Marquette Iron Region, Michigan: [specimens] 4207-4389. No. 3 1883-07

U. S. GEOLOGICAL SURVEY

FIELD NOTE BOOK

No. 3.

July 1883

Marquette Iron Region

Michigan

4207-4389

R. D. Irving.

Survey of the Pre-Cambrian Rocks of the N. W. States.

INSTRUCTIONS.

1. Devote at least two pages of this note book 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 figure attached, showing the amount and inclination of the dip. Denote slaty or other very plainly bedded rocks by lines running in the direction of the strike, with figures and a dip arrow attached as before. 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 smaller spaces as 100 paces, each of the spaces between the red lines as 500 paces, and four of these large spaces as one mile, or 2,000 paces. Usually the southeast corner will be placed at the first red 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 down one space, or the map may be turned around and the north placed at the left hand side of the page.

2. On the right hand page place the notes descriptive of the exposures. Begin in each case with the number of the specimen, after which give in order 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: 4025; 250 *N.*, 300 *W*; *Strike*, *N.* 6° *E.*; *Dip*, 50° *E.* Then follow with as full a description of the exposure as possible. Very often the notes for one section will cover more than one page in which case pass to the next right hand page, *repeatimg the map on each left hand page* as long as the notes, with regard to one section, continue.

3. Collect a specimen from each separate ledge of rock, or whenever there is a change of rock on any one ledge. In case of trips made on foot or in canoes, for long distances, neighboring ledges, unquestionably of one kind of rock, need not be sampled, the position and extent of the ledge being marked on the map, with the note that it is of a rock identical with specimen so-and-so. Under the same conditions small sized samples will be allowed, but in all other cases *large sized trimmed specimens,* with chips for slicing, must be selected in accordance with § 3, chapter IV, p. 44, Regulations of the U. S. Geological Survey. All specimens are to have numbers painted on them, in white on a black background, in camp.

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, etc., etc.

5. Forward this note book, as soon as filled, as registered mail matter, to R. D. Irving, U. S. Geologist, Madison, Wisconsin.

#3

Marquette Iron Region

Michigan

July 1883.

Notes taken by R.D. Irving in the Marquette Iron Region, July 1883.

Sec. 10 T. 47 R. 27 W Mich.

Corner

Low numbers are numbers of pits on Brooks Map. 1870

Lake Superior Mine.
July 20th 1883.

4207 - Diamond Drill core, from Mr Horne. "Hole. 14. Sample 64 - Depth 457'8"

4208 - Diamond Drill core - Horne. "Depth 615' - Hole 11"

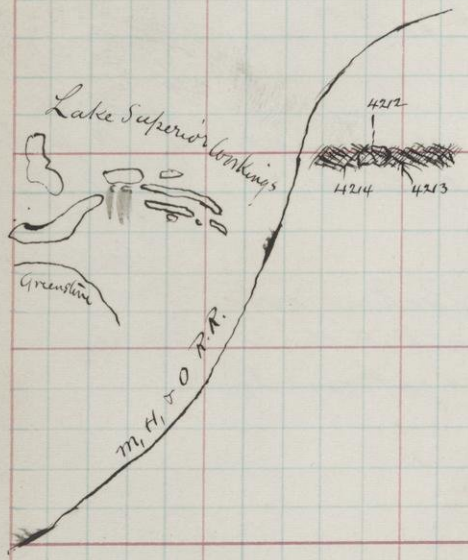
4209 Do - "Depth 147'"

4210 Do - "Hole 14 - Sample 54 - Depth 370', 64 feet Check"

4211 Hole 11 - Below Ore.
(Address C. F Horne - Ishpeming Mich - for information).

(9—891.)

Sec. 10 T. 47 R. 27W



July 20 '83

Lake Superior Mine.

4212 Near center Sec. 10, T47, R27W. Mich.
Greenstone knob near Lake Superior Mine.

4213 Short distance East of 4212 near the quarter line.

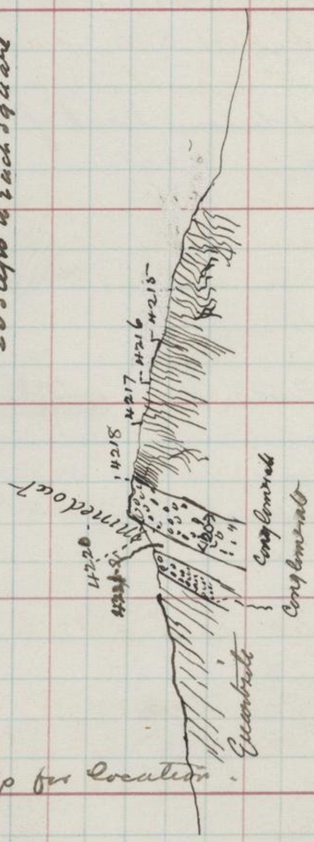
4214 Between 4212 and L.S. workings.

4212-13-14 are "greenstones", typically.
Compare them with the Ontonagon Greenstones.

(9—891.)

Sec. 19 T. 47 R. 27th Mich

20 steps to Each square



See next maps for location.

July 20 '83

Goderich Mine. July 20th 1883

.60/2 N.W. 19, 47, 270. Mich

Lee Romanyer in Geol. Mich. Vol. IV - p. 93
Specimens taken across formation (which trends just E-W and dips 45° N.) from South to North, see sketch on opposite page.

#215 From the southern slope of hill. Footwall. "banded jasper". Here the jasper forms somewhat breccia and conglomeratic.

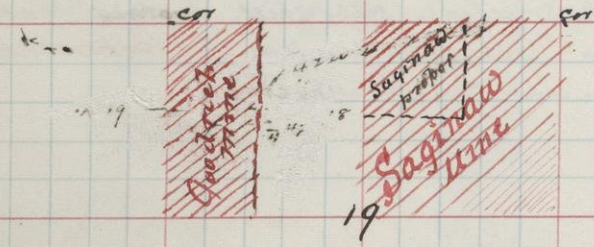
#216 20 steps north of #215 - In the "banded jasper"

#217 20 steps north of #216

This banded jasper runs about 30 steps further north, and then comes a sharp contact with a conglomerate, composed of the ruins of the banded jasper, and of specular iron. etc. The contact may be most beautifully seen at one place where the curved linings of the banded jasper come abruptly against, and

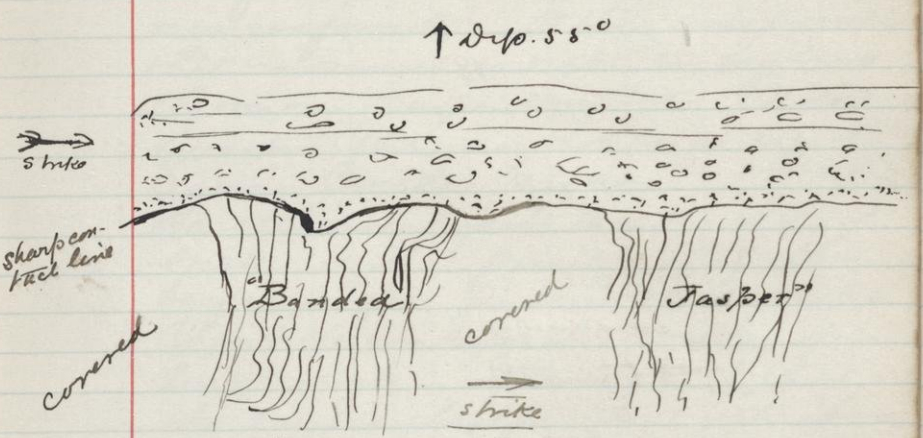
(9—891.)

Sec. 19 T. 47 R. 27 W. Mich.



See also next map page

are cut off by the conglomerate Chas.



(see also further notes on p 18)

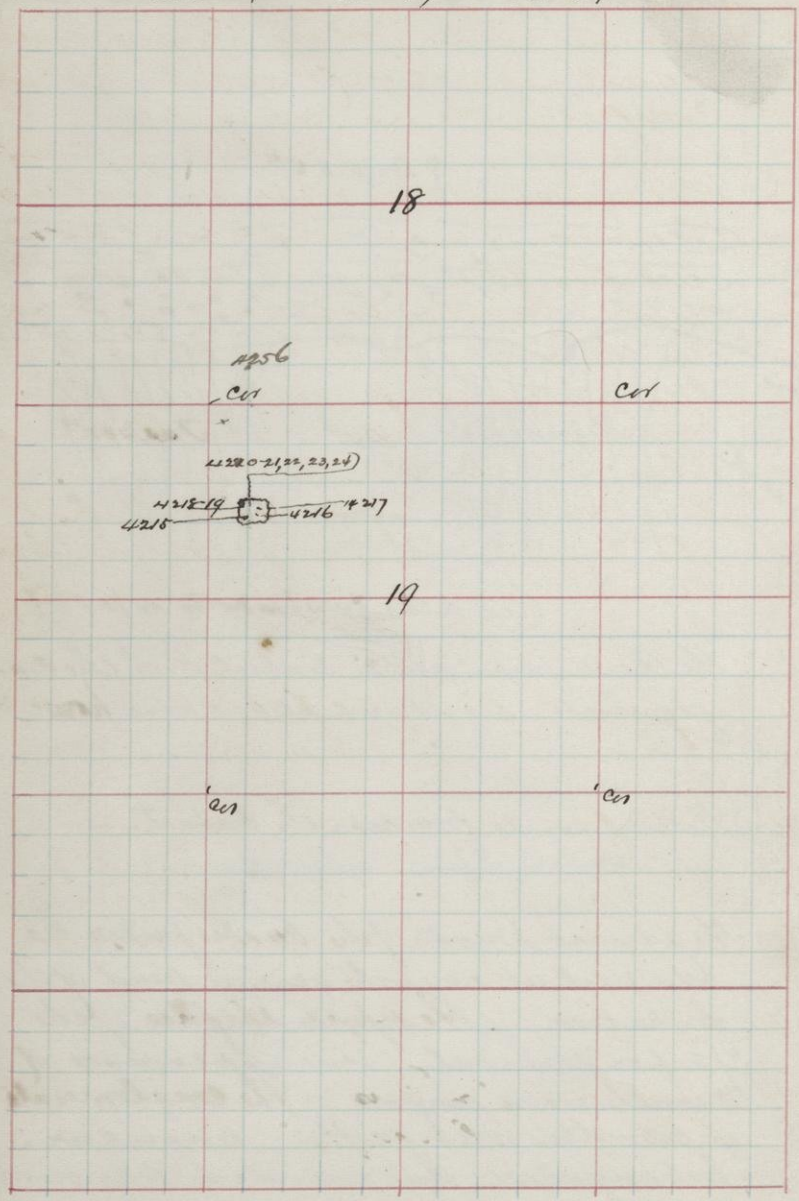
H218 The Banded jasper just in contact with the Conglomerate. see atm's sketch - & also page 3.

H219 The Conglomerate from near the contact.

The curving bands of the banded jasper lie here just at r.a. to the general bend of the formation. The upper surface of the jasper presents every appearance of a waterworn surface. The conglomerate is crowded with pebbles, angular, subangular and rounded, running

(9—891.)

Sec. 19 T. 47 R. 27 W 5th



from minute particles to pieces 4, 6, 7 inches long. These larger fragments are not at all infrequent. Consider carefully the nature of this break or unconformity. Is there any possibly that movement is right in making the iron ores of Jasper conglom. Beyond question they are not so in most cases. Can they be here? If not then this unconformity marks a great break. or is it possible that this banded jaspers underwent a peculiar chem alteration before the deposition of the Cong. Conglom. If so, how is it that the conglom. itself is full of the specular iron. (Is it possible that in here any thing here analogous to the "Keeia" of the Gunflint Lake beds? It seems hardly probable) In the underlying banded jaspers no bars.

4220 is from the face of the footwall - See diagram opposite p. 3

4221 Pebble from the ore bed - Goderich mine.

The ore itself is part of the Conglomerate - the specular iron simply cementing them plenty.

4222 Ore from the Goderich Mine.

4223 "Soapstone" from Down in the mine. Picked from the dump. Rominger mentions this rock. p. 94 Geol. Mich. Vol. IV.

