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## Marquette region, vicinity of Ishpeming, Michigan, etc.. No. 125 1891

Bayley, William Shirley, 1861-1943

[s.l.]: [s.n.], 1891

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Ishpeming  
~~Supp~~ No 5  
Plane Table  
Notes

U. S. GEOLOGICAL SURVEY  
FIELD SECTION BOOK

Blank lined page for field notes.

# 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 page is also arranged so that, if desirable, a smaller scale can be used, two inches, one inch, or even 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, for instance 4025, 250 N., 300 W., *Strike, N. 6° E., Dip, 50° E.* Then follow with as full a description of the ledge as possible. 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, but chips of them must be taken. The position and extent of the ledges not specimened should be marked on the map, with notes that each is of a rock identical with specimen so-and-so. Under the same conditions small sized specimens, trimmed to a uniform size of  $2 \times 2\frac{1}{2} \times \frac{3}{4}$  inches will be allowed, but in all other cases *large sized specimens*, trimmed to a size of  $3 \times 4 \times 1$  inches, must be selected, in accordance with section 3, chapter IV, p. 44, Regulations of the U. S. Geological Survey. In all cases collect chips for slicing. 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. It is desirable that specimens 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.

#125

Plane Table Notes

Marquette Region

Vicinity of

Ishpeming, etc

1891

W. S. Bayley

(89) Small ledge same slates further East.

40 ft. north is greenstone forming north side of hill.

(90) Valley

(91) Large ledge greenstone on south side of Long Hill.

(92) W. and large ledge on south

(93) E. side of Long Hill. It contains

19951 large feldspar crystals.

(94) Ledge of greenstone on south side of hill.

(95) Further east. Ledge

(96) S.W. end of ledge of greenstone running to (97)

(97) on same ledge

(98) Small ledge of greenstone

19948 with apparent pebbles.

(99) N. side of hill in saddle

(100) Small ledge of greenstone.

(101) W. end ledge in which alidade stands.

(102)

(103)

(104)

(105)

(106)

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(141)

(142)

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(144)

(145)

Station on ridge of quartzite<sup>d</sup>

(146)

(147)

(148)

Edge of the quartzite<sup>d</sup> bluff to the west of big bluff.

(149)

Top of this bluff. All ledge

(150)

west and, well down on hill

(151)

Small quartzite-ledge

(152)

Quartzite<sup>d</sup> ledge 15 x 10 ft.

(153)

E end of hill at bottom.

(154)

E end little ledge of deer

(155)

W

Lake agglomerate.

(156)

Bottom } toward East end of another

(157)

Top }



Knob of agglomerate

- (158) E end at the bottom of another ledge
- (159) Top of agglomerate bluff.
- (160) Ledge in plains soft low
- (161) Top of agglomerate ledge
- (162) East end ledge of agglomerate near road. Strike E-W. Dip a- but vertical
- (163) Foot of agglomerate ledge near road.
- (164) Top of same ledge.
- (165) Quartzite ledge 20 x 20 ft in plains.
- (166)
- (167)
- (168)
- (169)
- (170)
- (171) Points in plain, for topogra-  
phy.
- (172)
- (173)
- (174)
- (175)
- (176)
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- (178)

- (179)
- (180)
- (181)
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- (183)
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- (186)

Points in plain, for topog-  
raphy.

- (187)
- (188)
- (189)
- (190)
- (191)

old pit

- (192)
- (193)
- (194)
- (195)
- (196)

Points in plain, for topogra-  
phy.

- (197)
- (198)
- (199)

are old shafts in the swamp.  
They are now filled with water  
so cannot determine positive-  
ly whether solid rock was struck  
in them or not. One amount  
of material taken from (198)  
showed unhesitatingly say  
that rock was found there.

19952 Slate from dump of (199)

19953 " " " " (198)

19954 " " " " (198)

(200)

(201)

(202)

(203)

(204)

(205)

(206)

Points in plain for topography.

Swamp line about 20 ft west of (206)

On the edge of this swamp are several test pits<sup>o</sup>, in one of which rock can be seen in position. This appears to be the crest of the old formation, apparently dipping about  $45^{\circ}$  S. A ledge of the same rock is exposed on the surface about 30 paces S.E. of the pit.

(207)

(208)

(209)

(210)

(211)

(212)

(213)

Quartzite<sup>o</sup> cliff

(214)

(215) Top of cliff

(216) East end knob of quartzite<sup>d</sup> with drift foot hills

(217)

(218)

(219)

(220)

} Greenstone bluff, north of quartzite<sup>d</sup>.

In this bluff, the relations of the talcose rock and the agglomerate are much more obscure and complex than elsewhere. On the south side, near the bottom is the talcose rock.

Knob of this higher in the hill is the agglomerate<sup>d</sup>, cut by quartz veins or interbedded with fragmental quartzite<sup>d</sup> and still further to the north is the talcose rock again.

