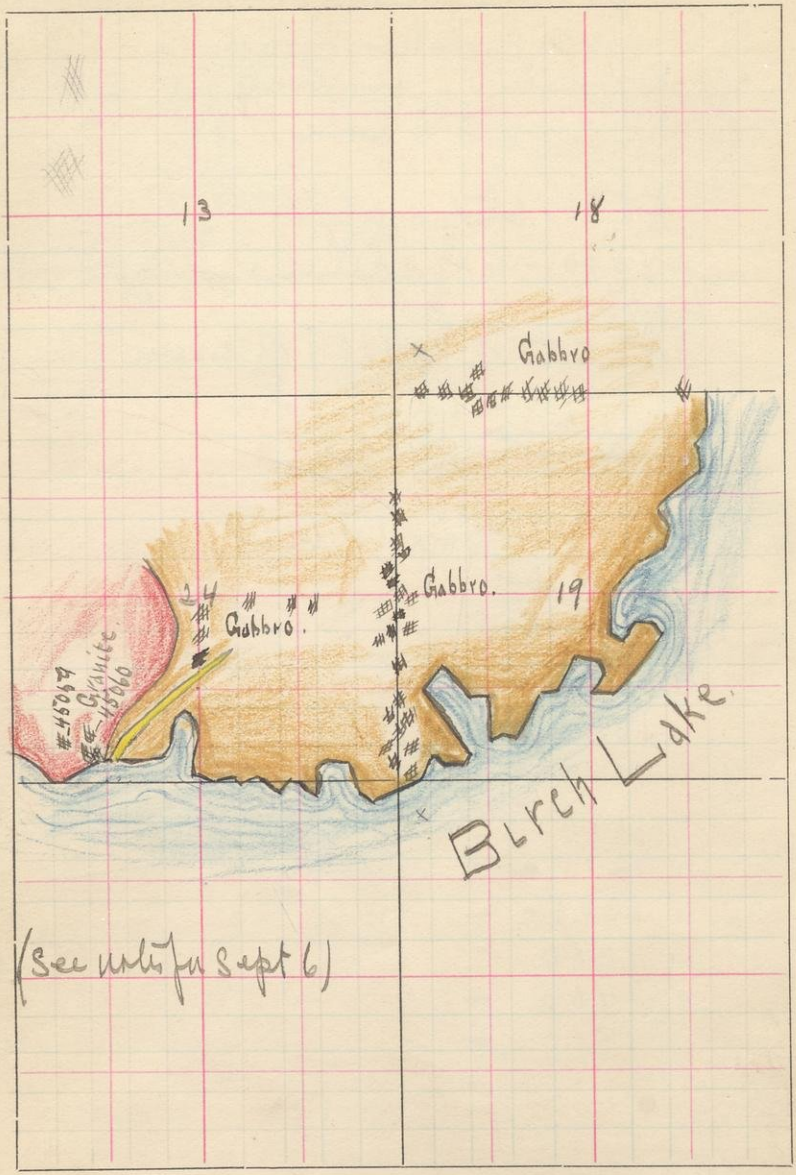
Sept 6 - Starting near S 1/4 post 24-61-12 ran N 1/2 mile - E 1/2 mile - N 1/2 mile E 3/4 mile - Starting at E 1/4 post 24 ran S to lake.

At 600 S to N from S 1/4 post 24 is an exposure of rather fine ~~pegmatite~~ quartz diorite gabbro.

At 750 N & 910 N on pasture line are exposures of the ordinary coarsely ~~crystalline~~ quartz gabbro

At 960 E & 710 W from S.E. Cor. 24 is exp. of gabbro
" " " 600 " " " " "
" " " 520 " " " " "
" " " 470 " " " " "
" 1000 " — " " " "
" 1080 " 20 " " " " "
" 1150 " " " " " " "
" 1200 " — " " " " "
" 1300 " — " " " " "
" 1350 — " " " " "
" 1400 — " " " " "
" 1500 — " " " " "

S. T. 61 R. 12 W



(See note sept 6)