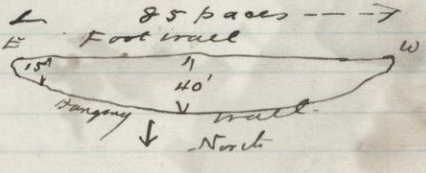
(9—891.)

Sec. 19 T. 47 R. 27 W

July 20 '83 Goderich Mine

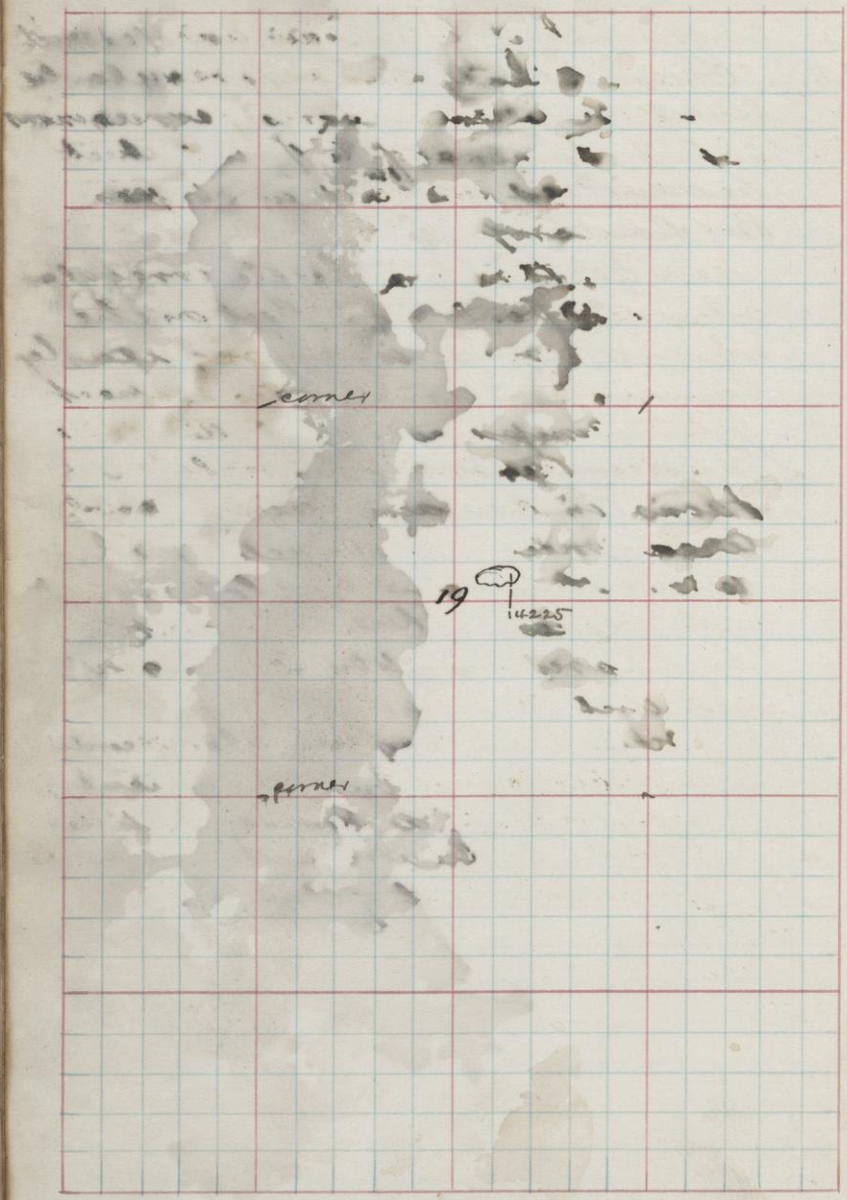
4224 Hanging wall of conglomerate. See Sketch opp. p. 23.

The ore body removed here absurpues no sketches



The narrowing leading due north, terminating in the hanging wall.

Sec. T. R.



July 20 '83 South of Saginaw Mine 7

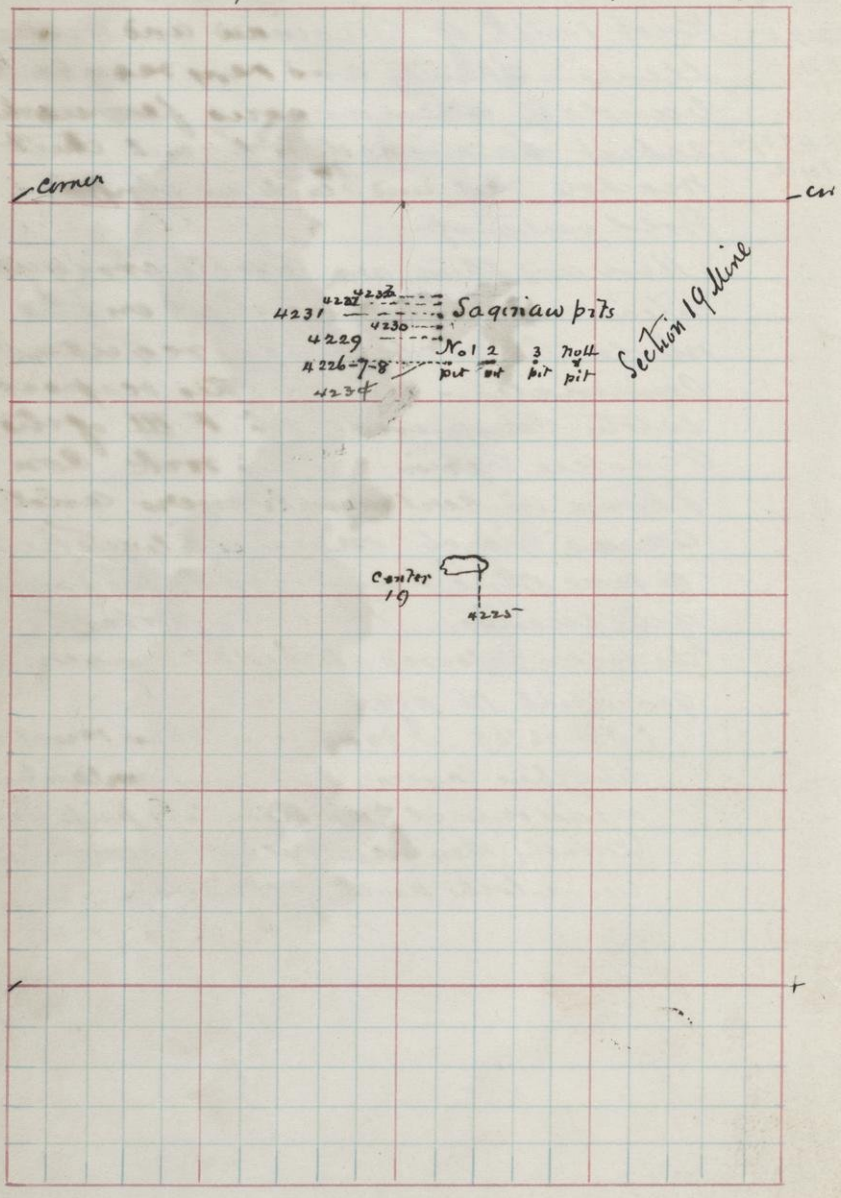
4225
4 Sp.
SW. N.E.
19. 47. 27 W
Mich.

Knob south of Saginaw and Goderich Mines - Thinly and very regularly banded cremaceous ferruginous schist. Laminae 1/16 to 1/2 inch thick Reathers red and black in stripes Red outcrops.

Here and there are little irregularities and bendings, but on the whole the rock is very regularly laminated - and in this respect is to be compared with F III of the Penokee Region. This rock contains in certain layers and areas much magnetite. This is some three hundred steps south of the mines. These are probably the rocks referred to by Rominger Geol. Mich III p. 94.

(Oct. 26 '83 - I do not learn what records dip of these layers - but they certainly are not vertical, as Rominger puts them. Probably they lie almost as the rocks in the mines to the north of them do)

Sec. 19 T. 47 R. 27 w Mich



July 26/83

Saginaw Mine

4226 NW. N.S. 19-47-27W dark — Shinly laminated rock from bench south of Saginaw old pit. This is comparable with the last mentioned rock (4225). It runs here into irregular and lenticular forms, accentuating the identity of the shinylam. plainly sedimentary as with the colored jaspery schists.

4227 25p. — "Soapstones" from decomp heap Saginaw mine

4228 — Coarse Conglomerate immediately overlying ore at Saginaw mine

4229 — Finer Congl 50 p. north 4228

4230 — Finer Congl. 30 p. north 4229

4231 — Finer Cong. 30 p. n. of 4230

4232 — Quartzite 30 p. n. of 4231

4233 — " 10 p. n. of 4232

Sec. 19 T. 27 R. 27 W Mich

corner

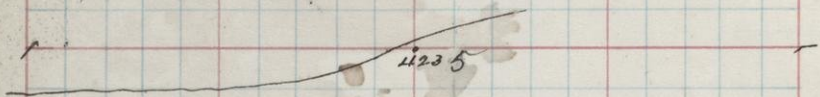
4233'