19956

Greenstone agglomerate<sup>d</sup>

19957

Agglomerate cut by quartz veins

19958

Talcose rock, north of 19957.

The contact of the talcose rock and the agglomerate seems to show an firmability - between

the two, in that wedge shaped areas of one penetrate the other. If the gneiss is a true fragmental - a tuff - this indicates that its age is the same as that of the quartzite, or more properly speaking, that it underlies the quartzite. However, up to this point no pebbles of the conglomerate have been found in the quartzite.

19959

Tufa, near contact

19960

Talcose rock near East end of hill.

If the talcose rock is a squeezed quartzite then the quartzite and conglomerate are of the same age. If the talcose rock, that contains pebbles of quartzite is a tuff, then the agglomerate is younger than the quartzite, although it appears to underlie it.

at the west end of Seal Lake the quartzite conglomerate is again found, forming a coat-

ing in a face of a cliff of the talcose rock, which face is between the talcose rock and the quartzite. The hill back of the quartzite at the west end of Seal Lake is separated from the quartzite by a little valley. The south face of the hill to the north is quartzite from which

19961  
19962

two pebbles were taken  
The talcose rock rises behind this.

19963

On the top of the hill is a dark rock that is apparently something between the talcose schist and the greenstone tuff.

At the East end of this quartzite hill west of Seal Lake are both the talcose rock and the conglomerate.

19964

The quartzite conglomerate is here more brecciated than elsewhere, and beyond it to the north (under it) it is finely banded with talcose layers and others resembling chert. The dip of the interlaminated series is

19965

usually to the south, but at certain places on the north side of the hill it is more or less elevated and in places is high to the north.

Beyond the quartzite the rocks are schistose talcose etc. Specimen of these was taken at (245)

(221)

(222)

(223)

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(249)

(250) 20 ft in north side of hill,  
south of lake.

19967 The rock is best represented  
by specimen 19967

(251)

(252)

(253)

(254)

(255)

(256)

(257)

(258)

(259)

(260) W } ledge of gray wacke or quartzite  
(261) E } on slope of hill, north of  
Detroit Mine.

19968 Specimens



(262)

(263)

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(289)

19969 Chest from dump heap of Detroit Mine

19970 Iron pit in swamp.

19971 } Rocks from dump heap of

19972 } Southern shaft of Detroit

19973 } Mines.

(290) W end north side of greenstone hill, south of Detroit Mine

19974 Diabase from west end of this hill at the bottom.

19975 Chest from little pit on north side of hill at east end.

(291)

(292)

(293)

(294)

(295)

(296)

(297)

(298)

(299)

Aug 24/91

(300) East end same greenstone hill. Hedge over the entire hill. Another smaller isola-

14

led ledge of the same rock is  
50 ft N. E and 40 ft E of 300

- (301) }  
(302) } Points in plain. No ledges  
(303) }
- (304)  
(305) West end of the west-hill to the East. No ledge just here, but the presence of large boulders of fresh greenstone, indicate presence of ledge under them.
- (306) Front side of hill, west end. Ledge of greenstone.
- (307) High up in hill. Ledge greenstone.
- (308) Ledge of greenstone, north side of hill. The ledge extends east to end of hill.
- (309) Front (north) side of hill. Greenstone ledge.
- (310) Top of hill, composed of solid  
19976 greenstone
- (311) North edge of precipitous ledge.
- (312) 6 ft S. of north edge of cliff.
- (313) Top of knob, west end. Solid ledge.
- (314) East end top of ledge.
- (315) Ledge of greenstone low in hill.

Rock mass 50 ft. East.

- (316) Valley
- (317) Shoulder of greenstone in hill  
north of valley.
- (318) Top of this hill. Greenstone
- (319) } Points on top of hill. ledges of  
(320) } greenstone.
- (321) West end, top of hill. Greenstone  
19977 of which 19977 is specimen
- (323) North side bottom of hill
- (322) Plain in plain
- (324) S.E. end top of this hill. Green-  
stone.
- (325) S. side of hill in slope. Green-  
stone ledge.
- (326) Top of hill. Greenstone
- (327) North side, west end of hill.  
ledge of greenstone
- (328) West end of greenstone knob,  
19978 where rock is schistose
- (329) Plain, north of hill
- (330) Test pit in plain, from dump,  
19979 heap of which took specimen
- (331) Another pit in plain. No rock  
in sight, but a good sized dump  
heap indicates presence of rock

19980 at the time the pit was dug.

(332) Side of drift plateau

(333) Ledge at edge of Es carpment.

(334) In swamp.

(335)

(336) } Points in open pit of Uelou

(337) } mine.

In this pit the ledge is cherty and well banded, with the rocks striking from 20°-40° N of W. On the west side the strike is more northerly than on the east side. The dip is about 40° to the S.W.

U.B. A more careful determination of the strike at another time gave an average of 10° N of W.

