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Menominee Iron Region, Michigan, Wisconsin: [specimens] 4100-4206a. No. 2 1883-07

Irving, Roland Duer, 1847-1888

[s.l.]: [s.n.], 1883-07

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U. S. GEOLOGICAL SURVEY

FIELD NOTE BOOK

No. 2.

July, 1883.

Menominee Iron Region

Mich. + Wis.

A. D. Irving.

4100-4206a

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, *repeating the map on each left hand page* as long as the notes, with regard to one section, continue.

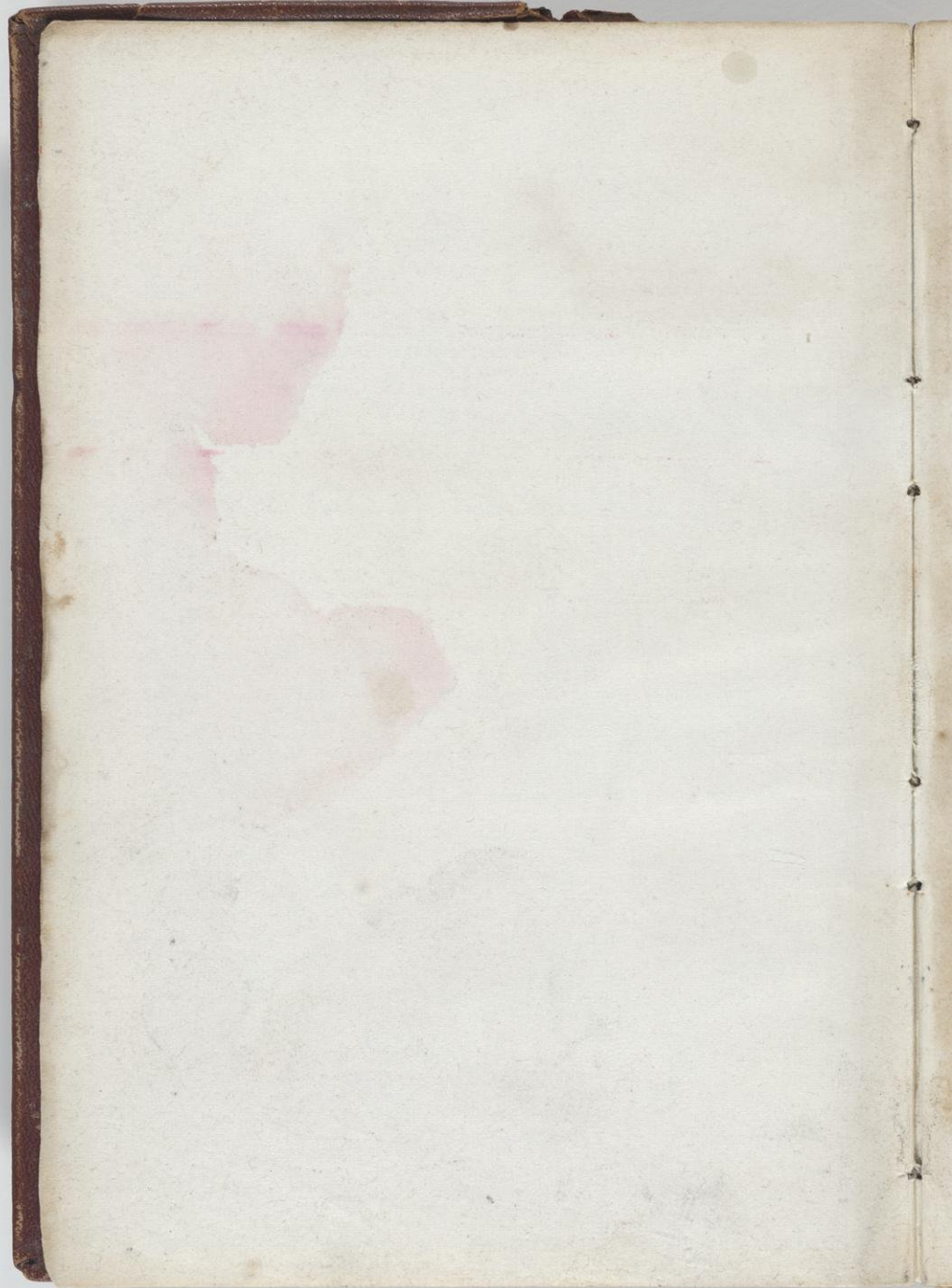
3. Collect a specimen from each separate ledge of rock, or whenever there is a change of rock on any one ledge. In case of trips made on foot or in canoes, for long distances, neighboring ledges, unquestionably of one kind of rock, need not be sampled, the position and extent of the ledge being marked 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.