19

July 20 '83 Saginaw Mine 9

4234 "Sorpsline" with specular iron.
Saginaw Mine

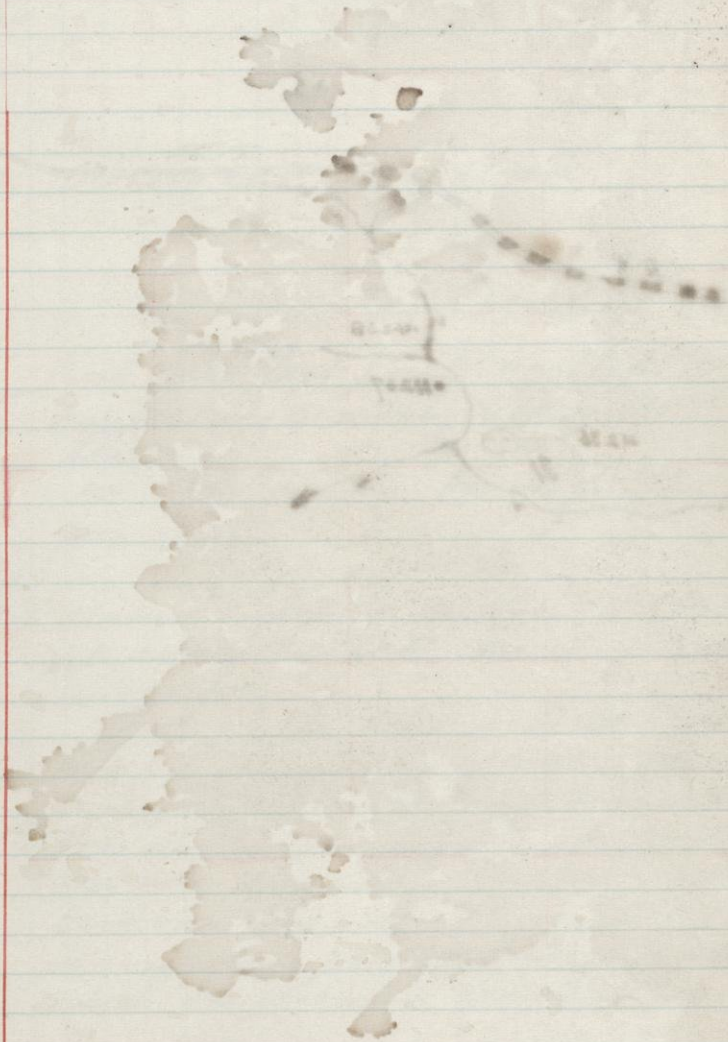
Sec. 20 T. 47 R. 27 @ Mich



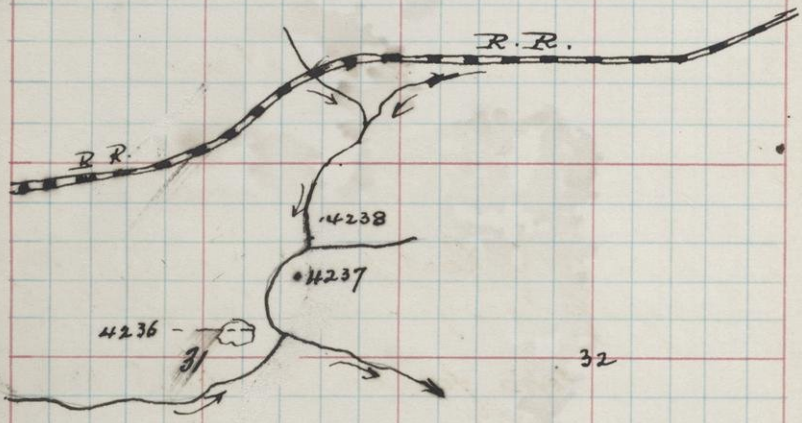
20

July 26 '83 East of Saginaw Allens 10

4235 Roadside between Saginaw and Owentsop Allens. Near N.1/4 post Sec. 20 T. 47 R. 2 W. Quarter.



Sec. 31 T. 47 R. 26W 4th



July 21
'83

Cascade Range

4236
S.W. h.s.
31-47-26 W
Mich

High rounded knobs of granite (1) west side stream

4237
N.E. 31
47-26 W
Mich

Road on east side of stream

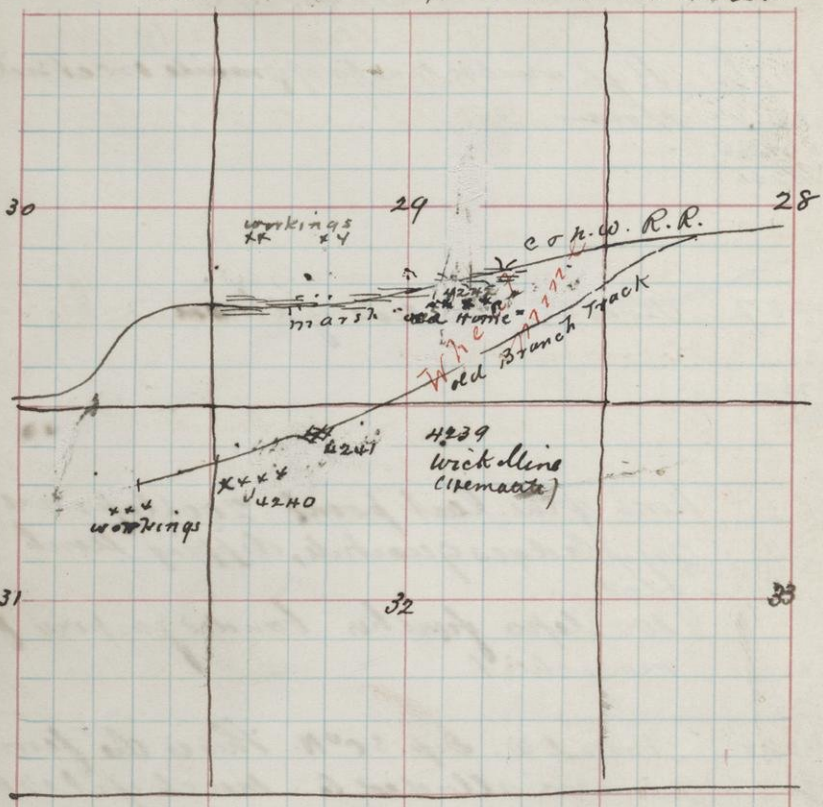
North of the last point 200 steps are grey ledges quartzite, dipping west flat.
100 steps further banded jaspery ferruginous schist

4238
3 sp.
N.E. 31

Strike E-W. Dip. 50° N. This is the ferruginous schist above alluded to. Much of it is red and jaspery
Next further north, near the sawmill this banded rock dips flatter. The banding is very regular. The iron is here unusually plenty. It is wholly specular oxide. No contortions seen here. The structure is a plainly sedimentary one, and since the jasper is plenty in here a good proof that the jaspery schists are elsewhere non-clastic.

(9—891.)

~~Sec.~~ T. 47 R. 26 W. Mich.



July 21 1883

Cascade Range

H239 New Home Mine. "Hematite"
This is the "Wick Mine" See Wright's Rept 1881. p. 197. N.W. N.E. 32. 47 26 W
Dip north - about 50° - but irregular.
Trend E-W.

H240 From old pit N.W - 32 - 47 - 26 W.
Dip. N. 50-60° Strike E.-W.
Compare rock other jasper schists - both the fine banding -

H241 Railroad cutting on old branch track N.W 32. 47 - 26 W. No structure can be made out. A "greenstone".

4

(9—891.)

Sec. T. R.

See map on previous page

4242-
8 sp.
U.S. 29-
47. 26 W
Mid.

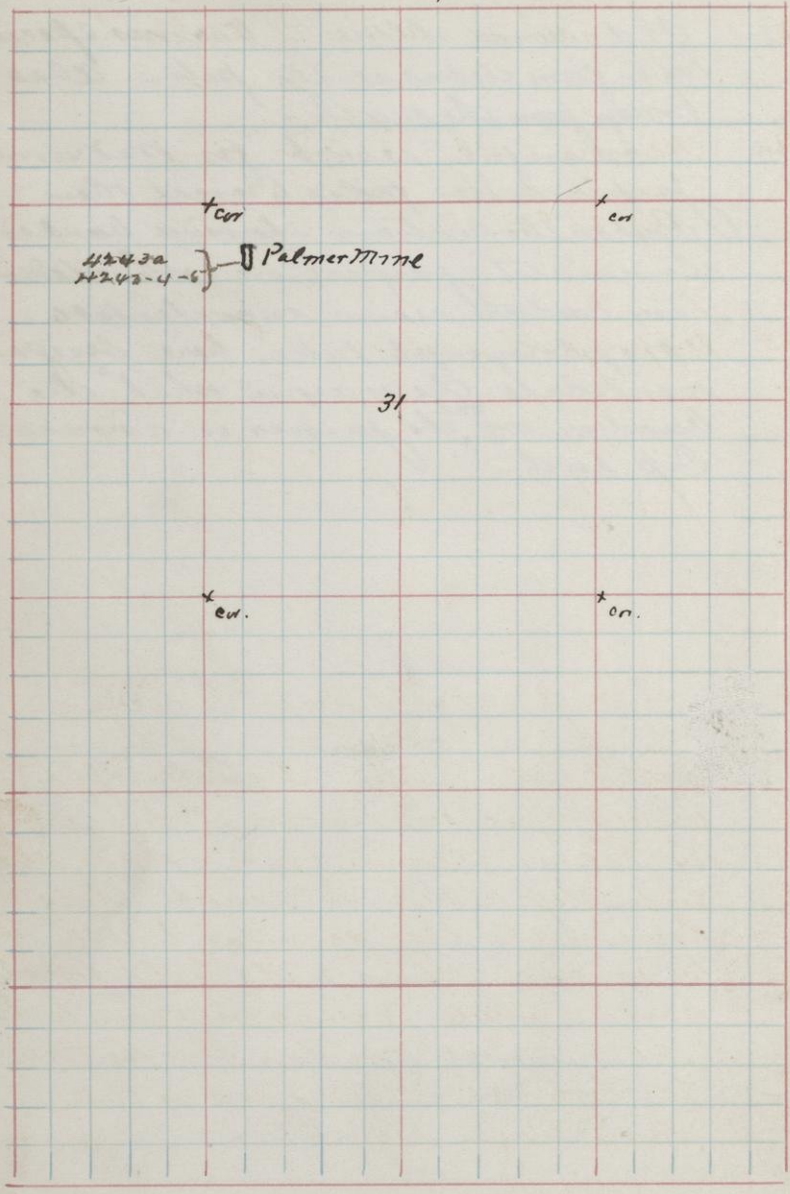
"Old Home Mine" - Various specimens taken from debris at the pits - Also broken from the walls -

A careful search for radiolarian jasper lenses failed to reveal them - But on the contrary showed a banded laminated jaspery ore whose sedimentary nature seems uncontestable -

One photograph taken here designed to indicate the way in which the banded ore and the jasper is arranged. Dip north -

(9—891.)

Sec. 31 T. 47 R. 26 W



July 21
1883

Palmer Mine

N.60.31-47-26W Mich

H2H3a Hanging wall. Palmer Mine
Conglomeratic Quartzite
Dip. 55° E. Strike N. & S.

H2H3 Upper part of Vein -

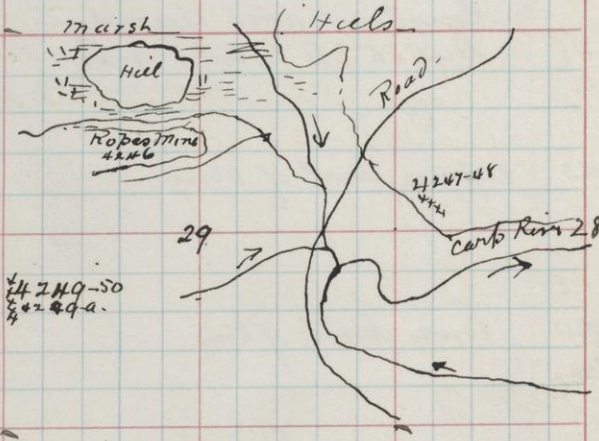
H2H4 Lower part of Vein

H2H5 Foot wall - banded jasper

Wright (Rept 1878. p. 80 - also later reports) makes a peculiar variation in dip at the Palmer. Romanzes (p. 66) makes the notes dip N. here as usual. Note, however, the very peculiar way in which the concave Range ends to the east-ward - granite coming in again to the west. Probably we have here the end of trough - whence the varying dips of Mich. Light speaks -

(9—891.)

Sec. 29 T. 48 R. 27 W 5th



July 22
1883. Ropes Gold Mine.

H246 Ore - wall rock &c. from the "mine"
6 sp. N.W. 29 - 48 - 27 W

H247 "Limestone" from Quarry near Ropes Mine -
3 sp. used for Flux at Deer Lake Furnace.
N.W. 28 - 48 - 27 W

H248 Talc-like Mineral - occurring in the
4 sp. Limestone H247

H249 Peridotite (?) from Romniger's Serpen-
tine area. 29 - 48 - 27 Very an
large and bold exposures of this rock
SW 29 - 48 - 27 W

H249a Chrysotile veins in the peridotite

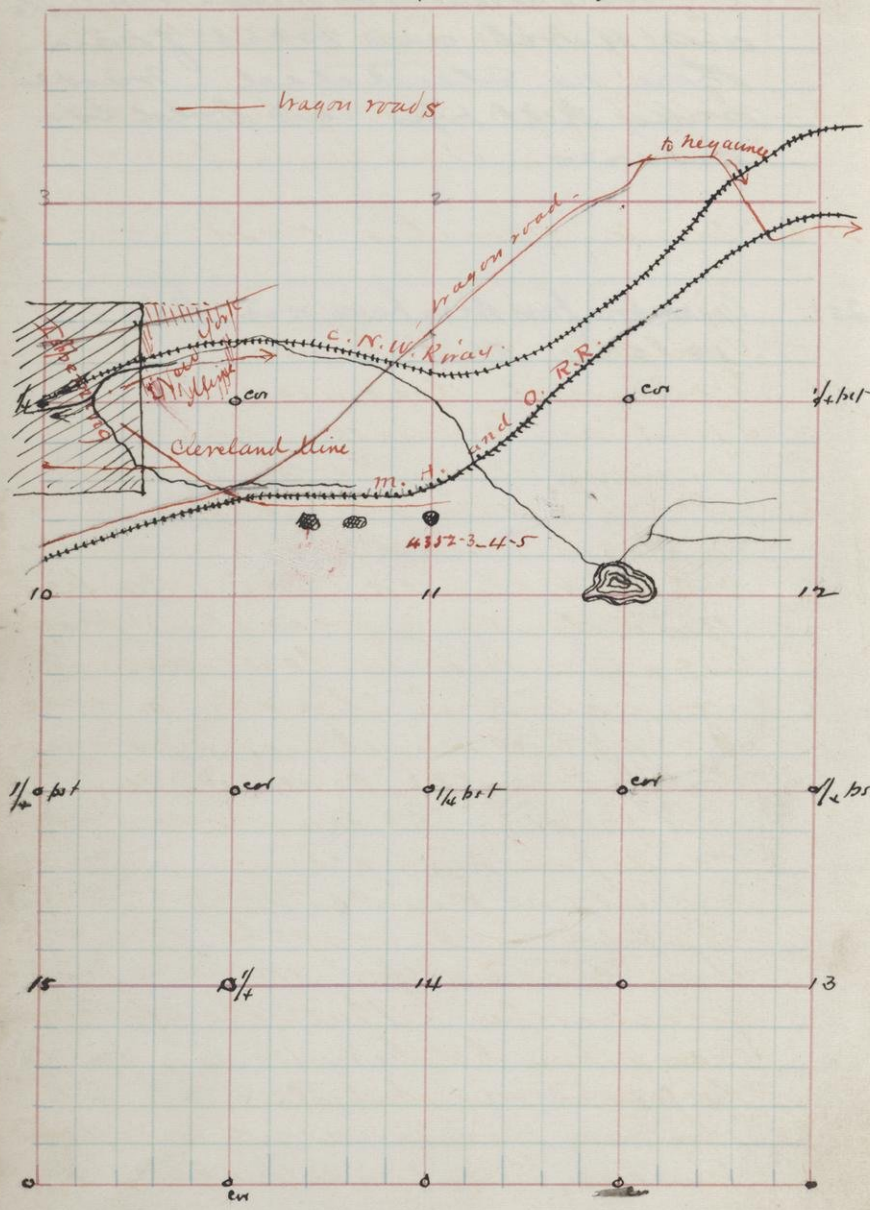
H250 Greenstone from near H249
(The locations are approximate only)

North of Deer Lake

The whole country around Deer Lake and north and west from there is studded with rocky hill tops and bold exposures.