- 19981 . Iron dump heap of this pit
- 19982 " " " " "
- 19983 " " " " "
- 19984 " one pile " "
- 19985 " " " " "

(338)

(339) } Points in another pit.

(340)

(341)

- 19986  
(342) Dredged a deep shaft is 20 ft East of (341), from which the rock represented by 19986 was taken South side of another pit where the same cherty rocks are exposed. Here the strike is about E or W.
- (343) E / ends open pit of Detroit  
(344) W / mine.

Rocks here strike  $10^{\circ}$  N of E on the South side of the pit and E or W on the North side. The dip is about  $45^{\circ}$  W. where regular. There is a slight fault shown on the west side of the pit, causing the shale to curve slightly.

19987 See traverse book.

On the South side of the wooded hill S of Seal Lake is almost a continuous exposure of a quartzitic gray wacke. The rock is not continuously exposed, but the ledges are separated by such small stretches

of soil that there can be no doubt but that the entire southern part of the hill consists of this material.

(345) Eastern exposure of this rock.  
The ledge here is 30 x 20 ft. Its strike and dip were not obtained.

19989 In certain places, little outcrops of layers of schistose greenstone are intermingled with the quartzitic rock in such a manner as to resemble blackensides.

(346) }  
(347) } Small ledges in brow of this  
(348) } hill.  
(349) }

(350) Bottom of hill  
(351) W } long ledge on hill.  
(352) E }

The rock here is schistose, much like a schistose quartzite or graywacke.

19990 is from west end of ledge

19991 from east end.

Certain obscure markings in

the ledge may indicate the presence of pebbles in the rock. They are, however, so rarely met with as to be of little importance.

(353) Another small ledge of same rock further East.

(354) 19992 Best pit from dump heap of which specimen was taken. There are some fifteen or twenty old test pits in this region with old dump heaps along side. It was thought worth while to locate one that one in which rock could be seen.

(355) Pit in which rocks are seen. These dip South at 45° and strike somewhere near E-W.

19993 Chest  
19994 chlorite schist } from dump heap of the pit.

(356) Station.

(357) 1/4 pit between Secs 35 and 2.

(358) E. end knob of greenstone

(359) Midway of knob at bottom

(360) Top of hill

(361) Near west end at bottom

(362) Top of hill.



T.

R.

Specimen 19997 is missing. At any  
rate its location can not be found  
in the notes.

Like other similar knobs  
this is practically an exposure  
of greenstone

(363) Near west end in top of high  
portion of hill.

(364) } Points in hill.

(365) }

(366) Pit in which chert rocks are  
19995 in place with a strike  $5^{\circ}$  S of  
E and a dip to the South.

(367) Gap between two hills

19996 900 N. 40 W. S E Cor Sec 33. T1  
48. R. 27.

(368) Top of hill, greenstone

(369) Further east, top of hill

(370) East end hill

(371) Little ledge of greenstone

(372) Another small ledge from  
19998 which took specimen

(373)

(374)

(375)

(376)

(377)

(378) Small bare knob of greenstone at  
East end of hill.

- 21
- (379) Eastern end of same knob.  
 (380) Pit, from dump heap of which  
 19999 won 19999  
 (381) East end of ridge of greenstone.  
 (382) Station

(383)

(384) } Points in open pit of Lilly  
 (385) } Mine.

(386) } The pit thus outlined Expos-  
 es in its S.E. and W. sides, well  
 and evenly banded cherts and  
 iron ores, striking about E.W.  
 and dipping about 45° to S. over  
 the north side is a mottled  
 white rock that appears like  
 a mottled paint rock.

21000 Cherts

21001 Mottled rock.

Aug 25/91

21002 One from one pile of Lilly Mine.  
 This represents the character of  
 most of the ore. A small portion  
 of it is more tinny.

The exploring shaft in the woods,  
 located by intersection, like  
 the other shafts and pits in  
 the vicinity - is in the banded

chert<sup>s</sup>

22

21003

21004

} represent the material taken from this shaft.

(387)

(388)

(389)

(390)

(391)

Ledge of schistose slates and quartzites 90 ft. long and 30 ft. wide. Strike E to W. Dip nearly vertical.

21005

112 paces 200 S of W of this exposure is another one on the railroad.

(392)

Another ledge of schistose rock exposed 50 ft E to W and 15 ft. wide.

21006

(393)

Small ledge same rock

(394)

(395)

40 ft from west end of a

21007

large exposure forming a ridge.

(396)

Top of ridge some distance

21008

East. Exposure 20 x 20 ft.

(397)

East end of ridge

(398)

Little ledge of more quartzitic

21009

phase of same rock. 40 x 10 ft.

(399)

Ledge of same rock 50 x 20 ft.

(H00) Same rock forming face of little knob 40 ft. long.