#2

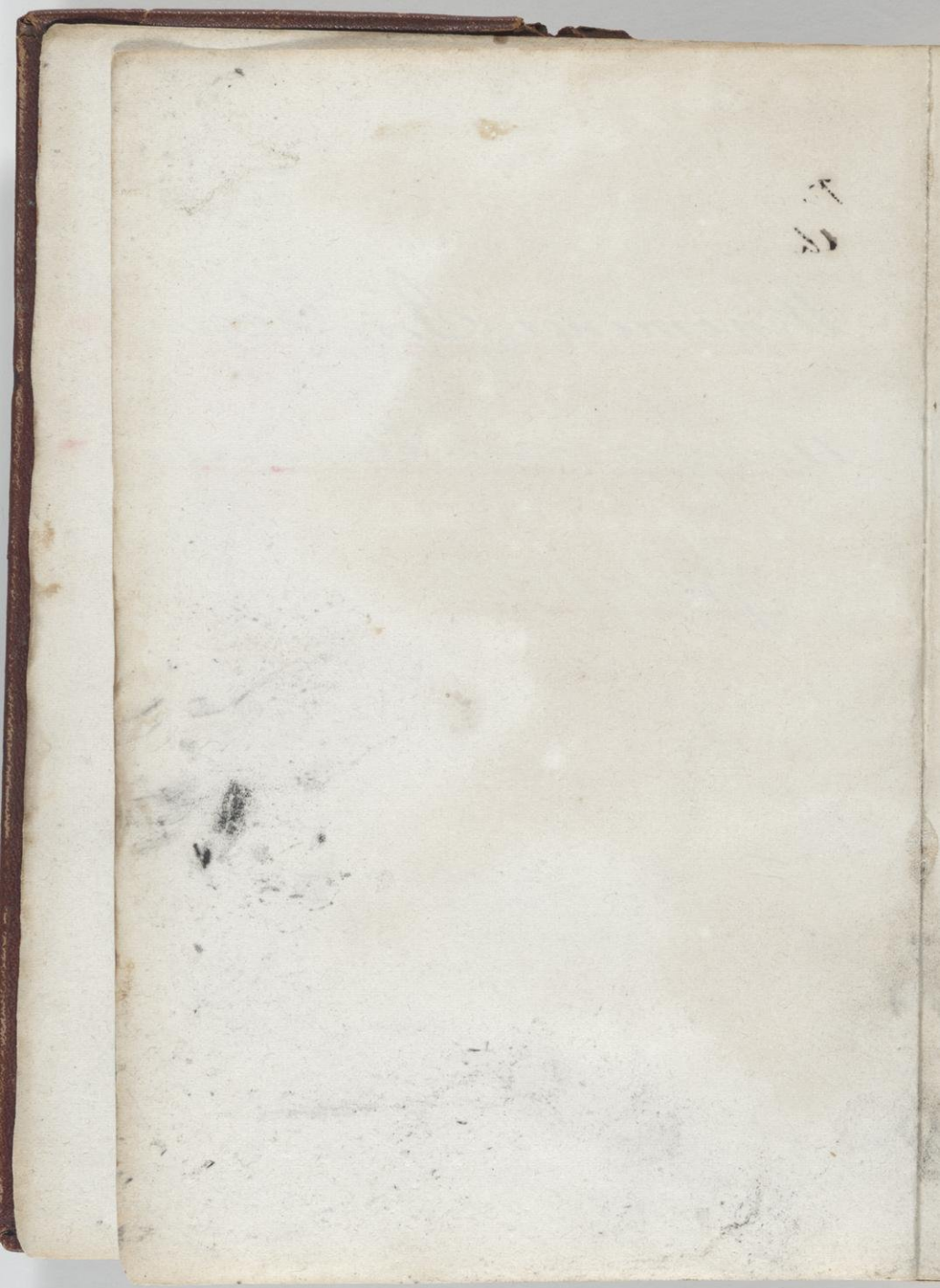
Menominee Iron Region
Michigan and Wisconsin



Menominee Iron Region.

Michigan and Wisconsin

July 1883.



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

Sec. 34 T. 40 R. 18 E *Wri*

✕ cor

✕ cor

Pits 34
D 84103
4102 x 4100 - 01

✕ cor

✕ cor

4
4
4
16
4
24
Mag
and
Ch
4
4
2
Hem
and
Tite
sche

July 11th 1883

Commonwealth Mine

4100 From exploration shaft 140 paces
4101 south by E. of Commonwealth
mine.

4102 Contorted ferruginous schists - foot
(Bispevino) wall of Commonwealth mine.

4103 Pyritiferous and graphitic(?) slate,
2 sp. carrying chalcedonic quartz,
ferruginous - just E Commonwealth
mine.
Magnetitic
and Chert
Chert schist

4104 From opening on slate just south
of E part of Ore pit, Commonwealth
mine.

4105 Rich ore samples from Stock
pile. Commonwealth mine. N.S.
2 sp. S.W. 34, 40, 18 E.
Magnetitic
and magne-
tite chert
schist.

Sec.

34

T. 40

R.

18E Wis.

007

007

Pits
000

007

007

The Commonwealth mine is mostly open, only the lower 75 feet being underground. The rich ore lies in the usual lean ferruginous schists, which recall those seen at Black River Falls, Penokee Range etc, but it lies in them quite irregularly. i.e. does not form regularly defined lenses, but is simply a portion of the lean ore richer than usual, the stratification of the lean schists running directly into the ore. The latter is often cut off abruptly by schist too lean to work. One large bar of such rock is left running directly across the mine. The large amount of red oxide, the chalcidonic quartz, and the mode of occurrence are all evidence of much secondary action.

The underlying ferruginous schists are very highly contorted. Compare this contortion with that of the Sunlight Lake cherty beds. It appears to be something quite independent of the general folding of the rocks. A layer affected by it will as a whole have a simple structure, parallel to that of the adjoining beds, but subordinated, will be folded in the most singular manner and yet at the same time show a constant tendency to return, in its laminar lines, to a parallelism with the general structure.

See photograph of this contorted rock south of the Commonwealth. the footwall of the mine.

Sec. 34

T. 40

R. 13 E. 110

Cor.

Cor.

34.

Commonwealth

O O O

line

Cor.

Cor.

Note that the siliceous matter interbanded in these schists is full as often chalcedonic, or chert like, as jaspery, if not often. Compare the specimens closely with some of the "sunflint" beds.

Note also the abundance of pyrite in the accompanying pyriteiferous slates, and consider what, if any, relation may subsist between it and the rich iron ores, and the general appearance of secondary action. Is it at all possible that some of these ores come from the alteration of pyrite? or of pyriteiferous schists? or is this reversing cause and effect?

Note also the accompanying plumbaginous schists. Are they really plumbaginous? A point needing careful determination.

Sec. 32 T. 40 R. 18 E. Wis.

Cor

Cor

32

Cor.

Cor

Locations based on J. B. Brooks map Plate VI.
 Geol. Mil. vol. IV. p. 481.

July 12th 1883.

4

#106 From Exploration pits in S.W.S.W. 32 40 18E Wisconsin. See Plate VI, J.B. Brooks report on Menominee Region, p. 481, Vol III fac. 44 of Wisconsin Yellowish brown limonitic ore

#107 From a pit near the east. Peculiar soft reddish black ore. From a different pit from #106

Hermatitic chert.

#108

2 Sp.

Cherty or chalcedonic material from these pits - compare with gunflint material.

✓ #109 Sericitic(?) schist, or quartzschist from some 200 paces East by South from these pits. Compare with formation III. Penokee Series.

chert schist

chert sch.

(9-891.)

Sec. 20 T. 40 R. 18E Wis.

Col

Col

20

Florence
line

4110
4112-13
4111

Col

Col

July 12 '83

5

Florence Mine.

#110

2sp.

Green material forming hanging wall
of main mine, in places.

#111

4sp.

Foot wall of the Florence Mine.

#112

3sp.