4251 Greenstone from Deer Lake road. N.W. 33 48 27 W. Mich.

Sec. 11 T. 47 R. 27 W Mich



July 22
'83

East of Ishpeming - Negaunee Road.

4252 Schist from "knot of diorite" described by Wadsworth p. 41

4253 "Diorite" from this knot.

I failed to find things as Mr Wadsworth describes them: I find a low hill - having exposures at its northern base, beautifully glaciated - of a dark-colored schistose rock which I should take to be, beyond doubt a greenstone metamorphosed and altered by dynamic action. Some 25' up hill - south - is a coarser rock. Does the coarser cut the finer? It may do so but I could find no junction.

At one point there is an appearance as if the two rocks came close together - within a foot of one another. But the specimens seem to show that the rocks on both sides the [illegible] are identical -

4254-5 Specimens showing above suspected junction, taken from either side the junction.

Sec. 19 T. 47 R. 27 W 4th

See map opposite page 5

July 23
1883

Goderich Mine

Where took picture of Banded Jasper laminae trend N. 40° E.
Layers E-W - [~~this refers to sketch on p. 4. In which the lines therefore should not be so nearly at right angles to the contact~~]
(This note refers to banded Jasper photographed some distance south of the mine - That figured in sketch p. 4 runs N-S. or at r.a. to contact with Congl.

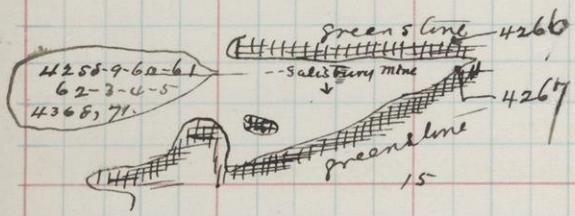
42056 Quartzite from north of Goderich Mine
S.W. S.W. 18-47-27 - see map op. p. 5

Sec. 20 T. 47 R. 27 W. Mich

July 23 '83. New England Mine 19

4257 Banded "Lost Comanche" from old pilot New England Mine.
N. S. Sec. 20 T. 47 R. 7 W.

Sec. 15 T. 47 R. 27 W Mich.



Salisbury Mine

N.W. 15 47 27W. Mich.

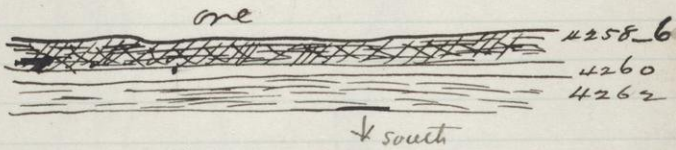
See Rominger's descriptions p. 84 Geol. Mich Vol. IV.

4258 Hanging wall. Specimens. Dcalcare. 6' wide

4259 No specimen

4260 On hanging wall. One foot from 4258; ore clean

4262 one foot Diallage above 4262.



4261 Lean ore on foot wall

4263 Freshest part of hanging wall. Much is soft and altered near the ore.

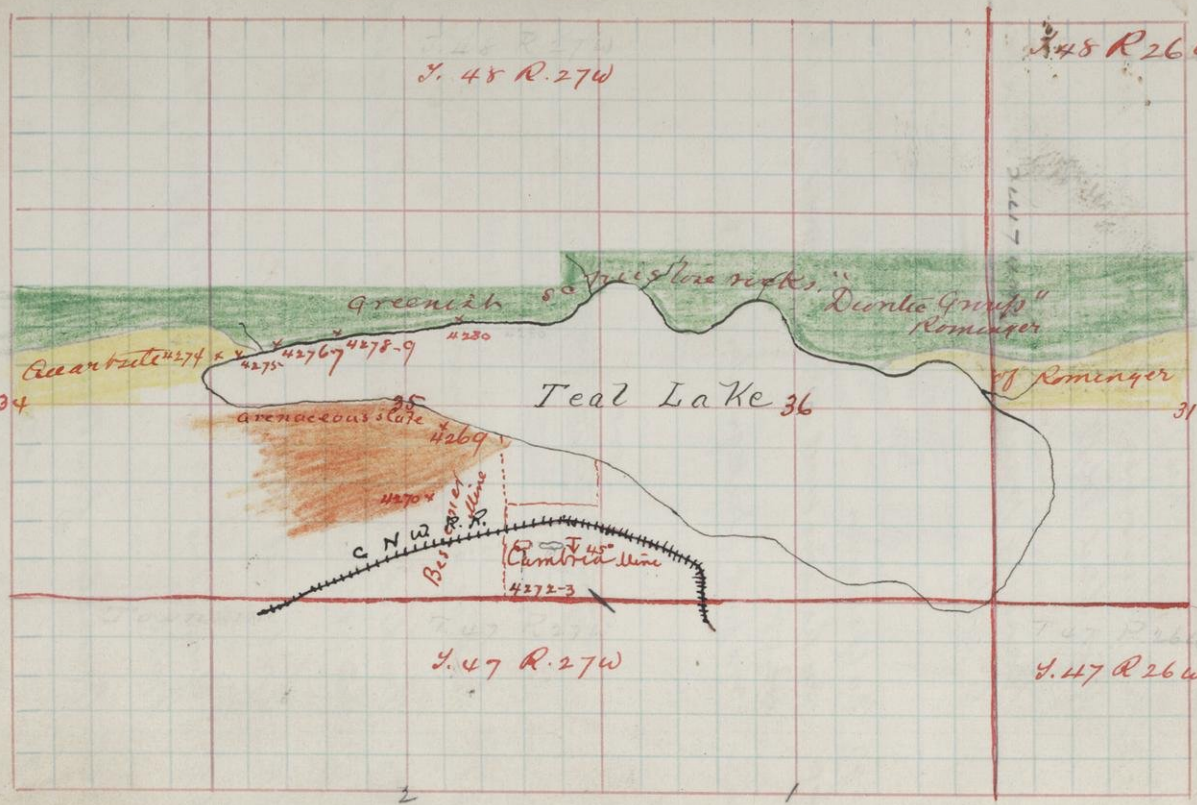
4264 Foot wall Schist.

4265 Greenstone 50 steps north of face of hanging wall.

4266 Greenstone from South side head Salisbury Ravine

4267 " " South " " " "

4368 } Salisbury Mine.
4371 }


T. 48 R. 27 W
T 48 R 26 W
Sec.
T.
R.
Greenish
Quartzite 4274
4275
4276
4278-9
4280
Teal Lake
36
34
31
Arenaceous slate
4269
4270
C N W R.
Best & Belzoni Line
Cumbria Mine
4272-3
T. 47 R. 27 W
T. 47 R 26 W
2
1

July 23 1883

Teal Lake

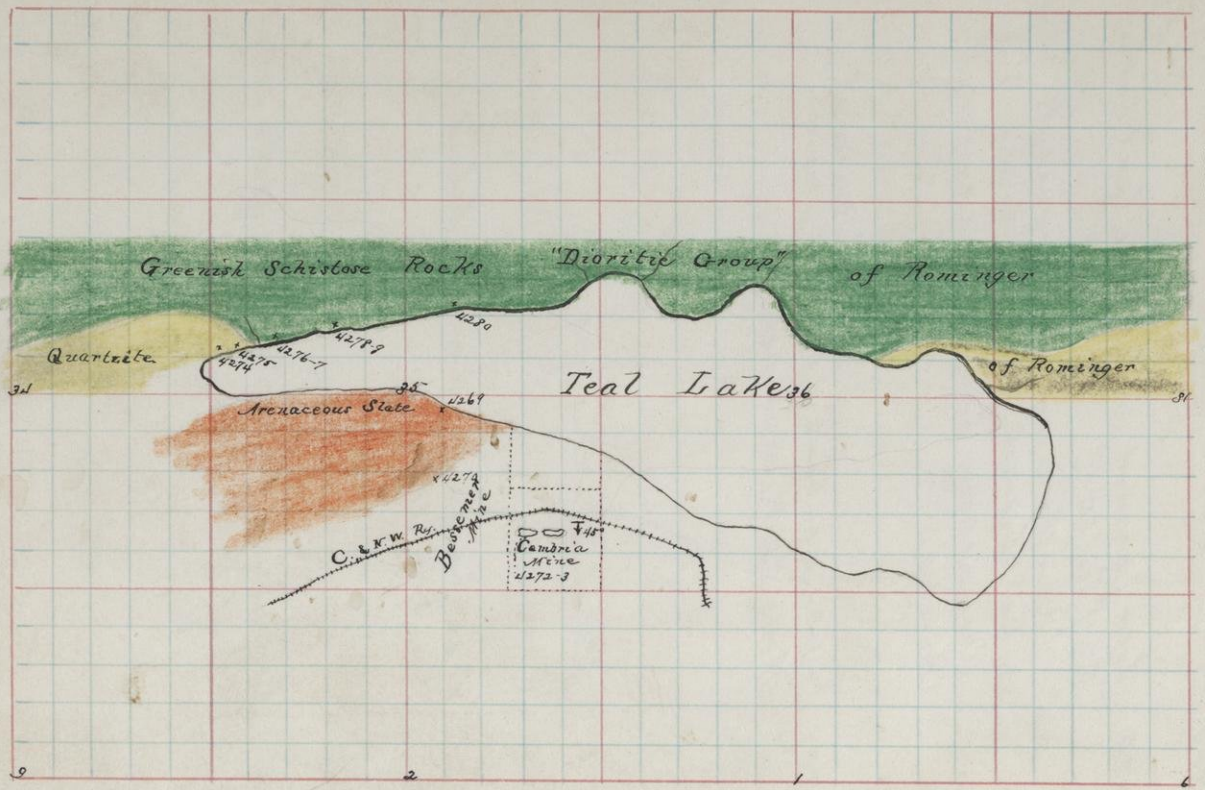
4269 Lone fragment south side Teal Lake- S.E. ¼ Sec 35
From the numerous fragments this rock is evidently in place here- The Arenaceous Slate described by Brooks

4270 In place on bank above the "Bessemer" mine. Shows slaty cleavage

4272. 2 Sp. Cambria Mine Ore

4273 5 Sp. Lean banded ferruginous Schist of the Cambria Mines

4274 Quartzite from East side of the west end of Teal Lake


Greenish Schistose Rocks
"Diorite Group"
of Rominger
Quartzite
Arenaceous Slate
Teal Lake
C. & N.W. Ry.
Bessemer Mine
Cambria Mine
4280
4278-9
4276-7
4275
4274
4269
4273
4272-3
31
35
36
1
2
9
6

Sec. T. R.

(9—891.)