(H01) Ledge of slate 60 ft long. The strike is about E-W and the dip is

21010 to the south. The strike of the cleavage is also E-W, but the dip is vertical

These rocks are called slate for lack of a more definite name for them. They are not the black slates of the younger formation, but seem rather to be schistose cherts and quartzites.

(H02) About center of 100 ft. ledge forming side of cut in railroad right of way. The rocks here also

21011 strike E-W and their dip is to the S.

(H03) Small ledge

(H04) W. end ledge 75 ft. long

(H05) East end of ledge in which the rock is schistose as before

21012 Another ledge is 100 ft E and 40 ft. north.

(H06) Center of 150 ft ledge of same rock

21013  
H.P.P.

(407) About 110 ft E of a little ledge of white quartzite 10x10. May possibly be large boulder.

The shaft of the Cambria mine is 140 paces 10° N of. from middle of the smokestacks located by intersection. On the dump heap are the usual bands of chert etc. most of which are marked by circular spots.

21014

21015

21016

21017

21018

all are from this dump heap.

One from Cambria stock pile.

" " E " " "

The large abandoned pit between the E. Lilly and the Cambria mines shows large exposures of well banded cherts, all conformable with uniform dips. At west end of the pit the rocks dip at 40° S. and strike 50° N of E.

21019

21020

(408)

one from stock pile of E. Lilly

Shaft.

Station

- (4091)
- (410)
- (411)
- (412)
- (413)
- (414)
- (415)
- (416)
- (417)
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- (431)
- (432)
- (433)
- (434)

Points in westernmost pit  
between E. Lilly and Cambridge  
venues.

Points in next Eastern pit.

Points in western pit.

Points in Easternmost pit.





- (451) Top of hill, whose rock ledges run west to (453)
- (452) Same hill.
- (453) East end of ledge in this Kuvoc. Valley
- (454) West end next hill East.
- (455) Top of hill.
- (456) Southern shoulder
- (457) Top of hill
- (458) This hill like the others is practically solid greenstone
- (459)
- (460) West end next hill north
- (461) Top of hill
- (462) West end top of southern shoulder of this hill.
- (463) Top of hill.
- (464) }  
 (465) } Front side of hill in top.  
 (466) }
- (467) }  
 (468) }  
 (469) } Points in hill  
 (470) }  
 (471) }
- (472) Ledge in hill
- (473) " " "

- (474) Ridge of greenstone in hill  
 (475) ditto.  
 (476) ditto.  
 (477) ditto.  
 (478) Pit, in which no rock was seen  
 21023 but from which specimen 21023  
 probably came, as taken from  
 good sized dump heap.  
 21024 is specimen of granite dyke cut-  
 ting greenstone at west end top of hill.  
 About 800 paces S. and about  
 1500 - 1750 E of W line Sec 34,  
 T. 48. R. 27. is a pit that has  
 been worked for iron. The rock  
 21025 is a dark quartzite

Aug 27 (King)

- (479) Station  
 (480) Ridge south of greenstone hill  
 (481) E. end of greenstone knob  
 (482) Further west, near base of knob.  
 Small exposure of greenstone five  
 paces east of (482)  
 (483) Large exposure of greenstone in  
 top of knob.  
 (484) Top of knob.  
 (485) Little point of rock in most western

T.

R.

21027 is from (496)

portion of knob.

21026

The rock is a well preserved  
greenstone

The last exposure of the knob  
is 70 paces west of (485)

(486)

(487)

Small ridge

(488)

N.E. end of lake

(489)

S.E. " " "

(490)

Near lake shore

(491)

Station.

(492)

Pits - at west end of greenstone

(493)

} Knob south of station.

(494)

at flag for correction.

(495)

West end top of ridge

(496)

East end top of ridge

10 paces E of (496) are two test  
pits in which rocks were not  
seen. The dump heap shows  
chlorite schist etc.

(497)

West end of level cut into ridge

(498)

East " " "

(499)

Little knob.

(500)

Another small knob

(501)

Top of bluff on west side of  
cut (497 & 498)

(502)

West end at edge of bluff.

- (503) One cipitino wall of greenstone.
- (504) Top of <sup>the</sup> small bluff.
- (505) East of 504 on same bluff.
- (506) Bottom of bluff.
- (507) Point where upper and lower bluff meet.
- (508) Bottom East end of bluff.
- 21028 Specimen of greenstone from this place.
- (509) East of center of bluff.
- (510) Foot of bluff.
- (511) " " "
- (512) Foot of ridge
- (513) on road
- (514) Slope of hill.
- (515) Road
- (516) Valley
- (517) Western end of ridge ground strewn with boulders of greenstone.
- (518) Foot of ridge
- (519) Large exposure of greenstone at foot of ridge.
- (520) East end of ridge at foot.
- 21029 Specimen
- (521) Valley
- (522) Foot of another ridge.