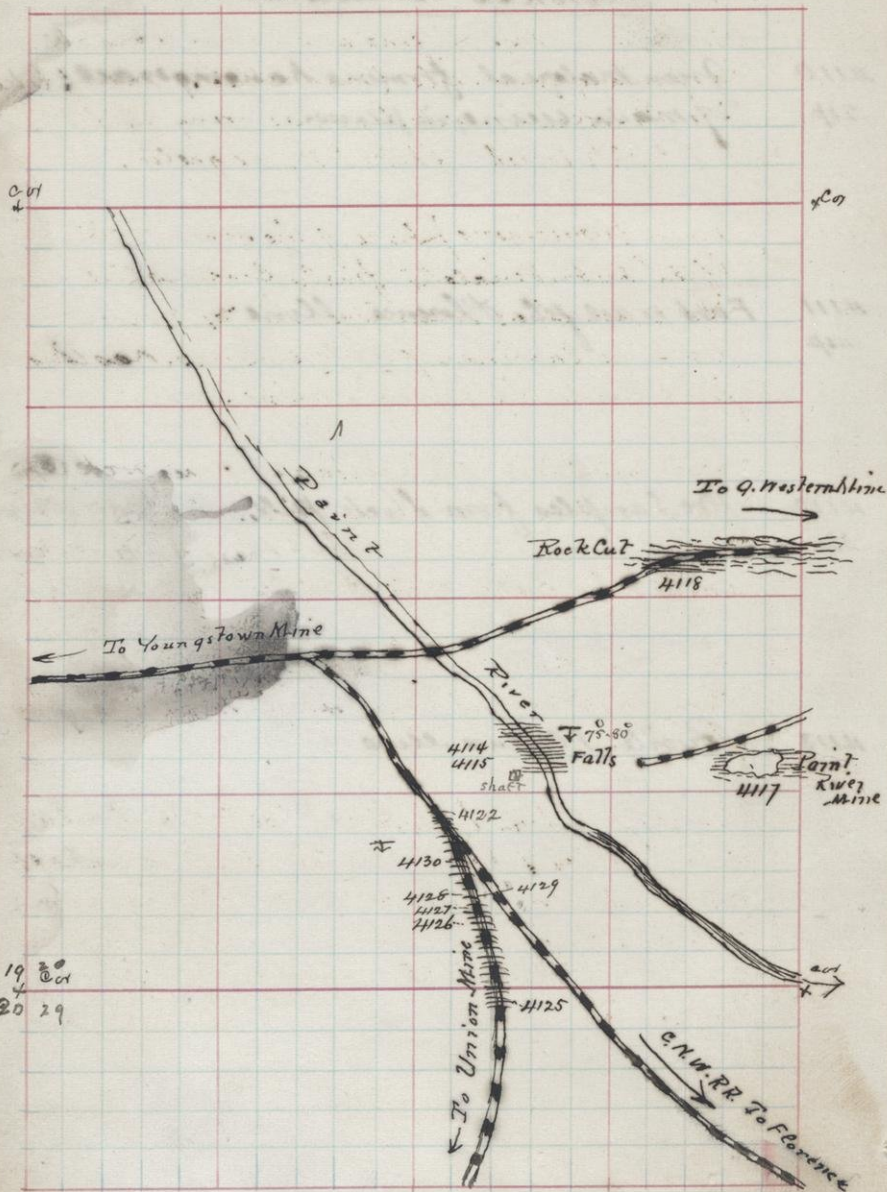
Ore samples from Stock pile. Florence Mine.

Plenty hematite and
magnetite.

#113

Pyrite - Florence Mine.

Sec. 20 T. 43 R. 32W Mich.



July 13th

6

Crystal Falls. Mich.

4114

2sp
Cherty schist
with brown
spar.

Rock of Falls. A fine showing. A black
hard claty quartzite (magnetic?) much like
the Pinckney quartzites occurring in F IV.
Dip high to south. Strikes E.W. magnetic.

4115

A more ferruginous phase of the same rock
Often subordinately finely laminated -
Here and there weathered rusty brown
On some laminae pyrite occurs. Has this
produced the rusty stains!

Here and there the laminae of this rock show
the peculiar contortions characteristic of the
ferruginous schists - but these are not extensive
On the whole the rock is banded quite regularly

Note that 4114 is distinctly cherty, and
compare both it and 4115 with the Gun-
flint Lake beds.

On the southern border of the belt, which runs
along the river several hundred feet, is a shaft
from which black claty pyrites and some
iron ore have been thrown out. See Commis-
sioner of Min. Stat. Mich. Report for 1881 p. 224
No specimen.

Secs. 26 T. 43. R. 32 W. N. 100.