4275 From Quartzite ledge - N.W. corner of Teal Lake

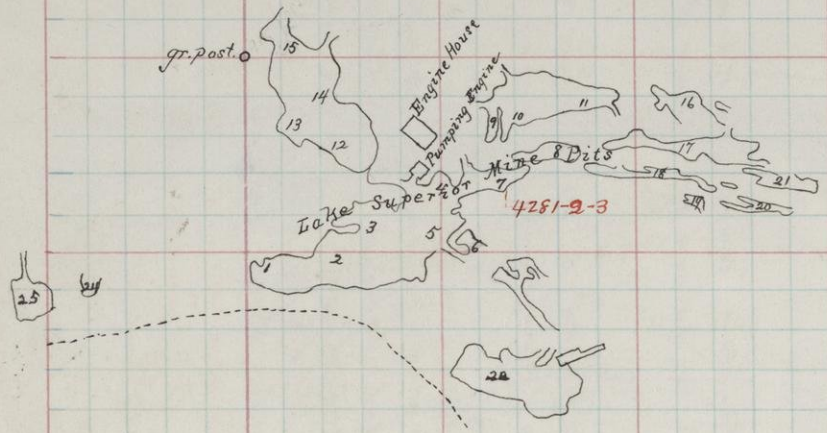
4276 2 sp. N.W. Side of Teal Lake - Two Specimens showing schist grading into each other.

4277 Interbanded with the quartzite of the N.W. shore of Teal Lake

4278 From cliffs on N. side Teal Lake - showing variations observed on these cliffs

4279 Schist from same place as 4278, but containing a quartzite pebble.

4280 Greenish schist. from Cliff on East side Teal Lake - 1/2 mile East of 4279 - but apparently an continuation of the same ledge


gr. post.
15
14
13
12
Engine House
Pumping Engine
9
10
11
16
17
18
19
20
21
Mine & Pits
Lake Superior
4281-2-3
3
5
1
2
25
24
22

Sec. T. R.

(9—891.)

July 24
1883

Lake Superior Mine

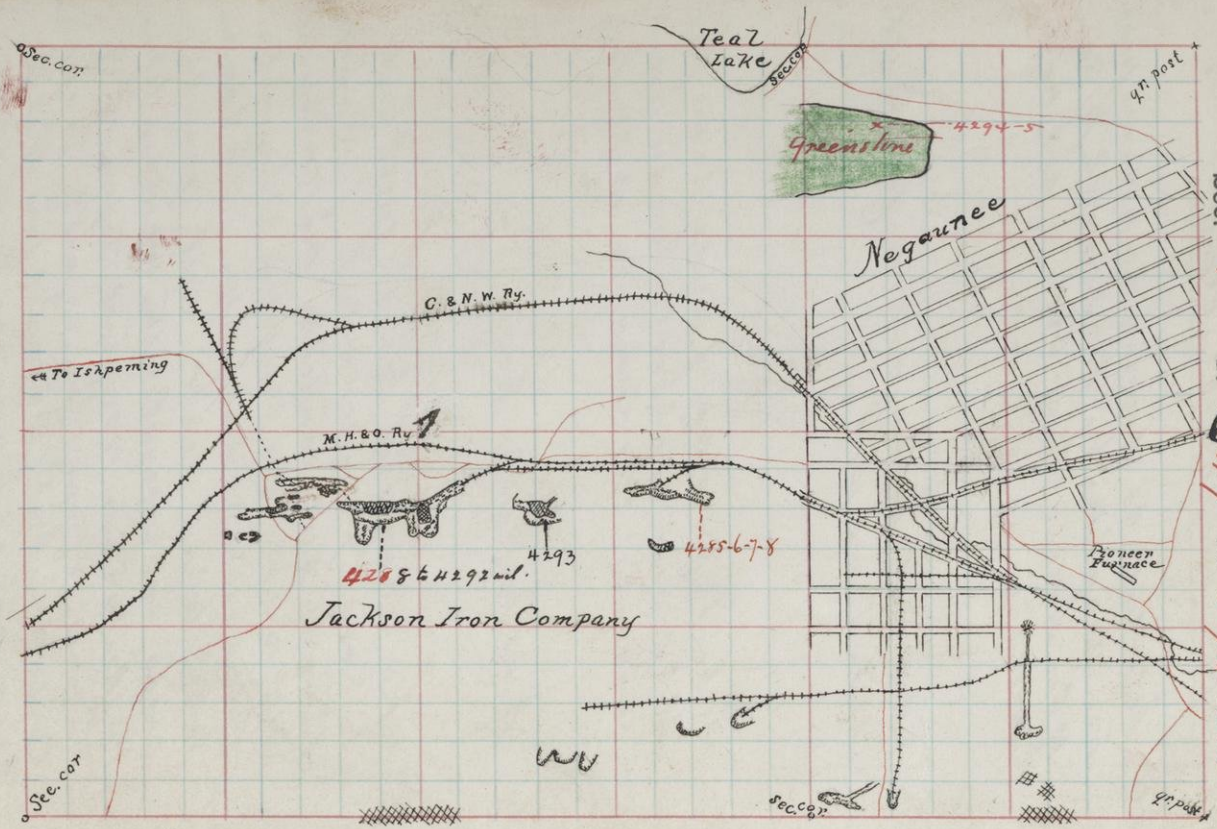
4281 Selected as showing supposed junction described by Wadsworth p. 30 of his Notes. From Pit not now working.

4282 Banded jasper and ore from South side same pit.

4283 Schist from north side same pit. This schist evidently lies in great lenses in the lean ore or jasper.

4284 6 sp. Lake Superior ores.

After a careful search with book in hand I am unable to find anything to substantiate Mr Wadsworth's ideas as to the eruptive character of the iron ore and jasper. He seems mostly to have dealt with minute areas and irregularities incident upon the disturbance or original deposition of the rocks, & from them argued to Eruptive Contacts – but I cannot find that he has in any case found or described a plainly marked intrusive contact.



Sec. 1 T. 47 R. 27 W. 4th P.M.

Sec 6 T 47 R 26 W and, (9—891.)

July 24 1883 — Jackson Mine Negaunee

4285 Conglomerated & brecciated ore No 7 Pit. Jackson Mine.

Honeycombing of the jasper from which ore shows beautifully in this pit.

4286 Soft hematite from honeycombed jasper - No 7 Pit - Jackson Mine.

4287 Mingled jasper and "Soapstone" Jackson Mine, Pit No 7

4288 "Rape ore" from bottom pit 7 - under ground.

Some of the "soapstone" in this place looks as if it might be merely a honeycombed and iron impregnated jasper. Is such a thing possible?

(9—891.)

Sec. 1 T. 47 R. 27 W Mich

See map opp previous page

July 24
1883

Jackson Mine - Negaunee

No 5½ Pit is alarge one.

4289 "Schist" from a strongly marked dike, some three feet wide, on South side No 5½ pit. This dike can be traced 150 feet on an East and West course and can be seen in cross section for a height of over 50 feet

4290 the "banded jasper" foot or South wall of this dike.

4291 Thin film between the dike and its jasper foot wall

4292 "Banded Jasper" from the same pit showing regular banding and broken jasper layers in same specimen

Pit No 3

4293 Crumbling jaspery ore from Pit 3 Jackson Mine. Shows Chalcedonic Quartz.

(9—891.)

Sec. 6 T. 47 R. 46W

See map opp. p. 25.

July 24
1883 Negaunee

4294 Greenstone from ridge north of Negaunee - Heigh and bold must be 150' above low ground of Teal Lake.
Its southern side slopes steeply to the south, while the northern is precipitous, and columnar. The whole appearance is just that of one of the interbedded greenstone layers of N. side Lake Superior - & is certainly suggestive of a flow. The columnar northern face, linear arrangement of ridge, south dip of Cambria underlies to the north &c, all combine to prove that here at least we have a genuine interbedded greenstone, and no intersecting mass. See photograph negative No

4295 is a variation of the commoner phase of rock on this ridge, shown by 4294

Glaciation finely shown here

A large mass of "banded jasper" north of east end of this ridge may represent Eastern end of the Teal Lake Range.

Section 4 T. 48 R. 30 W. Mich

colors after Brooks.

July 25
1883

Michigammi Lake.

4296 S.W. 28 T. 48 R. 30 W. Mich
South side Michigammi Lake.
Dip south
Amica schist wh. is almost a quartzite

The south side of the Lake is West of the outlet is mostly natural exposure near the water

4297 Island in Lake at beginning of outlet. South part sec. 27 T. R.

4298 From Island in outlet, or southern arm of Michigammi L. in west part sec. 34, T. R.
On this exposure and on the last named, the surface shows the appearance of having been, (or being, rather) intersected by a system of minute veinlets of quartz, constituting a close net-work. See specimen.

4299 From same exposure as 4298 - shows veinlets

4300 East End of large island. Michigammi Lake. South west of 27, T. R. This

Sec. T. 48 R. 30 W 2nd

See map opp. p. 27—

July 25 1863

Gleechegammi Lake

shows southern dip of the schist very plainly. Subordinately the Sch. is contorted. The dip is plainly true dip, because one can see the laminations due to sedimentation in fine light and dark lines

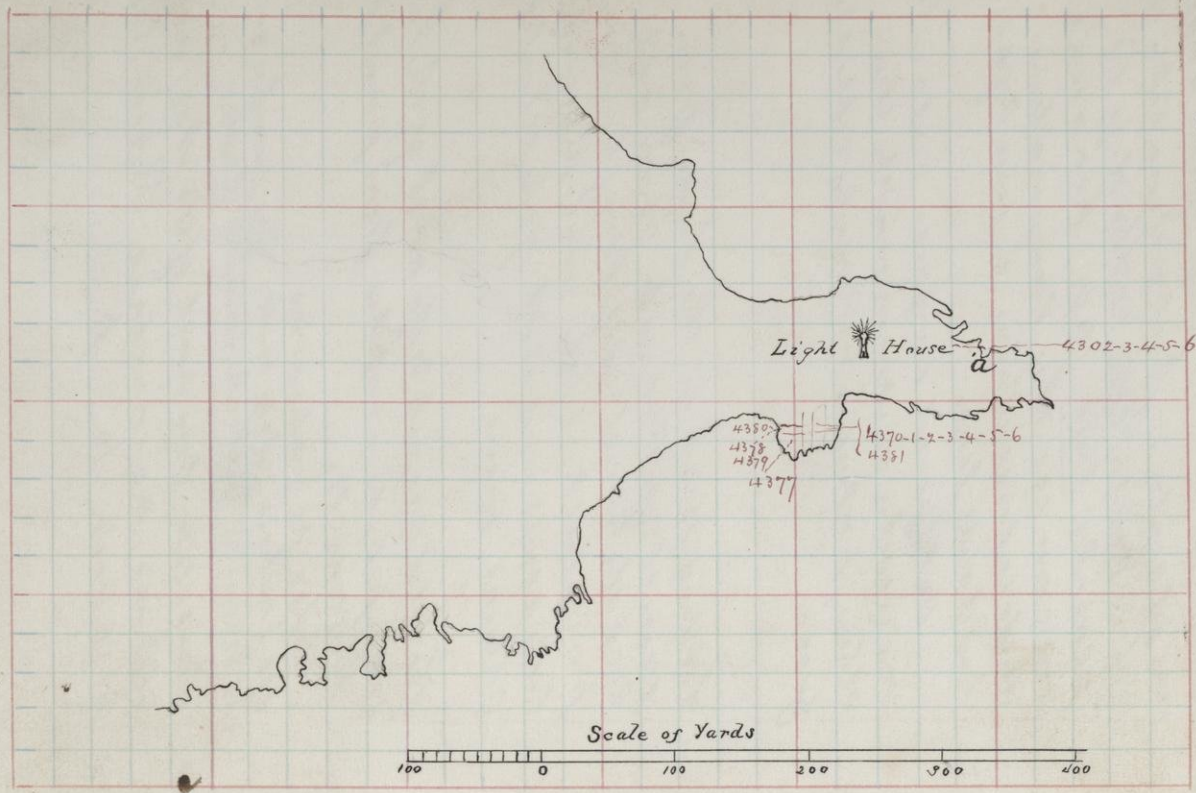
On exposed surfaces certain layers weather more readily than others, producing a finely ribbed surface.

Looking west in the Lake from mouth of Black Bay, one sees the South dip brought out very prominently by the contours of the hills about and west of the Gleechegammi mine.

The bold granite ridge west of the Lake was photographed from point A looking N.

See negative no.
See Yankee Note book. for further notes in regard to Gleechegammi Lake.