- 31
- (523) Foot of ridge near center. No exposure.
- (524) South side, eastern end of ridge
- (525) East end of ridge  
100 paces N of (525) is a little knob with bluff on its south side. Greenstone.
- (526) West end of ridge
- 21030 Specimen
- (527) Top of cliff
- (528) Slope of ridge
- (529) South-east end of ridge. Precipitous ledge of greenstone.
- (530) Top of saddle
- (531) R. R. now in field
- (532) In meadow
- (533) Test pit, worked at present by diamond drill. Dump heap shows
- 21031 chlorite-schist
- 21032 Banded-chert
- (534) Slope of hill
- (535) " " "
- (536) Western end of ridge, showing precipitous wall.
- (537) Near top of hill
- (538) Near center, on top of ridge.

- (1539) Tip top of knoll. Large exposure  
of greenstone.
- (1540) Precipitous front of ridge
- (1541) Center of ridge.
- (1542) 12 ft west of center post Sec 2.
- (1543) West end, foot of hill.
- 21033 Specimen of greenstone here  
Exposed.
- (1544) West end of ridge at foot of  
bluff of greenstone
- (1545) Test pit of considerable depth  
working in dump heap but  
schistose greenstone, banded  
there and here.
- 21034 one.
- (1546) Test pit with rock in place,  
in dump heap are same rocks  
as in (1545)
- (1547) Test pit, in same rocks.  
Another pit is 30 paces south  
of station.
- (1548) Large exposure of greenstone in  
top of west end of hill.
- (1549) Success exposure of greenstone  
in slope of hill.
- (1550) Slope of hill
- (1551) Test pit, with rocks in place

within 3 ft. of surface. Dump  
heap shows same material  
as those of other dumps, viz:  
Schistose greenstone and banded  
chert.

- (552) Diamond Drill boring -  
21035 Schistose greenstone  
21036 Porphyritic rock.  
21037 (?)  
(553) Large terr. pit, from which  
thus far only 20 ft of red soil  
has been taken.  
(554) Western end of ridge.  
(555) Half way up slope of side. En-  
tire ridge is made of exposed  
greenstone.  
(556) Further East on ridge. Thin  
base ledge of greenstone  
(557) Near foot of ridge.  
(558) At foot of hill.  
(559) Pit on ridge  
(560) at foot of precipitous cliff  
21038 of greenstone  
(561) Easternmost end of ridge.  
(562) on side of valley.  
(563) Highest pit at western end  
of ridge.



- (564) Front side of ridge on top of precipice.
- (565) Steep slope of bare rock.
- (566) Knob.
- (567) East end of ridge precipitous to the south.
- (568) East end of ridge.
- (569) Precipice to south and east.
- (570) Saddle, formed by jutting exposure of gneiss.
- (571) 10 paces east of last Eastern exposure.
- (572) Foot of hill.
- (573) Foot of sharp slope of hill.
- (574) Foot of sharp slope.
- (575) Foot of slope.
- (576) Bare of rock exposure.
- (577) Near bottom of hill.
- (578) Near western end of hill. at base of rock exposure.
- 21039
- (579) Bare of rock exposure.
- (580) Little foot ridge south of main hill.
- (581) East side of foot hole.
- (582) West " " " " west of foot hole (581).
- (583) West side of another foot hole.

- (584) East side of this pot hole.
- (585) Valley
- (586) West flank of hill.
- (587) Slope of hill.
- (588) On spur of ridge
- (589) East side of little sandy horse-shoe ridge.
- (590) Bottom of ridge, level of Swamp.
- (591) South side of ridge.
- (592) Slope of ridge
- (593) Swamp.
- (594) N. E. side of horse shoe ridge,
- (595) Another point in this curved ridge.
- (596) Extreme west end of rock exposures in hill.
- (597) Large exposure of greenstone.
- (598) Large boulder like projection of greenstone.
- (599) Near highest point of ridge. Rock extends lengthwise of hill.
- (600) Edge of precipitous bluff of greenstone
- (601) Another point in edge of bluff Greenstone.
- 21040 75 paces from (601) to extreme eastern exposure of rocks.

- (602) Edge of rock bluff.
- (603) Further west in same bluff.
- (604) Extreme western part of top of hill.
- (605) Edge of greenstone precipice
- (606) " " " " "
- (607) See pages north of edge of precipice. Greenstone exposure continuous up to this point.
- (608) Edge of precipice
- (609) Large greenstone ledge on south side top of hill.
- 21041
- (610) Top of hill
- (611) Little sheep in hill. To the east hill precipitous
- 21042 Specimen from (611)
- (612)
- (613)
- (614) Valley south of Station
- (615) on gradual slope. No ledge
- (616) " " " "
- (617) In valley " "
- (618) " " " "
- (619) Back some distance on slope, no ledge.
- (620) Ditto.