July 13th 83

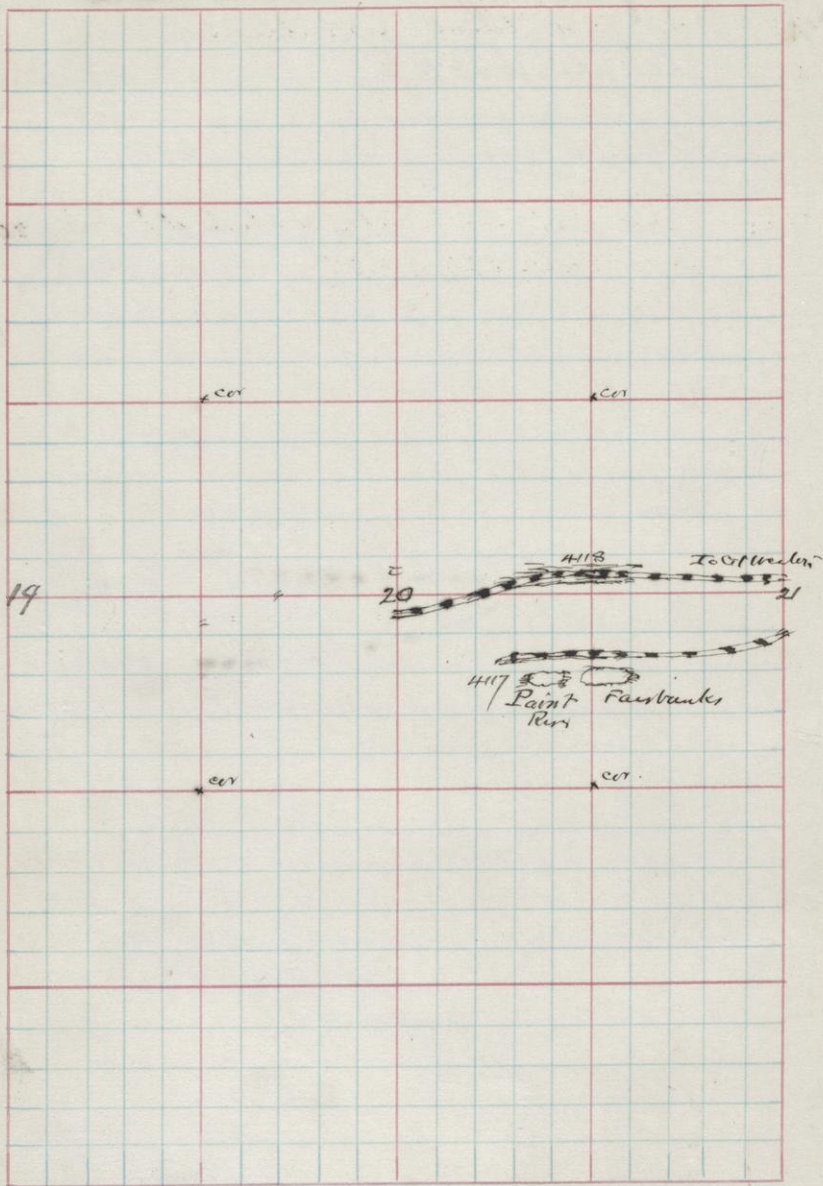
7

4116
2sp

Nes from the Great Western Mine

See also wrap p. 6.

Sec. 20 T. 43 R. 32W Sect.



July 13 '83

8

4117 ores from Paint River Mine

3 sp.

Hematite and
brown spar.

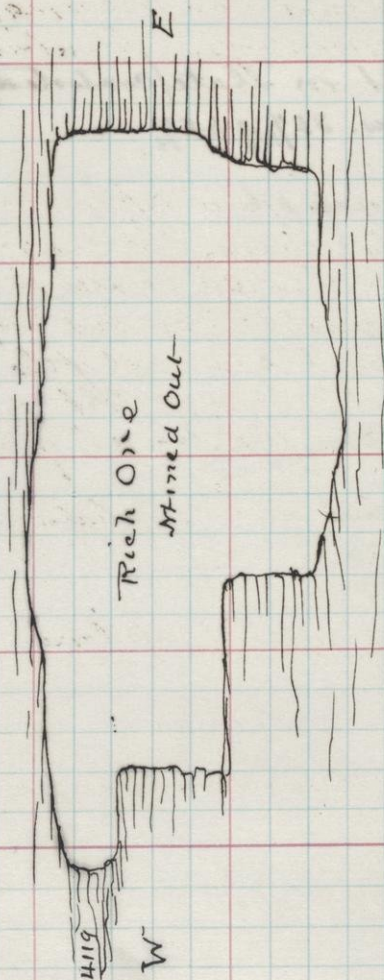
4118 Rock Cut on Slate (contorted) - Sec. 20

43 - 32 W. $SE\frac{1}{4}$ of $NE\frac{1}{4}$

See also map. p. 6.

Sec. 19 T. 43 R. 32W Mich.

Each small square = 2 paces



July 13 '83.
Youngstown Mine

9

4119 Diagram on preceding page shows location of this mine - on following page outline of workings. Lean banded ore or ferruginous schist is uncovered on a large area around the opening. 4119 represents this rock.

The open space representing rick or moderately rich ore, the diagram shows nicely how the rich ore lies in the lean, not as distinct bodies, but simply as a richer portion than usual of the ore which surrounds it, grading in to it on all sides. Nothing like the "lenses" of the Marquette region.

Note that 4119 is chalc edonic rather than jaspery.

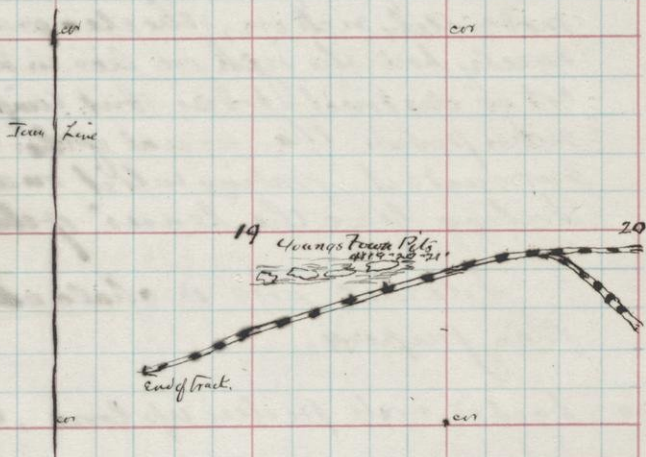
4120
Hematitic
chert schist

banded rock picked up cone, outside pit

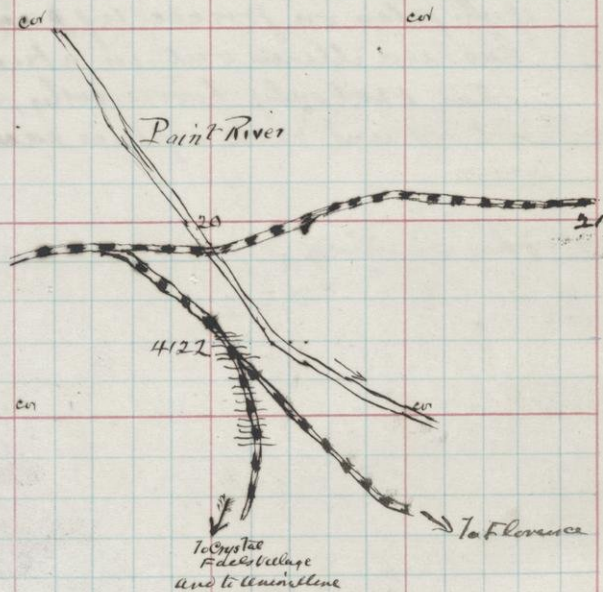
4121
2 sp.

Rich ore, Youngstown stock pile

Sec. 19 T. 43 R. 32W Mich.



Sec. 20 T. 43 R. 32W



July 13 '83.