4301 Limestone from west of the Stoney Islands Menominee Region. See Note book No V p. 31



Sec. 24 T. 48 R. 25 W. Mich

July 26
1883

Light House Point Marquette

– See also pp. 46-48- this book–

#302 A slaty rock from north side of East end of the point. 20 feet from wall of dike. Strike E-W. Dip vertical, or very high to north

#304 Heavy dike intersecting #302 from the wall of the dike

#303 Slate rock at junction with the dike

#305 Dike rock 20 feet from junction with the slate

One very heavy dike at this place, lying parallel to the slaty lamination, is accompanied by a number of smaller ones, running parallel to the main dike, & diverging from it but little.

#306 In one place a smaller dike 18" wide was observed breaking across the slaty lamination for a short distance. #306 is this dike

#307 The slate in contact with #306

(See further as to Light Ho. point pp. 46-48)

Sec. 2 T. 48 R. 25 W mich

See maps opp. page 31

July 27
1883

Granite Islands

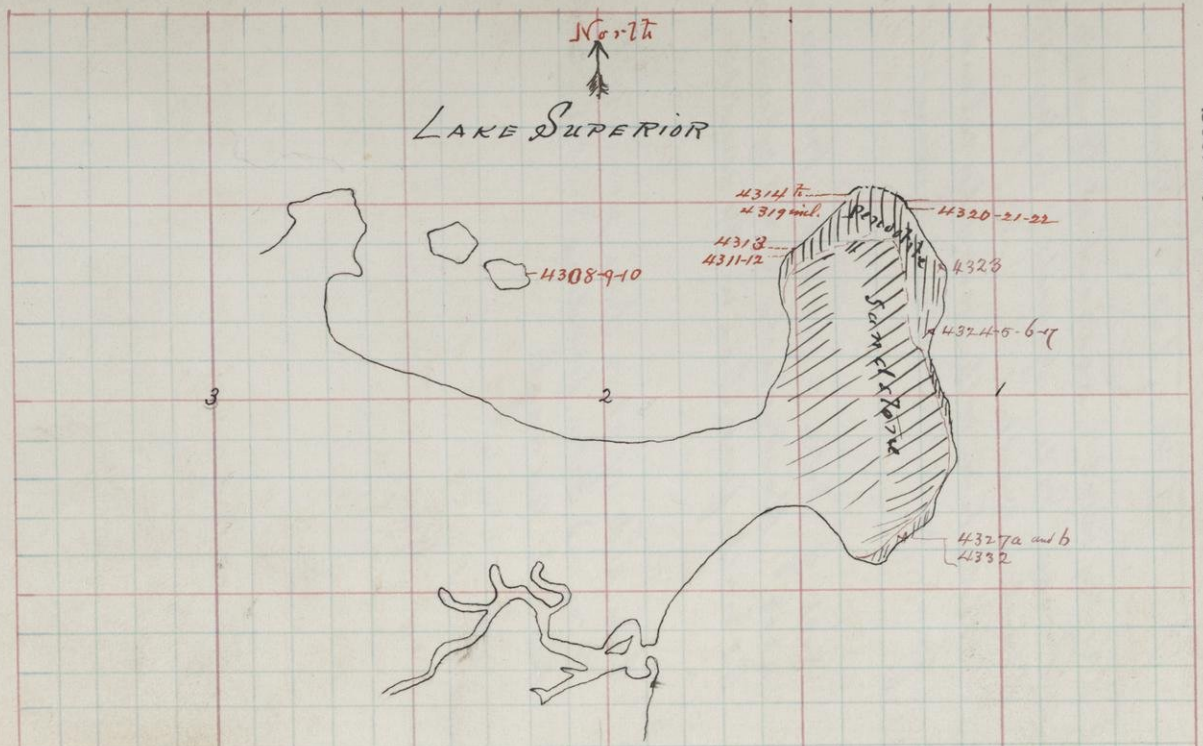
N.W 1/4 Sec. 2 T. 48, R 25 W mich

4308 Rocky islet, nearest of Group to Presqu' Isle. Granite. No parallel Structure visible

Photog. taken of this and other islands from E point this island, looking west

4309 Rock of Dike 4 feet wide. Traversing 4308. Handsomely cross-columnar At rocks finer than in the middle.

4310 Trap side of above dike, near wall. A second dike bending S. 35° E. Cuts this at an angle.



Sec. Iowa lo. 2 T. 48 R. 25 W 4th M.

July 27
1883.

Presqu' Isle.

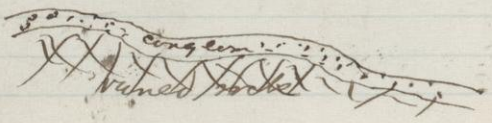
#311 Whitish layers in the sandstone which runs all along the west side of Presqu'Isle in low ledges. This sandstone is mostly red, and shows all the characters of the "Lake Superior" Sandstone.

False bedding very pronounced in some layers.

#312 Pebbles from a conglomerate underlying above layers. This conglomerate is two feet thick.

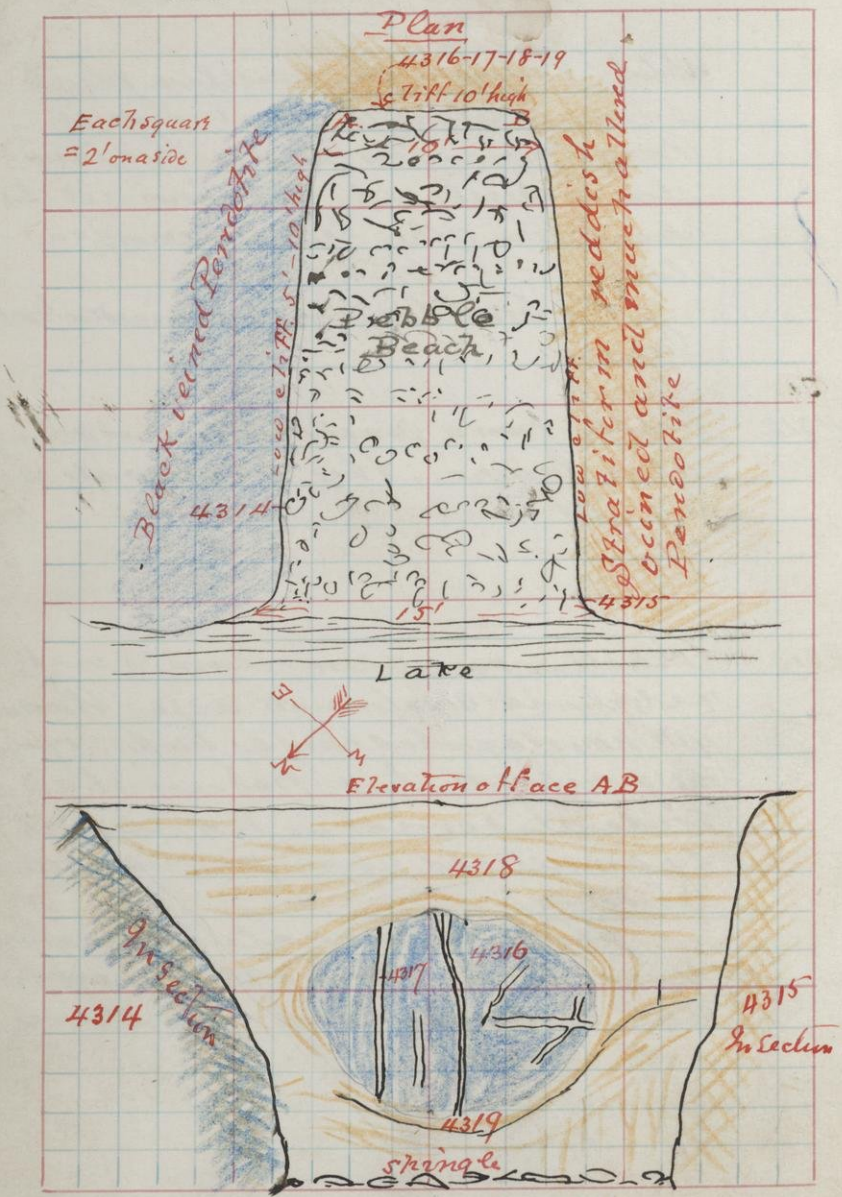
#313 Recalcined veined and veinstoned rock underlying conglomerate #312. Remenger has regarded this as distinct from the peridotite - but Wadsworth is evidently correct in regarding it as an altered upper portion of the Peridotite.

The conglomerate along shore seems to conform to the irregularities in the surface of the veined rock beneath it.



(9—891.)

Secs 1 & 2 T. 48 R. 25 W mich



Scale double the size of plan.
Each square 1 foot.

In the veined material is often a sort of pseudo stratification - suggesting the action of a bedding parallel to that of the overlying Conglt. and Sandstone. But it is plainly merely a result of veining and alteration. Here and there in this veined rock may be seen areas of the black peridotite, running into the rest.

4314 From northern end west side of Presqu' Isle Black veined peridotite. For relation to others specimens see sketch on opposite page. This is at the N.E. corner of a little rock walled shingle beach. facing north west.

4315 From S.W. corner of above beach. Reddish stratiform altered peridotite seamed with white, the seams by parallelism in rough way to surface giving a pseudo-stratiform appearance.

4316 Crumbling black peridotite, forming a sort of core in the veined reddish peridotite 5 feet high by seven long, as shown on opp. page

4318 } From over and under, respectively
4319 } this core of black peridotite. The veins of the stratiform material

(9—891.)

Secs 1 & 2 T. 48 R. 25 W 5th

See map opp. page 31.

July 27
1883

Presqu'Isle - Continued

embrace the core like the coats of an onion. #319 comes from one of these larger veins like masses.

#317 Veins in the core of black peridotite, #316.

The structure here is far more shattered than indicated in the sketch, a number of the veins can be traced completely around the core. The yellow lines of the diagram are meant to represent roughly this structure.

The stratiform material is not regular at all in its pseudo-bedding. It is wavy, and wholly unlike a true stratification. It seems plain that this dolomitic material is the result of the alteration of a mass of peridotite in two ways. (1) by the alteration by weathering of a series of successive concentric sheets, possibly originally due to a sort of spheroidal weathering, and (2) by the veining and alteration along

(9—891.)

Sections 1 & 2 T. 48 R. 25 W

- See map opp. page 31 -

Presqu' Isle - cont.

cracks. At times the pseudo-stratification will appear to be regular, and then will run off into a series of concentric and crisscrossing vein like bands. See specimens for nature of these veins.

It should be said that the black peridotite of the core of skelet opp. p. 32 is so rotten that it can be dug out like sand with the point of the pick.

4321 Black peridotite from north point of Presqu' Isle. Between this point and 4314-15 is a great continuous surface of black peridotite veins. No sandstone seen along here overlying the peridotite. This specimen is from the west wall of a bay facing about N. The west wall is pictured in negative no-18, and the whole bay, including the top of the west wall. This wall is some twenty feet high.

4320 is the unserpentined rock from this place.

The veins and unserpentined are thoroughly mingled. i.e. white veins and areas of calcite, dolomite and serpentine occur bordering and patching the black rock in every direction. The whole effect is a striking one and is strongly suggestive of sections of olivine rock, veined by

(9—891.)

Secs. 1 & 2 T. 48 R. 25 W Mich

See map opp. page 31

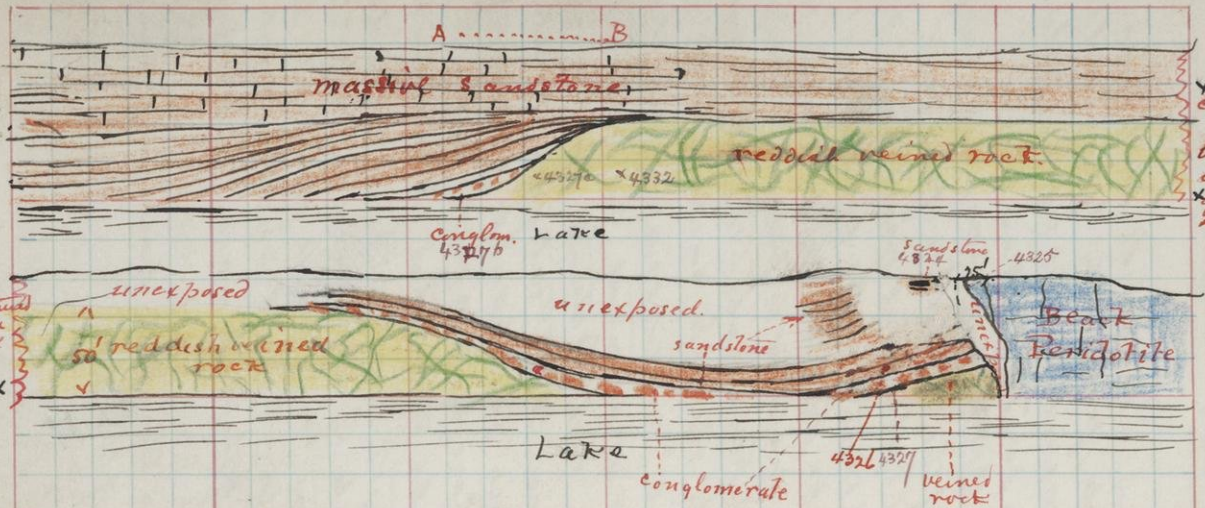
July 27
1883

Presque Isle Continued

serpentine. The reddish Stratiform altered rock previously described is plainly merely altered further altered form of the peridotite than this.