- (621) Ledge of greenstone on top of little hill. Ledge 20 x 20 ft.
- (622) ditto.
- (623) North side of this hill on top.
- (624) on plain of station
- (625) Base of hill, S of station
- (626) " " "
- (627) " " "
- (628) " " "
- (629) " " "
- (630) " " "
- (631) Top of hill. Greenstone ledge, 50 x 20 ft.
- (632) Top of hill. Ledge

Aug 28/91

- (633) W. edge Swamp
- (634) S. " " " " on top of hill
- (635) Lake shore
- (636) Bottom of swale
- (637) " " " " at end
- (638)
- (639) S.W. side of swale
- (640) Edge of swamp.
- (641) Top of hill, near edge of swamp
- (642) Edge of swamp.
- (643) Top of slope.

- (644) 1/2 way up slope
- (645) Up on slope, near road
- (647) Top of little ridge
- (646) Edge of swamp.
- (648) In gully
- (649) On ridge
- (650) In hollow
- (651) W 1/4 part sec. <sup>page 2 H.F.P.</sup>
- (652) End of gully.
- (653) W. end little greenstone knob
- (654) Bottom of north face of bluff.
- (655) Bottom of cliff, where took  
21043 specimen
- (656) Bottom of cliff.
- (657) In front bottom of cliff.
- (658) W. and southern spur of ridge.  
Greenstone.
- (659) A little way up on southern  
slope, where bare ledge.
- (660) Further up on slope; bare  
ledge continues.
- (661) E end large ledge
- (662) S. end higher knob.
- (663)
- (664) Flag top of hill. All top ledge of  
greenstone.

- (665) N end ledge (662)
- (666) S. end ledge greenstone, running about 100 ft. N.E. and 20 ft wide.
- (667) S. end little knob of greenstone in larger knob.
- (668) N. end ditto.
- (669) Large ledge 30 x 20 ft.
- (670) Front of hill in top of little precipice.
- (671) Front of hill in top
- (672) Ledge of greenstone 30 x 30 ft. 15 ft S.E. of (672) is the N.E. end of a ledge 125 ft. long and 20 ft wide.
- (673) Front edge precipitous ledge of greenstone
- (674) ditto
- (675) "
- (676) Bottom of greenstone ledge
- (677) " " " "
- (678) W. end top of ledge
- (679) E " " "
- (680) E end next knob west. Green-
- 21044 Stone here exposed as before
- (681) Bottom of hill in front. ledge of greenstone all around it

north and west faces.

- (682) W. end hill.
- (683)  $\frac{1}{2}$  way up slope. Ledge practically continuous from (682) to (683)
- (684) Top of hill. no ledge
- (685)
- (686) W. end west hill, at bottom.
- (687) Front of hill, near top. Ledge all along front side.
- (688) S. side here.
- (689) Top of hill. Ledge practically continuous between all points sighted to me this hill, and to
- (690) from which point took specimen of greenstone.
- 21045
- (691) Front side of hill.
- (692) W. end
- (693) Center at bottom
- (694) E. end
- (695) Center on top
- (696) Valley
- (697) W. end
- (698) Center
- (699) E. end
- 21046 } all from the dump heap of
- 21047 } the E. New York Mine, at E.

T.

R.

Mr. Channing says the ore  
bodies in this mine are strik-  
ing 20° S 7 E and are dipping  
South.



end of this Jasper knob.

21048

one from one pile.  
The knob itself is largely banded Jasper and one, more or less entangled so that strike and dip were not obtainable. To the west or W<sup>2</sup> the Jasper is as represented

21049

by the specimen. A little further East it is more

21050

cherty and brecciated. Beyond this, especially on the south side of the hill, there is an approach to the conglomerate, but whether true conglomerate or not it is difficult to say

21051

Supposed conglomerate

21052

More cherty phase of same.

21053

Cherty conglomerate.

True conglomerates however, are on the north side of the hill. Specimen 21053 was taken from a fault some distance down to north slope.

From the fact that the veins, (of which there are two, near each side or end of the knob)

are in old chest it was thought that the contact of the newer and older formations must be visible somewhere on the hill, and that the conglomerate was a recent capping. Mr Channing searched for this contact and found it on both sides of the hill about 1/2 way up the slope.

(700)

Station

(701)

75 paces N of 701 is the Eastern end of a pit 100 paces long from E to W. At its west end is chlorite schist, exposed at several points lying in a line N and S of W.

21054

At the south side is gapped conglomerate and on the East side of most western portion of pit is slaty ore, like that at Fitch mine, in the conglomerate and conformable with it. The strike is about 10° S of E, and the dip high to the S.

21055

On the north side of the pit toward the west is a cherty-

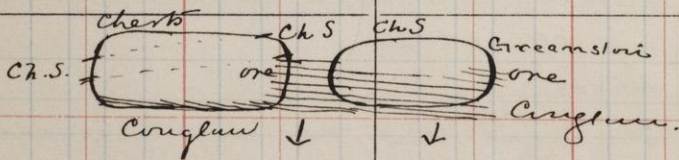
21056

On the north side of the pit toward the west is a cherty-

21057

T.