11

4122

Slate from R.R. cut S. 5. 20 43 32 W.

2 sp.

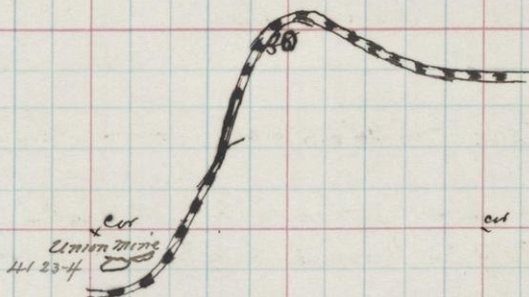
See page 6 map. also.

Terruginous
chertachist
with magne-
tite, hematite,
pyrite, much
brown spar
and actino-
lite.

Sec. 31

T. 43

R. 32 W. 11th.



July 14 1883
Union Mine

4123

Rocks or lean ore, west end of pit

Pit 20' wide 200' long. now full of water

Formation runs about E.W.

No other rocks in sight

4124

Pick ore from stock pile Union Mine

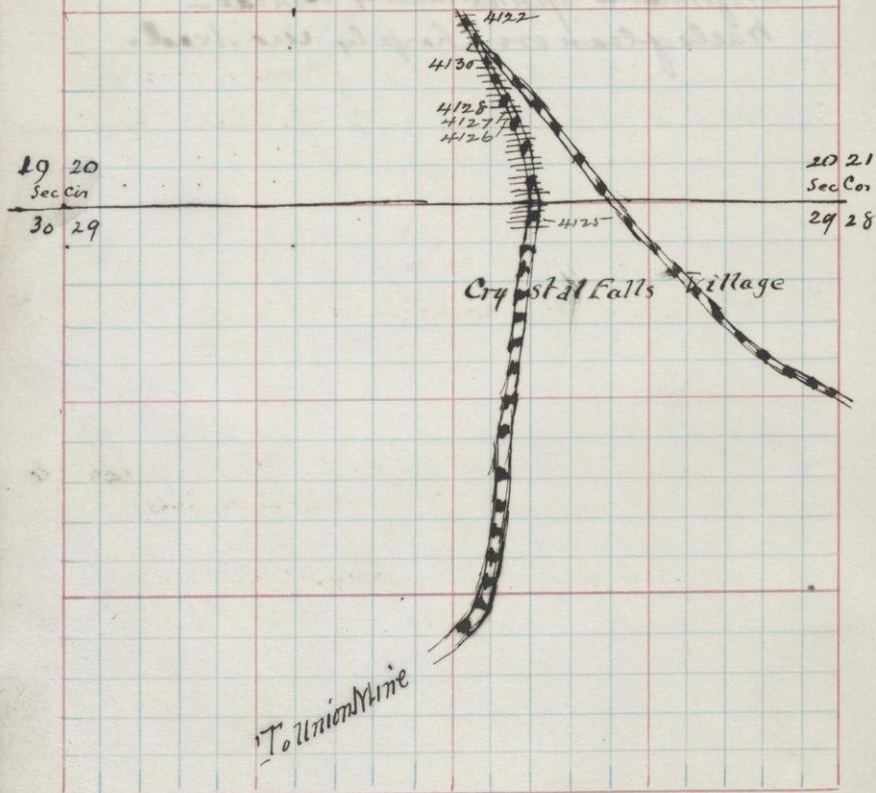
Ore formation approximately vertical -

trails of lean ore sharply marked.

Sec. 20

T. 43

R. 32 W. 11th



July 14 '83

13

Railroad Cut, Crystal Falls.
see also map. p. 6.

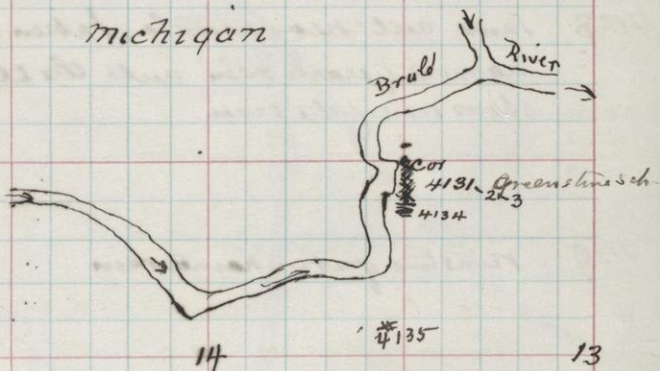
- 4125 Southern end cut clearance parallel to bedding
N. 5. 1/4 29, T. 43 R 32 W Slick.
- 4126 near middle of length of cut
- 4127 Same cut further north, but nearly level
- 4128 Same cut near middle taken where a
narrow quartz vein cuts the slate - Specimen
shows some of the seam.
- 4129 Rimestone gaters named vein
- 4130 Steel further north on cut. more quartzite-
like. (compare with Gunflint Lake beds)
- Rock in this cut nearly vertical. no record
made of dip, may be somewhat south.

Sec.

T. 40

R. 18 E Wis.

Michigan



Wisconsin

Cot

Cot

July 14 '83
Brule River

14

- 4131 N.E. $\frac{1}{4}$ of N.E. $\frac{1}{4}$ 14, T. 40 R. 18 E. Wis.
From road near bank Brule River
near h.s. cor. sec. 14
- 4132 50 steps (estimated) south of 4131
- 4133 Short dist. south of 4132
- 4134 Short distance south of 4133
- 4135 S.E. h.s. 14. T. 40 R. 18 E. Wis. on road
from Florence to Lechigamone Falls.

See also Brooks detailed map. Pl. of
Report on Menom. Region - a description of fort.
Lectin BB p. 494 of Ger. Wis. Vol. III. 4131
is evidently = Brooks f. & Sp. 3249 - or 32033
on bank of the same - 4134 is his σ or chlorine
schist. 4135 belongs with his "chloro-
quartz schist" b. or c. of Lectin BB.
Brooks map gives andrey
exposures

Secs 2 and 11 T. 39

R. 19E Wisconsin



July 16 '83
Twin Falls. ~~Heron~~ River.

4136 See Wright's map of Twin Falls, incl.
2sp. section Vol. III p. 475, geology of
Id. 4136 is from "V" of Wright's
section. It is very fine-grained and
should hardly have called it a green-
stone - no distinct bedding - much
jointed.