Note that we have here, on the surface and face of the west side of this bay, a marked spheroidal weathering — This is the first stage in the process next before the varioling and finally the Stratiform material is produced. Maddren and Remington — though the former evidently right in calling this rock a peridotite, and in regarding the Stratiform material as altered from it — are, I think both wrong in regarding the Stratiform material as overlying the black peridotite, for both here and at the point previously sketched it plainly runs into it. On the west side of the P. Isle it intervenes between the sandstone and black peridotite, and on the east too, but it is merely a lateral alteration of the black mass, as it seems to me.

4322 Crumbling Stratiform material from east side of this bay.



(9–891.)

T. 48 R. 2 W. Third

July 27
1883.

Presqu' Isle Continued

4323 Very black peridotite from N.E. corner Presqu' Isle.

4324 Sandstone from top of bluff E. side Presqu' Isle. Within 25' (scant pace) black Peridotite, at same level. The Sketch on opp. page shows the position of this specimen, and also represents the occurrences along the east side of Presqu' Isle, for about one third to one half mile.

4325 Peridotite 25' horizontally from 4324 There is a covered place here very difficult of access, and I think the peridotite may show so might be found closer to the sandstone, Vertically below here at some 25' above water the sandstone is in place Is this a fault line? or merely a line of unconf. abutment?

4326 Sandstone some 15 feet above lake level, and overlying 4327-

4327 Conglomerate immediately overlying veined rock at the same place as 4324-5-6- This conglomerate

Secs 1 & 2 T. 48 R. 25 W

See map opposite page 31.

is some five feet thick, and dips somewhat sharply beneath the water, as indicated on the sketch. The pebbles are from quite fine to 3" and 4" diameter. They seem to be mostly of some kind of granitoid rock, or of feldspar. A somewhat hasty search failed to reveal any pebbles which might be referred with certainty to either the veined rock or the black peridotite - Some dark colored pebbles were found however, and of these some are in the specimens brought away.

4327a The veined rock about 1/4 th mile further South along the East side of Presqu' Isle. As shown in this sketch, in the vicinity of the supposed fault, or where the black peridotite ends to the South and the veined rock rises rapidly above the water, carrying the conglomerate and overlying sandstone with it, to a height of 50 feet above the water - This height is maintained for a long distance on the East side of the point, the sandstone above being unexposed, or at least so concealed that it cannot be seen from

Sec. 1 T. 48 R. 25 W 5th M.

Enlarged and more accurate sketch of portion A — B of sketch opp. p. 36.

See map opp. p. 31.

the water. In addition to the numberless little veins traversing this rock in every direction, there are larger ones also, ¼" to ⅜" wide. These are equally irregular in course with the little ones. 4332 represents one of these larger veins.

4332 It is to be noted that the veined rock on the East side P. Isle does not show the strongly marked pseudo lamination seen in it on the west side.

43276. Conglomerate overlying the veined rock at its southern extremity on the East side of Presque Isle. See sketch op. p. 36. Here the conglomerate follows the curved surface of the veined rock, as before. but it is very interesting to note that the upper layers of the sandstone do not partake of the bending the whole appearance being that of an irregularity due primarily to irregular deposition, and gradually corrected as the sedimentation progressed. See sketch opp. p. 38, also enlarged sketch on page opp. this, which is more satisfactory. The veined

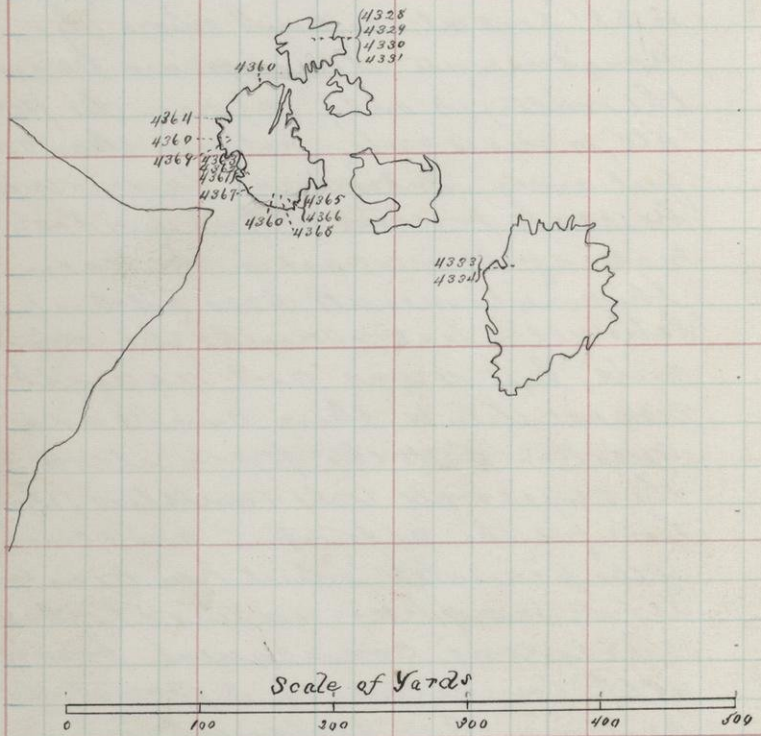
Sec 3 & 2 T. 48 R. 25 W Mich

See map opp. p. 31.

July 27
1883

rock thus cuts through quite a thickness of the sandstone, coming in contact with calayes which is 25' and more above it in another place - Again the thickness of thinner bedded sandstone between the conglomerate and massive sandstone above, which is 25' feet at the point where the conglomerate disappears beneath the water, is only 12' near the peridotite, or veined rock, not more than 200 feet away. Individual layers may be seen to dovetail in here in order to make up the increase in thickness. The conglomerate does not continue "like a blanket" around the veined rock, but runs out against it. I do not think there can be any question as to the precedence of the veined rock over sandstone, though how far the alteration and veining of the peridotite, which has been intense, may have caused subsidences and consequent bowings in the sandstone, is a point deserving consideration.

Sec. 13 T. 48 R. 25-W



July 27 1883

Pic Nic Islands

Near Marquette.

Northernmost Island

H 328 Dike rock from a large dike traversing this island - Dike is 15 yards wide, trends E-W nearly, and is cross columnar. There are also numerous joints parallel to the walls. Towards the edges these become more and more plenty, until the rock even becomes Schistose.

H 329 In the dike rock near the walls where it presents the Schistose appearance.

H 330 The rock composing this island

H 331 The wall rock of the above

(H 332 - Dike from Presque Isle - see p. 38)

Southernmost Island

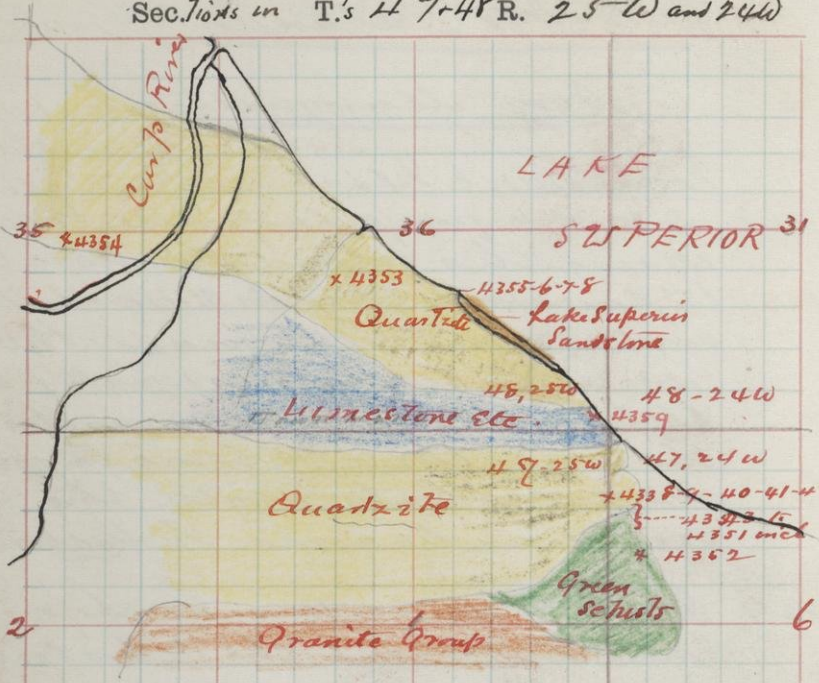
H 333 Prevailing black rock of this island.

H 334 Epidote seams and veins occurring plentifully in H 333.

(See further note Pic Nic Islands, p.)

The rock forming these islands is Structureless.

Sec. Notes in T.'s 47+48 R. 25 W and 24W



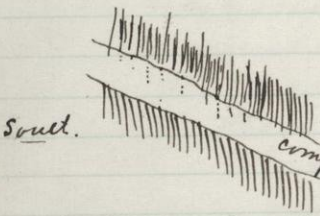
colors from Romenger's Map.

July 27
1883

Quartzite Range E. of Marquette

4338 (4335-6-7 have no specimens corresponding to them). From East side quartzite range, N.S. 1/4 Sec. 1 T. 47 R. 25 W. White Quartzite. - Dip N. 45° - Strike E-W.

4339 Siliceous schist immediately north of 4338 - affected by a strong slaty cleavage dipping N. 75° and striking N. 75° W. There is here an alternation of more slaty and more compact quartzitic material, the former showing the cleavage prominently, the latter not, thus: Compare in this respect



with the Devil's Lake slaty beds, and compare the slaty material with Fig 9 of the Penokee Huronian.

4340 } Quartzite north a few paces of 4339
4341 } the slaty cleavage gradually loses its power, and here we have only the true dip, 45° N., showing

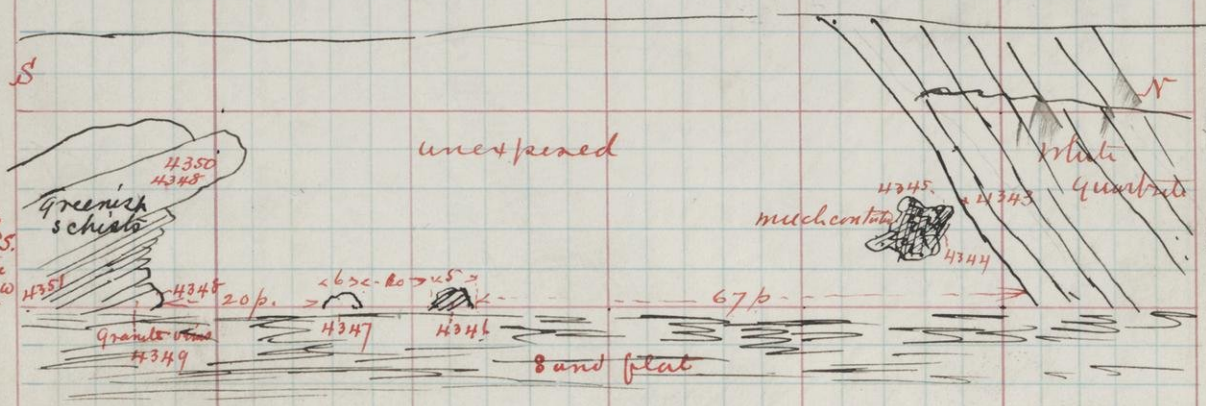
4342 From near 4338

(See map p. 44)

Sec. 6 T. 47 N. R. 24 W. Mich.