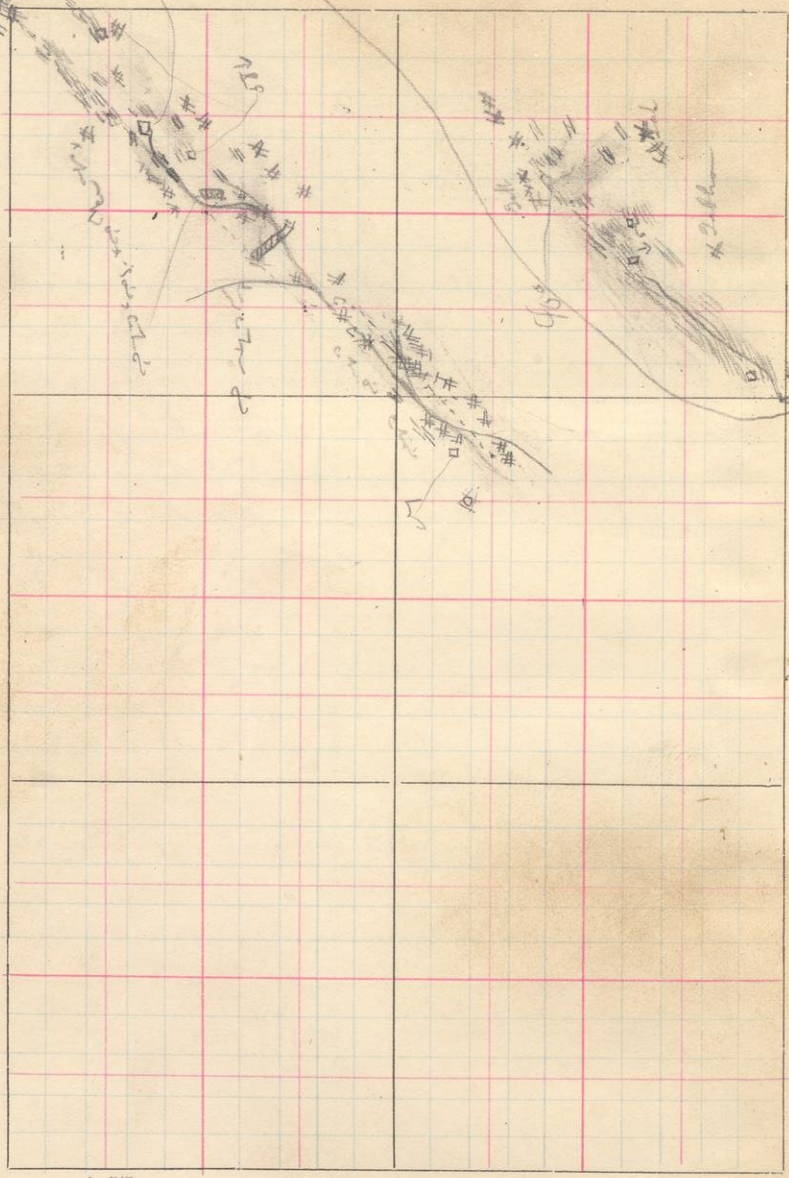
6—747

Jn 19-61-11

At 2000 N & 1822 W from S E cor is exp. of Gabbro.
" " " 1706 " " " " " "
" " " 1626 " " " " " "
" " " 1600 " " " " " "
" " " 1540 " " " " " "
" 1960 " 1455 " " " " " "
" " " 1400 " " " " " "
" 2000 " 1300 " " " " " "
" " " 1260 " " " " " "
" " " 1100 " " " " " "
" " " 940 " " " " " "
" " " 350 " " " " " "
At 940 N of S.W. cor 19 " " "
" 900 " " " " " "

From this point to the lake shore is one almost continuous exposure of Gabbro.

S. T. R.



Sept 18 - Went out to N W 1/4 18-59-14 to find shaft, I ran formations and relations mapped this by N. H. Winchell.

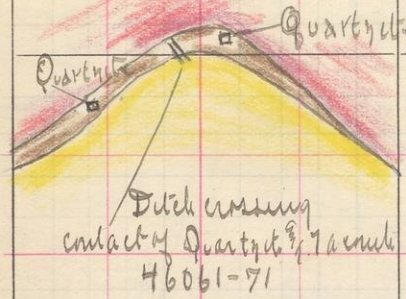
Near the S E corner of the N W 1/4 of 18 found a ditch running from the swamp on the N up the hill side about half way and swinging a little to the E. This ditch has been put in for exploratory purposes.