4137
4138
4139
4140
4141
4142

SE of SE
2, 39,
19E

These specimens were taken along the
west cliff i.e. maconson side, at the
Lepper Fall, from about "bb" to the
lower end of "Z", Wright's map - being
taken in order as given - Some of the
specimens represent the "schist", but
I could not see that it was anything
more than a phase of the green mas-
sive rock; nor could I see
that it runs regularly across
the river. I think this is all
imaginary. Indeed we saw
one place where the schistose
structure was quite as distinctly
parallel to the river, or nearly
parallel, as it is any where
else transverse to the stream. If we
do admit such interstratification
as Wright shows, we must then
certainly know that one schist

Ivins Falls. Continued
band.

16

#142 is from the massive point at the lower end of the fall. Corresponds to 2136 of Wright's map.

#143 is from a peculiar nest in #142

#144 Shows some of #143 attached to the rock

The jointing of the massive rock #142 is very irregular. Looking like bedding.

The Falls are at a point where the river cuts through a sharp ridge, which seems to run a good deal north of west.

4145

Ledge at East end of Twin Falls
Bridge - Michigan Side

4146

From road on East Side - Michigan
Side Menominee river below
Upper and Lower Falls.

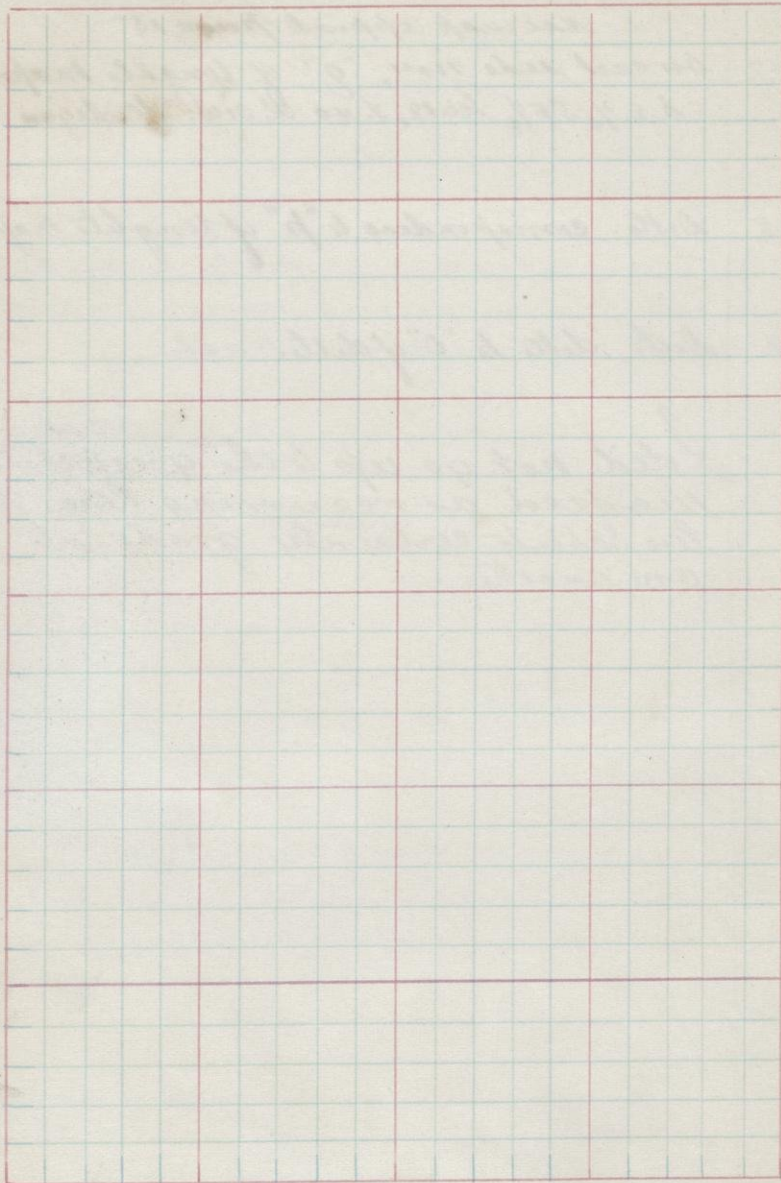
Lower Twin Falls.

see map opposite page 15

- 4147 On east side river, "g" of Wrights map.
 N.E. $\frac{1}{4}$ S.E. $\frac{1}{4}$ Sec. 12, T. 40 R. 31W. Michigan
- 4148 Ditto. corresponding to "p" of Wrights map.
- 4149 Ditto - ditto to "o" of ditto.

I did not go up to the greenstone
 marked as occurring here. The
 two schists certainly grade into
 one another.

Sec. 24 T. 40 R. 31W Mich.



4150

From Railroad Cut betw. Iron Mountain Station - and Iron Falls. E $\frac{1}{2}$ 24, T40, R. 31W - Michigan

Sec. 5 30+31 T. 40 R. 30W. Michigan

— Each square 200 paces on a side —

col

col

30

Boundary of Chaparral

4450a
Chaparral

col

4452

4453

4451

4453a

Probably

col

31

20

Iron Mountain, Mich July 16
1883

4151 From Hill top south of Chapin Mine
2 sp. Starts pites - A large outcrop of specular
Magnetic quartz schist, very platy, then but non continuous
with brown spar. layers. Lean in iron - Banding shows
that platy structure is p'llel to bedding
This lies some 200-400 steps south of
the mine workings - Strike E-W.
Dip very high to south.

4152 Banded specular schist from just
Like 4151. south of the mine workings.

4153 From about halfway online between 4151
& 4152

4153a 200 steps south of 4151

4150a Rich ores. Chapin Mine

Sec. 5

T. 38

R. 20E

Wis.

North line Sec 8

T39, R30W - Mich.

1 mi

Photo taken here, looking towards falls

Section line

MICHIGAN

Falls

Basin

T39 R30W Mich

718

Menominee River

sec 5

sec 8

T 38 R. 20E Wis.

1/4 post

center of
Sec. 8

Big Ojibwe Falls.

July 17 1883

- 4154 From point at south side basin below
256 fall - as indicated opposite -
North face of a broad ridge of rock.
- 4155 From same ledge, further west. This
Greenstone is very massive and heavily
jointed - making very large exposures.
- 4156 From crest of falls on Wisconsin side.
- 4157 From point "g" of Brooks map. Gellish.
Report on Menom. Reg. Vol. III. Plate III.
Which see.
- 4158 From uppermost end of "g" Wisconsin side.