R.



Pits, with Conglun. etc.

rock containing much chlorite?  
That portion of the pit toward  
the East is much like the west-  
ern portion. To the north is diabase  
or schistose gneiss, blue grey  
entire length, with one and con-  
glomerate to the south.

(702) E. end north side terrace conglom-  
erate bluff.

(703) W. end ditto

At the north side of this bluff  
well down on the side is exposed  
what looks like the old formation,  
forming the conglomerate on top  
in what appears to be an un-  
conformity.

An old shaft is at the East  
end of the bluff (see 21050 etc.)  
From its dump heap took

21058 Chert and ore

21059 Bent layers of same

21060 Schistose gneiss

21061 Chlorite - schist

21062 Banded ore.

(704) Placis

(705) E. end gneiss known.

T.

R.

Mr. Channing says the one bod-  
less in this

- (706) }  
 (707) } Points in South side greenstone  
 (708) } hill.
- (709) W. end greenstone knob  
 (710) in saddle. Greenstone.
- (711) Base of rock in bluff.  
 (712) S. E. end bottom of bluff. } of greenstone  
 (713) N. W. end bottom of bluff. }
- The S. E. side of the hill in which  
 is northernmost flag & of Johnson-  
 ing is steep, with greenstone ex-  
 posed along its entire S. E. side.
- (714) S. W. corner near greenstone  
 hill East.
- Several small ledges of greenstone  
 are 100 ft. further west in S. W.  
 in swamp.
- (715) High bare knob of greenstone in  
 hill, separated from another sim-  
 ilar knob further north by a  
 little depression.
- (716) Front face of cliff.  
 (717) " " " "
- (718) Top of hill in front. Greenstone  
 21063 ledges here exposed
- (719) High point of greenstone some dis-  
 tance back from front of hill.

(720) Summit of cliff.

(721) " "

(722) " "

(723) Side slope of hill. No rock.

(724) And of slope no rock.

(725) Pit on hillside, showing in  
21064 its dump heap banded chert  
etc.

Higher up on the hill is a nest  
of old pits from which some lit-  
tle soft one has been taken.

(726) W. end of long pit  
(727) E. "

(728) Another pit

(729) " "

(730) W. ends another long pit  
(731) E. "

(732) Small pit

21065 Chlorite schist

21066 Banded one and chert

21067 Hard one

21068 Cellular one and chert

All from dump heaps of these  
pits

(733) Top of bare exposure of green-  
stone toward west end of knob  
at foot of which are these pits.

- (734) Top of hill. No rock.  
 (735) Spur of hill.  
 (736) Pit at bottom of slope. From  
 21069 Dump heap took specimen.

Aug 31/91

(737)

(738)

(739)

(740)

(741)

(742)

(743)

(744)

(745)

(746)

- (747) } Three ends of greenstone ledge,  
 (748) } on hill to East of U. G. Mine  
 (749) }

(750) Greenstone ledge 20 x 20 ft.

(751) S.E. side of greenstone hill

(752) } Ends of little greenstone knob

(753) } on hill.

21070 Specimen

(754) Depression on top of hill. No ledge

(755) Ledge of greenstone 30 ft long  
 NE to SW.



- (756) E. end of knob in hill, all edge of greenstone.
- (757) Small ledge of greenstone in plain.
- (758) W. end of greenstone ledge in hill.
- (759) W. end precipitous portion of the ledge.
- (760) Station
- (761) E. end of precipice. Another ledge 60 ft. W.
- (762) Little ledge in hill. Another ledge of greenstone begins at 30 ft S. of 762 and runs all the way to (763)
- (763) to (763)
- (764) Ledge 15 x 8 ft. 15 ft. E. W.
- (765) " 15 x 15 ft. Practically
- (766) continuous to (766), where it is 20 ft. wide.
- (767) }
- (768) } Points in North end or side of
- (769) } pit.
- (770) E. end of pit.
- (771) W. end of ledge on lower portion of hill.
- (772) E. end of same ledge, which is more or less schistose. 60 ft. E. of this is a little

- Knob of greenstone 40 x 40 ft.
- (773) Ledge of greenstone, same 10 ft. long and 3 ft. wide in base of slope.
- (774) } W. end ledge of greenstone
- (775) } E. end ledge of greenstone
- (776) Center of ledge 40 ft E. W. 15 ft. W. S.
- (777) } W. end ledge of greenstone.
- (778) } E. end ledge of greenstone.
- (779) Precipitous front of same ledge, which here extends all the way to top of N. of saddle.
- (780) Little ledge of greenstone on top of hill.
- (781) N. end large ledge on top of hill.
- (782) Small ledge on north side of hill.
- (783) " " " "
- (784) " " " near base of hill.
- (785) " " " "
- (786) Small ledge greenstone.
- (787)

The pit upon whose northern side (767) etc were taken is about 40 ft wide at its eastern end. On the north side the wall