The lower end of the ditch is in drift but above this is an exposure of about 10 ft of quartzite, 18 inches of conglomerate, and about 4 ft of Taconite. Thus a complete section of the upper 10 ft of the Quartzite formation, ~~the~~ four ~~layers~~ feet of the basal phase of the Taconite and the conglomerate separating them is seen here.

The Quartzite is for the most part in thin layers or banded - The color is green and to considerable extent it is micaceous.

When exposed to the weather it presents a greenish and shaly appearance - This thinly bedded altered quartzite is

S. 18 T. 59 R. 14


Quartzite
Quartzite
Ditch crossing
contact of Quartzite & Taconic
46061-71

probably what we shall describe as a greenish, more soft & siliceous thinly bedded rock"

The quartzite presents a different aspect at different horizons. Specimens were taken, showing the various phases - Some changes in the bedding or texture can be seen every few inches. The following series of specimens show these changes.

46061 Quartzite from 10 ft below Conglom. Green, thinly-bedded, banded & micaceous.

46062 Quartzite from about 18 inches above 46061 - Banded, slaty through, micaceous and of a darker green than the bed below.

46063 Quartzite - Very similar to 46062 only more thickly bedded - from 18 inches above 46062

46064 Quartzite from one ft above 46063, showing contact of two phases - One with more pronounced

and darker - the other more micaceous of a lighter green and more brittle.

46065 Quartzite - 5½ ft from bottom slaty cleavage - micaceous - thinly bedded and dark green

46066 From 7 ft from bottom - slightly banded, light-green quartzite with conchoidal fracture.

46067 Micaceous dark-green quartzite from 9 ft above bottom

46068 Dark-green quartzite and slightly banded from just below the conglomerate. The deepest green of the set

Above the quartzite and at the base of the Iron Formation is eighteen inches of conglomerate.

The matrix appears to be magnetic iron - The pebbles are of vein quartz, both colored and uncolored - In size they vary from a fraction of an inch in

diameter to fine sand grains -
The specimen in shows the average size - Few if any are larger than the largest shown there.

Above the conglomerate is about 4 ft of the basal phase of the Taconite.

46070 Taconite from just above the conglomerate - Slightly magnetic and very cherty

46071 Taconite from about 4 ft above the conglomerate - Cherty, magnetic and ferruginous

There is no appreciable difference in dip to be seen here between the Quartzite and the Iron formation -
The dip as measured being 15° to the S in both cases - Strike E & W -
At about 2 3/2 W.S.W. from here is a pit in slaty micaceous Quartzite

Sept 21. Ran N from road on W line 32 + 60 - 13. to N.W. corner - E 600. Thence from corner ran N 1000 = Thence E 1000 - Thence S to road.

At 530 steps S of N.W. cor. 32 is an 46072 exposure of a reddish granite - The rock is formed by a coarsely crystaline reddish feldspar & q the rock contains hornblende