Sec. 8

T. 39

R. 30 40 Mich.

See map opposite page 21.

Big Quennesset Hall. Continued.

4159 Specimens of "Greenstone" from workings
3 sp. on the east side of river, for air Compressor

4160 Specimens from schist "x" - of Brooks map.
3 sp. Plate III - Michigan side below fall.

4161 Brooks Clintonic schist "y" below falls
3 sp. Michigan side.

4162 "z" of Brooks map Michigan side.

4163 "aa" of Brooks map Mich. side

4164 "bb" of Brooks map Mich. side

4165 "cc" of Brooks map Mich. side

Big Ogunneseec Falls. Cont.

It is to be carefully considered how far the Ogunneseec falls schist - of greenstone - are but phases of the same rock. Such a schist as 4150, 'x' of Brooks map, certainly looks far enough from anything like a greenstone - Still the impression one gets on the ground is that of one continuous mass of rock. Presumably some of the Schistose phases are parts of the great greenstone mass, and others not. Compare also with Little Ogunneseec section - where the various phases are the same as at Big O. Indeed the web is plainly the same.

Sec.s 15 and 14 T. 39

R. Bow. Mich.

+ Sec. 15

Little Quinsee

Falls

Secs 15 14 T. 39 R. 20 E. Mich.

Galton ridge

Sec. line.

Sections
9 10
16 15T. 38, R. 20 E.
Wis.

Little Quennereec Fall.

July 17 1883

4166

2 sp.

From point up in middle of fall between the two chutes, about opposite "j" of Bonnet's map, sec. 10. 10. 10. Part III. Plate II. (no. below "j")

4167

Thirty feet across strike from 4166 - upstream.

4168

Sixty feet upstream from the last

4169

2 sp.

Loose specimens quarried out from top of the fall.

4166-69 all from "i" of Bonnet's map.

4170-71

Gabbro from long ridge below Quennereec Fall - as indicated on map.

4172

A schist from this long gabbro ridge - from same point as 4172. There never seems to run into one another on the strike.

4173-4-5

Schists from the same gabbro ridge from the point indicated on the map.

Sec. 8 15 & 14 T. 39

R. 30 W. 11th

See map opp. p. 24

Little Queenenese Falls. Cont.

Brooks map is incorrect in that it represents a gap as occurring between the beds at the falls, on the "Mushy side", and the long gabbro ridge below. In point of fact no such gap occurs. The exposure is continuous.

The schists here certainly seem to run into the gabbro.

Quartz - Are they not merely alteration phases of a greenstone gneiss or gabbro at lower or upper Queenenese falls; as well as at upper & lower Twin?

The whole succession at Little Queenenese especially looks like one continuous rock. Schistose structure and extreme alteration may have been developed together in an eruptive rock at first wholly massive? The schistose structure here seen has nothing in common with ^{the} ordinary ~~Schistose~~ ^{igneous} ~~Campanate~~ ^{granitic} gneiss or gabbro rocks. No variation in mineral contents accompany it. The lenses such as they are closely interlocked.

4176 "K" of Brooks map - Little Queenenese.

Sec. 15 + 14 T. 29

R. 30 W. Mich.

See maps appo. p. 24.

Little Auvernere Falls. cont.
"m" of Brooks map

4177

4178

no specimen

4179

"h" of Brooks section

4180

"o" of Brooks map.

4181

"p" of Brooks map.

4182

"q" of Brooks map.

Sec. 34

T. 40

R. 300 block

Quinnerecelline
4183-4185

Quinneseec Mine - July 18²⁷
1883

H183 Rich Ore - Strike E-W. Dip. 70° N.

H184 Banded ferruginous schist in
which the ore occurs. Strike E-W. Dip 70° N.

H185 Horizontal Platan Sandstone overlying

Sec. 11 T. 29 R. 29W. Sec 11

East Vulcan

corner

East Vulcan Mine

S $\frac{1}{2}$ S $\frac{1}{2}$ 11-29 390

July 18 1883

H186 South wall. Chloritic Schist.

H187 North wall. Quartz Schist

H188 Lean ore

H189 Rich ore.

2 sp.

Plenty hematite and magnetite.

H190

Limestone, 1000 feet north west of the
mine. (Vanhook)

Is not this the same magnesian? R.D.S.
Yes, undoubtedly. At least it lies
horizontally, according to Vanhook
and Merriam, over sandstone. It
might be a layer in the Potsdam but
it certainly is not the Harpers
Glenite, wh. must be somewhere
where in the vicinity.

Sec. 10. T. 39 R. 29W Mich.

West Vulcan line.

~~4192~~
4193-94
4191.
↓ 30'

center Sec
10

West Vulcan Mine.
July 18 '83

H190 South wall - nearly vertical Strike $\approx 20^{\circ}$ S
Chert schist. (?)

H192 North wall - nearly vertical

H193 Lean ore

Ferruginous
chert schist
with brown
spar, hematite,
magnetite.

H194 Rich ore.

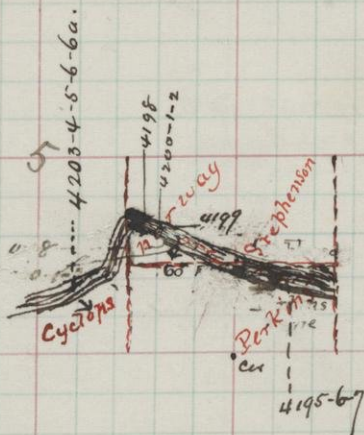
2 sp.

Sec 34+5

T. 40

R. 29 W Mich.

Norway Mines.



See better map on next page

Normay Mines. July 18 '83 30

Saginaw Mines = Perkins

4195 Wall Rock

4196 Lean ore

Ferruginous
quartz schist

4197 Rich ore

Normay Mine

4198 Hanging wall. South side

25p.