(9–891.)

Sketch of East End of Quartzite Range
East line, N.E. 1/4 Sec. 1, T. 47 R. 25 W. Mich.



Squares 5 paces on a side.

July 28 1883

Encarbate Range & environments.

4343
4344
4345
4346
4347
4348
4349
4350
4351

Specimens collected along East end of this range, as indicated in sketch on opp. page. Compare Romeyn's p. 60. After passing a synclinal structure in the Encarbate range itself, we come to the place represented in the sketch, where the north dipping Encarbates give place to a series of greenish schist. The appearance is as if we had here to do with a true unconformity, and the greenstones are portions of the granitic series. Consider carefully if this is not probably true, from other considerations.

See photograph of negative 21, 1883 which shows just what is given here in the sketch, so that an accurate sketch may be made. The inclinations are not correctly represented in the sketch on opp. page.

The veins in 4348, represented by 4349, are from mere threads to 18 inches in width. They run principally parallel to the lamination, or schist structure, wh. is pronounced, but also transversely.

4352 (Somewhere near here)

Greenish rock from S.W. to N.W. 6, 47, 24 W. The greenish schist, with granite veins, continue all along here, into a coarse chicken

(9—891.)

Sec. 5 35 & 36 T. 48 R. 25 W 5th

See map opp. page 41.

July 28
1883

Gannister Quarries Carp River near Marquette, Mich

4354 Gannister quarry on the north side of Carp River Valley. N.W¼ S.E.¼ Sec 35, T. 48 R 25 W Mich - Short dist. E. of mouth Leonard - See Rominger Geol. Mich IV, p. 41

4353 Gannister Quarry N.E. S.E. 36, T. 48 R 25 W. Mich. Rominger p. 49

(9—891.)

Sec. 36 T. 48 R. 25 W mich.

- See map opp. p. 41.

July 28
1883

Unconformity of Sandstone and Quartzite near Marquette

N.W.¼ S.E.¼, Sec. 36, T. 48 R25W
See Rominger. p. 49

This is the place figured by Dana and Foster and Whitney.
See Photographic negative 22

4355 The quartzite at this place

4356 The sandstone

4357 Sandstone from actual contact with the quartzite. It is wedged into the cracks of the quartzite.

4358 Quartzite from the road near by

4359 Specimens from the limestone in this vicinity. From near S.E. corner of Sec. 36. T. 48 R 25W. This is from exposures on the roadside of Ohern road.

(9—891.)

Sec. 13 T. 48 R. 25 W Mid.

– See map opp. p. 40 –

July 29
1883

Pic Nic Islands

Vankins

near Marquette

See also p. 40 of this book.

4360 Prevailing rock of Pic Nic Point.

4360a
4360b } Less common phases of 4360

4361 Felsite (?) dike in 4360. Runs slightly w. of north

4362 West wall of 4361

4363 East wall of 4361

4364 Areas of a schistose rock enclosed in 4360, and seemingly unmixed with it. Largest 7'& 8' wide by 20' long

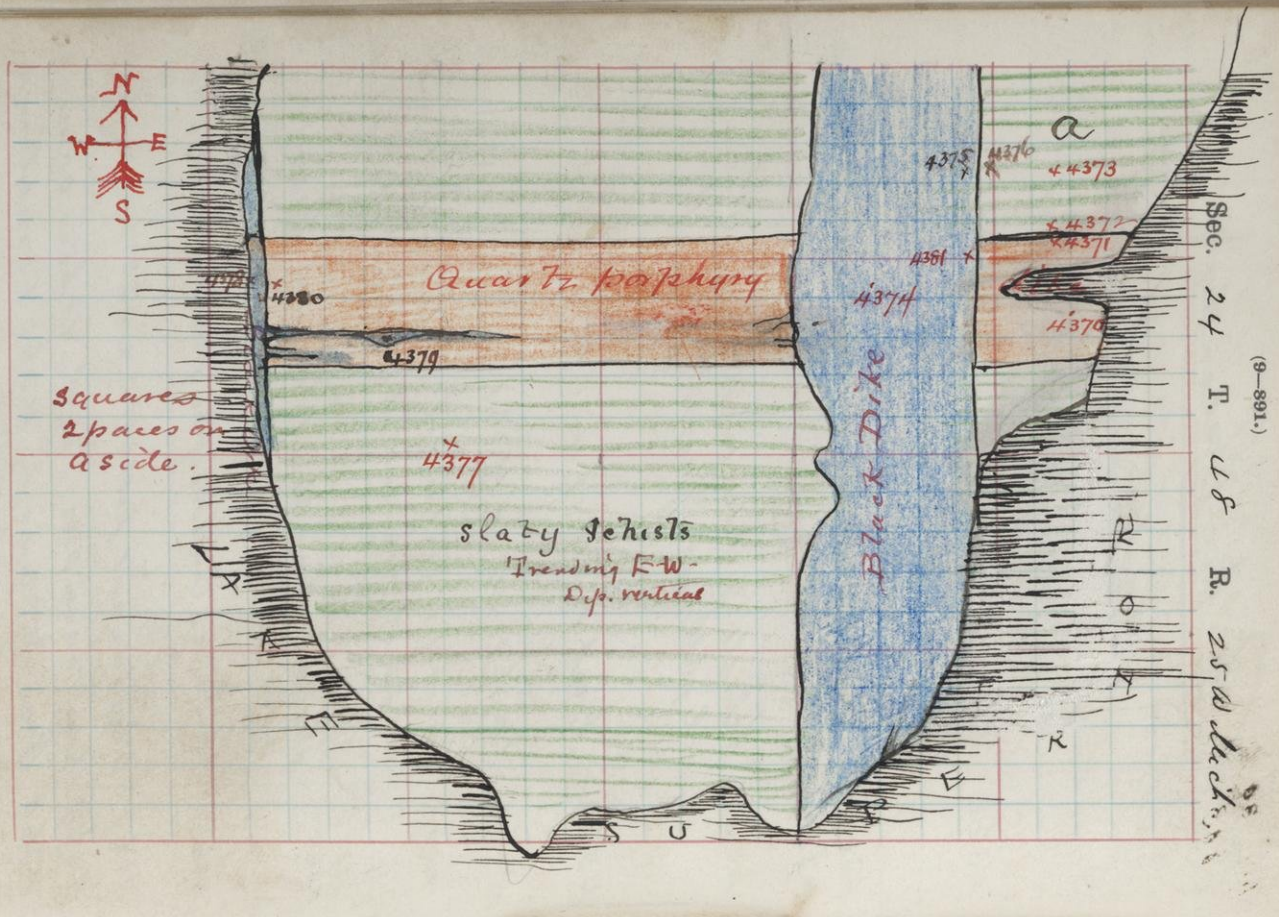
4365 Shows conglomeratic appearance observed in 4360

4366 Portion of a large one of the prevailing pebbles (?) in 4365

4367 A less usual pebble (?) in 4365

4368 Granite area in 4365 - 3' by 10' - others occur

4369 Granite veins in 4360 sometimes several feet wide.



Sec. 24 T. 4 S. R. 25 W. Mt. Diablo B. & M.

(9—891.)

July 30 1883

Light House Point
near Marquette

N.E. 1/4 Sec. 24, T. 48 R. 25 W.

See also page 29, this book.

4370 Quartz porphyry Dike south side Light House Point - see Sketch - opp. page For locations see general map of point, p. 29

4371 Quartz-porphyry dike at junction with slate on the north

4372 Slate in contact with 4371

4373 Schist 10 feet north of Quartz porphyry 4371

4374 Black dike

4375 Black dike at junction with slate

4376 Slate at junction with black dike

4377 Slate as on figure

4378 Second black dike parallel to the first, and 27 paces east from it Only a portion of the dike is seen. The specimen is from 6 feet east of the trail.

N.W.¼ Sec. 24 T. 48 R. 25 W 5th

- see also map opp. p. 29.

Light House Point Cont.

4379 Stringer running from the black dike into the quartz-porphyry. There are ten of these Stringers. The larger and more northern one is 2" to 1' in width and over 25' in length. Can't see the termination. The other, which is only 3 inches south of the pit is narrower, and terminates within 6 feet. (Possibly these Stringers are merely bandings of the slate remaining in the Q. P. Study Specimens for an answer to this doubt.)

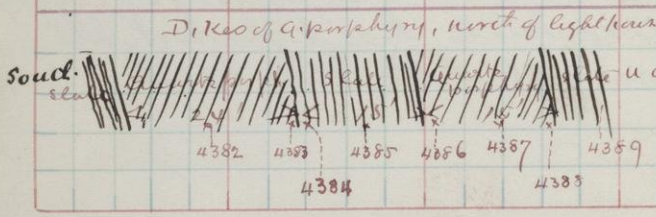
4380 From quartz-porphyry dike at contact with second black dike, 4378

4381. From quartz-porphyry at contact with first black dike 4374

The larger black dike appears to end abruptly to the west, possibly sending off branches, but this was not made out satisfactorily. Slate certainly lies adjacent the course of the dike to the west.

Sec. 24 T. 48 R. 25 W Mich.

- See map opp. p. 29 -



Light House Point

North Side of the Point.

4382 Quartz porphyry dike on north side of point, lying parallel to the strike. 24 feet wide. Specimen from the middle of the dike

4383 The same dike in contact with the slate to the north of it.

4384 Slate forming north wall of the dike. At contact.

4385 Slate from midway between above dike, and a second. Slate 15' wide

4386 Another dike of quartz-porphyry, fifteen feet from first and 15' wide. From southern contact

4387 Middle of the second dike

4388 Second dike at the northern contact

4389 Slate north of the second dike

Photographic Negatives taken in the Marquette Region - July 1883

Negatives are marked in lower left hand corner with No ogers "a" being added to the numbers in case of duplicates.

No 10, 1883. Not duplicated
Goderich Mine - showing contact banded jaspers and conglomerate -
see page 4, this book.

Photo. Neg. continued

No 11-1883 not duplicated.
Geological Line - showing
Contortes "banded jasper"
See p. 3, this book.

Photo key. Continued

No 12, 1883 Duplicate.
Lake Superior Mine - Showing fol-
ding at west end of Pit No 3
See p. 23, this book.

Photo: Neg. Cont.

1883 not Duplicated

No 13 - Home Mine - Cascade Range
Showing banded jasperoy ore -
See p. 13 this book

Photo neg. cont.

No 14 - 1883 Not Duplicated
Greenstone Ridge S.W. from
Pegamene - See map on
page 24 this book - also see
p. 26.
Shows appearance of west
face of the ridge.

Photo. Neg. continued

No 15, 1883. Duplicated
Greenstone ridge N.W. of Negaunee. See map p. 24 - also p. 26 this book
Shows the ridge in profile as seen from the East.

No 16, 1883. Duplicated.
Shows view of Sawtelle
Range north of Lake Michi-
gammi, as seen from the
Lake shore on the south - Ta-
ken from point marked A
on map of L. Michigammi
p. 27 this book.

Photo. neg. continued

No 17, 1883 - Duplicated.
Shows a bay in the peninsula at north
End of Presque' Isle - See page
344, this book.

Photo req. continued

No 18, 1883 - Not a duplicate.
Shows the west wall of the bay pictured in No 17, as seen from the east ledge of the quarry. See p. 34 this book

Photo. neg. Continued

No 19. 1883- Not Duplicated.
Granite Islands - west of Berque'
Isle. See p. 30 this book
Looking west from East end of Eastern-
most island.

Photo reg. Continued

No 20, 1883. Duplicated.
View of east end of Quartzite range
South of mesa Quette - See p. 41
this vol.

Photo. neg. continued

No 21 1883 Duplicates.
Views of supposed unconformity between Quartzite and Granite-Schist South of Marquette- See p. 42 this book

Photo. neg. cont.

No 22, 1863. Duplicated
bed of unconformity between Quartzite and sandstone South of mar-
Quette. See p. 44. this book.

Photo. reg. cont.

No 23 1883. Duplicated
Looking south from point A Light House Point. Map p. 46

No. 24. Duplicated
View of Dike on North side Light House Point looking north p. 29 Scenic Stds. in the distance