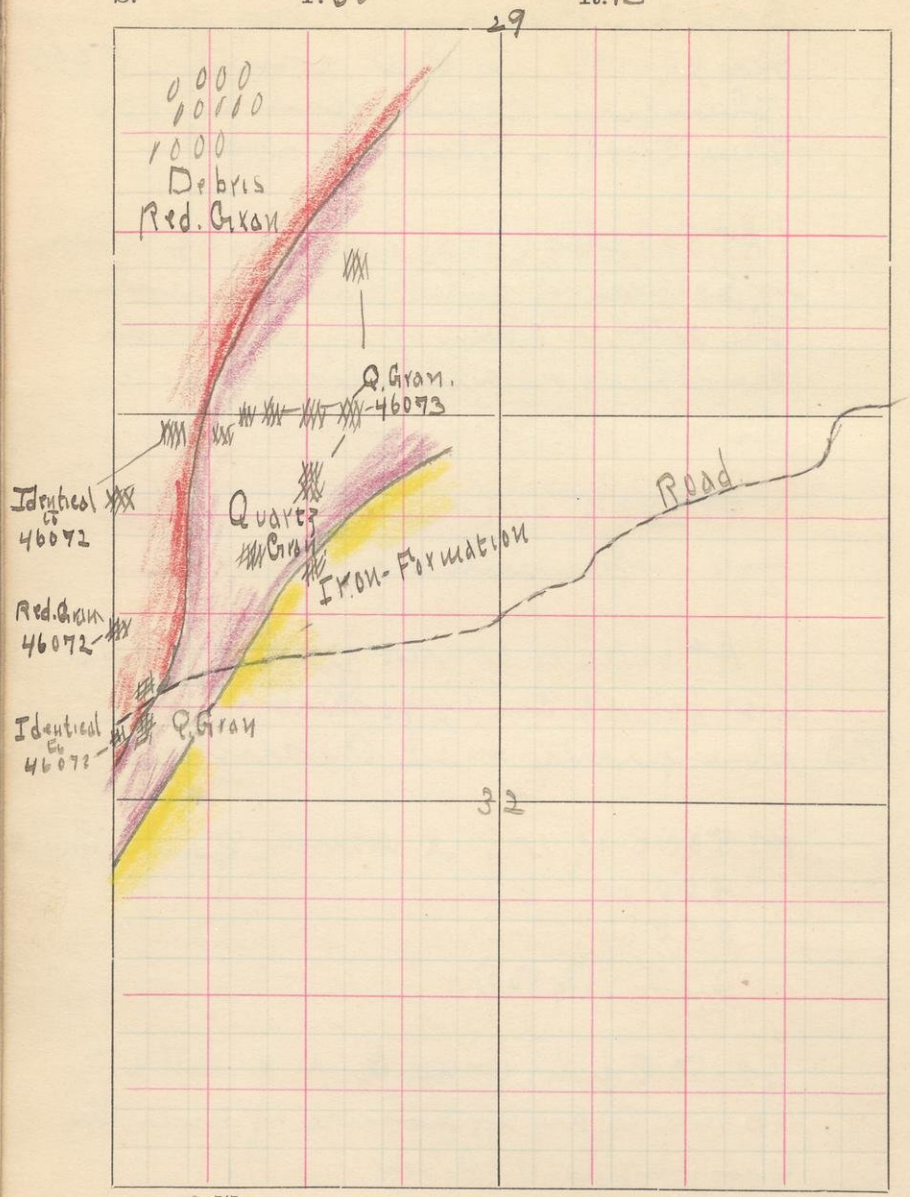
At 220 S of corner is another outcrop identical to 46072

At 600 E of corner just N of line was found an exposure of the 46073 blue-quartz-eyed granite.

At 500 E of cor. is same quartz Gran.
" 400 " " " "
" 350 " " " "
" 278 " (3/4 508) " " "

At 150 E from corner and a little S of line is an exposure of granite similar to 46072

S. T. 60 R. 13


29
Debris
Red. Gran
Q. Gran.
46073
Identical
to
46072
Quartz
Gran
Iron-Formation
Road
Red. Gran
46072
Identical
to
46072
Q. Gran
32

At 1400 W & 1400 N from S.E. cor 29 is blue quartz Gran
" 1500 " 1864 " " 32 " "
" " " 1810 " " " " "
" 1650 " 1620 " " " " "

At 2164 N of road – 580 E of W line 32 is an exposure of Dam formation. This is of the black hard & very magnetic phase – No contact with the quartz granite was to be seen – The relations from what could be seen from the topography were those which existed between the Archean granite with W. and the over by mig V.H. Indications of intrusion of the granite with the Dam formation were observed.