"jarper"
acid ferruginous jarper

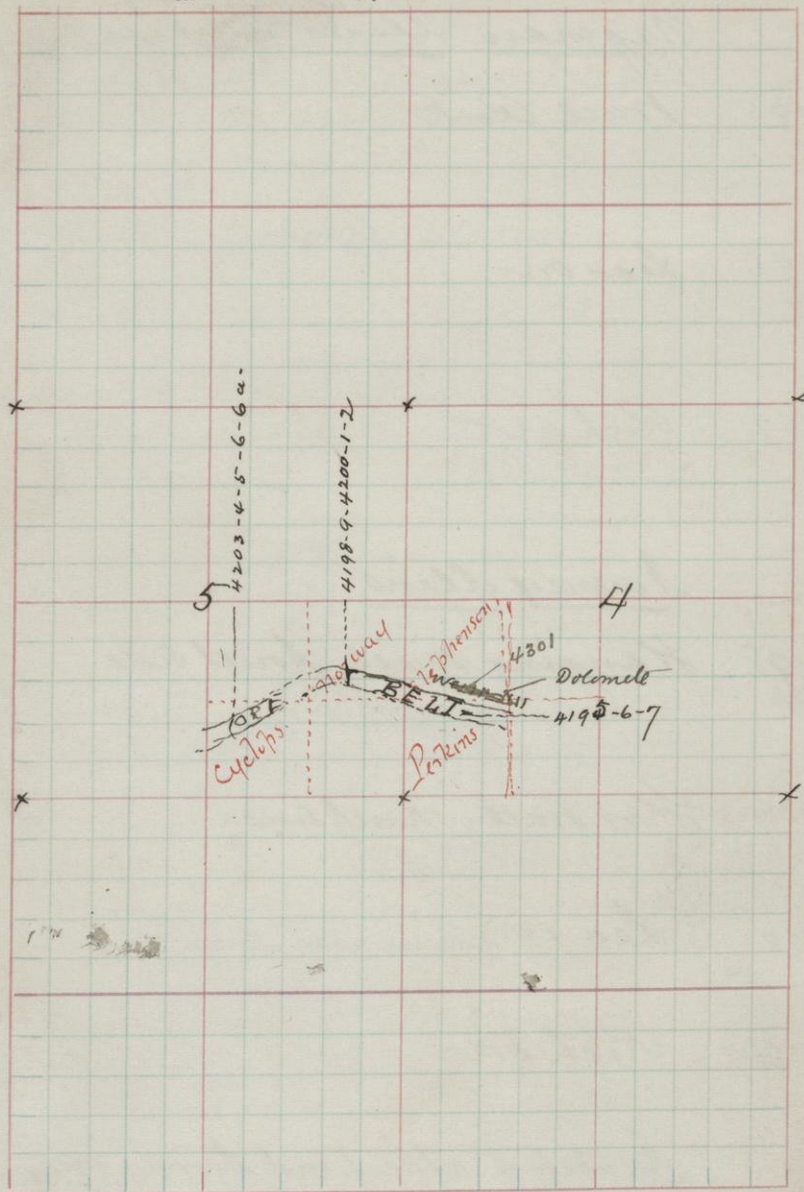
4199 Foot wall - north side. Hematitic chert

4200 Lean ore

4201 Rich ore

4202 Sundline at west end Normay. ore lying
horizontally

Secs. 4-5 T. 40 R. 29W Mich.



Norway Mines. Continued.

Cyclops Mine.

4203 Wall rock

4204 Lean ore

4205 Rich ore

4206 Sandstone overlying at Cyclops - Potsdam

4206a - A little vein found cutting the ferruginous schist of the Cyclops Mine.

4301 Dolomite north of the Norway Mines.
(Stephenson property.)

Sec.

T.

R.

These negatives are all diamond marked
1883 } in the lower left hand corner of
to - } the glass side - not the film side.
i.e. they were marked on what will be
the lower left hand corner of the print.
When duplicated, the duplicate is marked
with same number, with "a" attached.

Photographic Negatives. Menominee
District

1.

Duplicated. See Page 1.

Duplicate

See pages

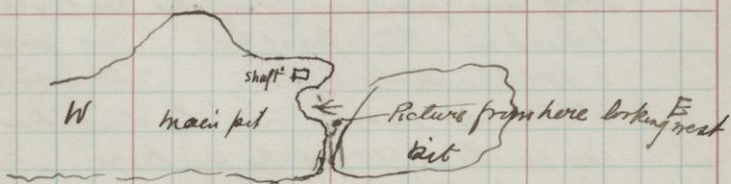
163

Contorted ferruginous Schist, on south side of main pit of Commonwealth mine. The surface of the ledge ^{as seen on surface} although highly contorted, ~~steel~~ the general dip of the mass is high to N. nearly vertical, and strike E-W. 4102 are specimens of the contorted Schist in this picture. See page 1 of this note book. The general strike is nearly in the direction of the log in the right of the picture. In the left back ground may be seen the south edge of the main pit, and the hoisting machinery, houses etc. On the right is a high bank of drift, showing the thickness which has been stripped from the ledge whose surface is here pictured. The whole area of the contorted schist shown in the foreground is perhaps some 15 feet sq. or less. Of course the whole surface is of the same material, but is crumbled or dirty to as not to show structure in the picture.

Sec.

T.

R.



2
Duplicates

See pages
1 & 3

View of commonwealth mine - Looking
about west, or slightly south of west
from the East end of the main pit.
See diagram on opp. page. A rough sketch
drawn from memory and not to any scale.
In the immediate center foreground, or
rather, to the right of the center, is seen
the bottom of the main pit, from which
but not seen, a shaft descends feet
to the lowest workings

3.

not duplicated.

See pages
1 to 3

Photog. neg. continued 34
View of Commonwealth mine, looking
East from West end of main part.

4

Duplicate.

See pages

21-23.

Big Queenesec Falls taken from
point below falls on Luchigan side,
Cooking S.S.W.

5.

Duplicated

See pp.

24. 26.

Little Quinnerees Fuels. East
Chute. Taken on Michigan side,
Looking

6

Luts. Quenneseec Falls, General
view. Taken from below falls,
on Wisconsin side.

Duplicate

See pp. 24-26

Photog. neg. Continued.

38

7.

view of Norway Alene

Duplicated

See p. 30.

Photog. neg. continued. 39

J.

Duplicates
Sep. 30

breed of Tommy line - Different
from No 7 -

Photog. neg. cont.

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9 View of Cyclops ellie - Showing
unconformity of Oriskany Sand-
stone, with Huronian Schist.
Duplicate
See p. 31.