- 21072 is schistose greenstone  
 Further west in the bottom of  
 the pit chert and ores occur, of  
 which a specimen was taken  
 near the greenstone.
- 21073  
 21074  
 21075  
 21076 Banded Jasper and ore, whose  
 strike is about  $10^{\circ}$  S of E and  
 dip about  $80^{\circ}$  W.S.
- (787) old shaft with no rock exposed  
 under it. on its deep heap,  
 however is abundant schistose  
 greenstone.
- 21077  
 (789) Tripod. The rocks exposed on the  
 wall of this open pit are schis-  
 tose greenstone, with a little  
 chert on the East end. The chert  
 could not be reached so took  
 my specimen of greenstone.
- 21078  
 (790) } N  
 (791) } S ends of little greenstone hill.  
 (792) Ledge on back side of same hill.  
 (793) S. side of pit. Snow  
 S. side of pit, toward middle, took  
 21079 specimen  
 (794) W. end pit.

(795)

Corner.

(796)

W. end ledge showing contact of greenstone and chert. Ledge extends east all the way

(797)

to (797), and is a continuation of the north side of the pit.

21080

Greenstone

21081

Chert or Jasper

(798)

(799)

On the north side of mine

(800)

westerly pit, where the rock

21082

is generally a schistose greenstone.

(801)

W

(802)

E

ends of little rock partition separating two pits. The rock looks like a micaceous greenstone. It extends about forty feet further west.

21083

On the south side of this pit is a high wall of conglomerate with fine pebbles of ore and Jasper. The rock dips about S. at an angle of 41°.

21084

Specimen of conglomerate

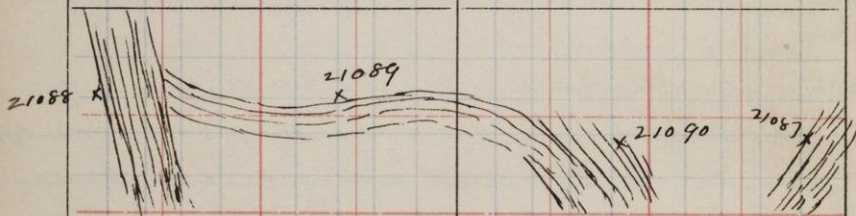
21085

one conglomerate, just under the Jasper conglomerate.

- (803) N. side of pit
  - (804) Conglomerate on the south side of pit. A few feet further S. quartzite outcrops.
  - (805) S. side of pit.
  - 21086 Quartzite from 10 ft. S. of (805)
  - (806) S. side of pit
  - (807) W. end of Southern pit, separated from more northerly one by (806)
  - (808) North side, near east end of this more northerly pit. Quartzite is exposed along entire side.
  - (809) South side of pit, to westward.
  - (810) } South side of pit, moving
  - (811) } eastward.
- The south side of this pit, like the corresponding side of the more northerly one, is through quartzite and conglomerate, the being the rock at (811). The dip of these stratified rocks is 35° S and their strike 100° S of E.
- 21087
  - (812) S. side of pit
  - (813) S.E. corner of pit
  - (814) N.E. corner of west pit. South of 1
  - (815) North side of this pit.

T.

R.



Rude section across west end of  
pit.

(816) N. w. corner of same pit.

The rock is not very near (816), which is <sup>an</sup> old dump heap partially filling pit. The exposure is now near (814), 20 ft from (815) and 60 ft. from (816).

(817) W. edge of pit at west end

(818) " " " "

(819) S. side of pit

(820) " "

(821) " "

(822) E. end.

This pit affords another good example of a fold such as is seen to such advantage in the Lake Superior pit. On the west end, where I struck the rock dips to the north, in the center of this side they are nearly horizontal, and on the north side they again dip northward, while in the pit further north they dip southerly.

The south side of the western half of the pit is schistose greenstone, at the west end as before is conglomerate, and above this is

21088

21089

21090

quartzite

on the S. side toward the East. Apparently under the conglomerate

21091

is jasper ore, striking 30° N. in general, though much contorted.

The light is bad, but it seems as though could detect an unconformity of the north side of the pit.

(823)

Pit in another pit. At (823)

(824)

is contorted jasper and ore. At

(825)

(824) schistose greenstone form-

(826)

ing north wall of pit at East end.

(827)

and being a dike with trend

(828)

S. of E. and a direction hade of 15°

(829)

at (825) is jasper and ore, im-

(830)

pregnated with greenstone at

(831)

(826) and much contorted at (827).

Its general strike is about S.E. and dip S.W.

21092

Jasper and ore from (825). The northern wall is jasper. Except at the East end where the schistose greenstone occurs. On the south side is a narrow greenstone dike running for some



## Photographs

- 1 Quartzite Agglomerate
- 2 " "
- 3 " "
- 4 Deer Lake Agglomerate
- 5 " "