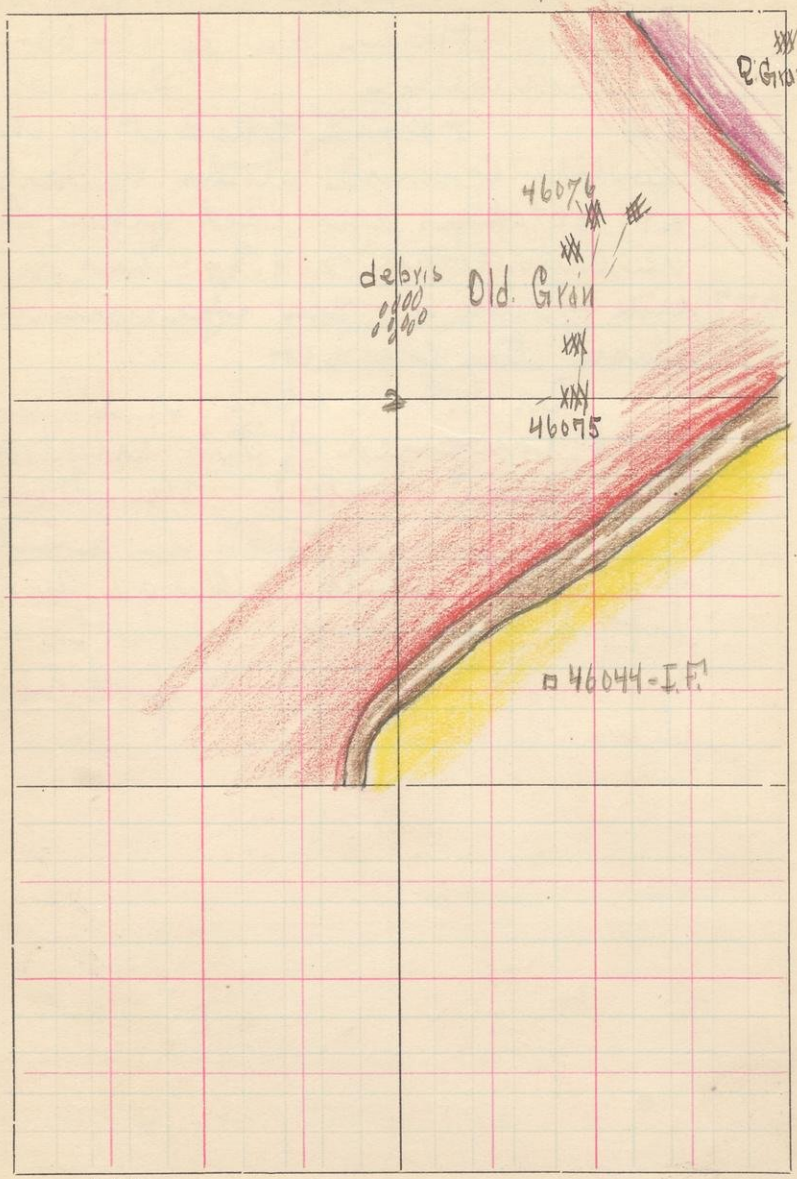
At 380 E of W line 32 on road & 40 N is quartz Gran
" 80 " " " " " is Red Gran.

Just S of road on W line 32 the two granites are in contact, though the relations of the two were not established. The reddish granite may be either a large dike in the quartz granite or a phase of the Barnes granite in which the quartz eyes were not developed

Sept 22 - Landed for the conglomerate reported to be in S.W. ¼ 13-60-13 on Iron Lake - Did not find it - Found instead contact of the Quartz Granite with the quartz at 180 ships due east from the meander corner on N & S line on N side of lake - The specimens 46077 46078 show this contact 46074

On the lake shore is a large float composed of this conglomerate rock - The elevation of this, judging from the position of the float which is large and not far from place, must have been at a number of feet higher than 46077 & 78.

S. 2 T. 59 R. 14



Sept 23 - Ran W on sections N of road, beginning at center 31-60-13, to N of Mail man camps.

At 400 W & 50 N of center 31-60-13 is blue quartz 4 ram
" 50 E of ¼ post " " " " " " "
" 300 W of E ¼ post 36-60-14 " " "
" 700 " " " " " " " " "
" 445 " " " " " " " " "
" 1000 " " " " " " " " "
" 1300 " " " " " " " " "
" 1400 W & 900 N from SE cor 36 " " " "
" 2000 " 850 " " " " " " "
" 855 from NE cor 2-59-14 " " " "
46075 " 1000 S " " " & 1650 W is Archean Ht gran
" 850 " " " " " " " "
" 600 " " " " " " " "
" 500 " " 500 " " " "
46076 " " " " 400 " " " "