Lake Superior region: [specimens] 44000-44124. No. 439 1907

U. S. GEOLOGICAL SURVEY

FIELD SECTION BOOK

9-891

LAKE SUPERIOR DIVISION.

INSTRUCTIONS.

1. Ordinarily at least two pages of this book will be devoted to one section. On the left-hand page, place a map of as much of the section as has *actually been seen*. Denote rivers, lakes, marshes, etc., by the usual topographical signs. Denote the ledges of rock, when no structure is made out, by cross-hatching, making the cross-hatching cover as nearly as possible the areas occupied by the exposures. If the rock is a massive one, but still more or less plainly bedded, use the same sign with a dip arrow and number attached, showing the direction and amount of the dip. Denote a shaly or other very plainly bedded ledge by right parallel lines, and a ledge having a secondary structure by wavy parallel lines running in the direction of the strike, with dip arrow and number attached as before. The greatest care must be taken to avoid confusing slaty or schistose structure with bedding, and in all cases where there is the least doubt about the true bedding direction, indicate it by a query. To each exposure on the face of the map attach the number of the specimen representing it. In mapping the section count each of the spaces between the blue lines as 100 paces, and twenty of these spaces to one mile, or 2,000 paces. Usually the southeast corner will be placed at the bottom of the page, or at the first black line above the bottom of the page, and at the right-hand side. If, however, for any reason, it is desirable to show portions of an adjoining section, the southeast corner may be shifted up, or the map may be turned around and the north placed at the left-hand side of the page. The ruling of the left-hand pages is also arranged so that, if desirable, a larger or a smaller scale can be used, eight inches, two inches, one inch, or one-half inch to the mile. With the two-inch scale, the squares outlined in black represent sections, and those in red, quarter sections and "forties," while the space between the blue lines is 200 paces.

2. On the right-hand page place the notes descriptive of the exposures. Begin in each case with the number of the specimen, placing the number on the left-hand side of the red line, after which give in order on the right of the same red line the position of the ledges as reckoned in paces from the southeast corner of the section and the dip and strike when observable, the latter always being expressed from the north; for instance 4025, 250 *N.*, 300 *W.*, *Strike, N.* 78° *E.*, *Dip* 50° *S.* Then follow with a full description of the ledge. When topographical maps are used for locations this paragraph applies only in part.

3. Collect a specimen from every ledge, or wherever there is a change of rock on any one ledge, taking care to get fresh material, unless for a special purpose the weathered surface is desired. In case of trips made on foot or in canoes, for long distances, neighboring ledges, unquestionably of one kind of rock, need not be specimened. The position and extent of the ledges not specimened should be marked on the map, with notes that each is of a rock identical with specimen so-and-so. Under the same conditions small-sized specimens, trimmed to a uniform size of 2 x 2½ x ¾ inches will be allowed, but in all other cases *large-sized specimens*, trimmed to a size of 3 x 4 x 1 inches, must be selected, in accordance with section 3, chapter IV, p. 44, Regulations of the U. S. Geological Survey. Specimens should not be placed together without protection in the collecting bag, as the fresh surfaces, important in determining the character of rocks, are thus destroyed. They should be damaged by no temporary mark, but the numbers should be at once marked in at least two places upon the inclosing paper or cloth bags. Specimens may be permanently marked in camp by painting the numbers upon them in white upon a black background, using Silver White and Ivory Black oil tubes for color, with turpentine as a diluent.

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

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

W. J. Mead.
Madison, Wis.

439

44000 —

No 44001 — Weathered gabbro from W. bank of Ammicon river. Sec. 32-T48N.-R-12W. Wisconsin. This specimen was collected about 6 feet from No. 44000. It represents quite an advanced stage of weathering being made up largely of clay and ferric oxide.

44000 — Fresh gabbro, same locality as above. This specimen represents a comparatively fresh phase of the gabbro. Alteration has begun however as is shown by iron stains in the fracture cracks.

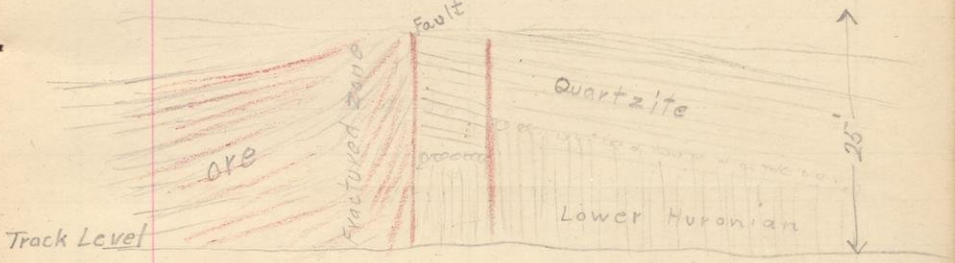
44002 — Specimen showing contact of gabbro and red intrusive rock. W. bank of Ammicon river Sec 32-T.48 N.-R12 W. about 1/4 mile from locality of 44000 & 44001.

44003 — Quartzose rock from S. W. corner of Soudan Hill adjacent to ore. Montana shaft.

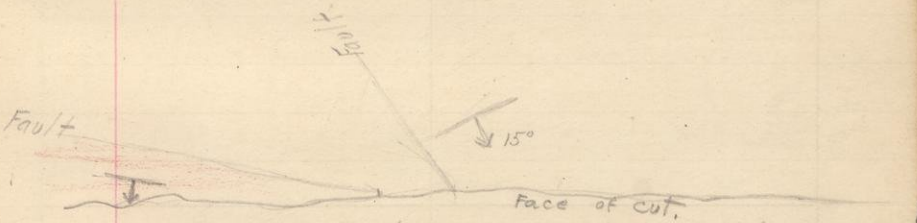
Wednesday May 01.

Examined exposure in vicinity of Beulah Mine.

Noted fault exposed in new cut on North side of open pit.



Sketch of Section Exposed in cut.



Sketch showing Horizontal section.

About 100 yards north of the exposure of the fault, the surface of the lower Huronian was found outcropping and covered in patches with Conglomerate. Dip about 15° S. the same as was noted in exposure North West of the mine.

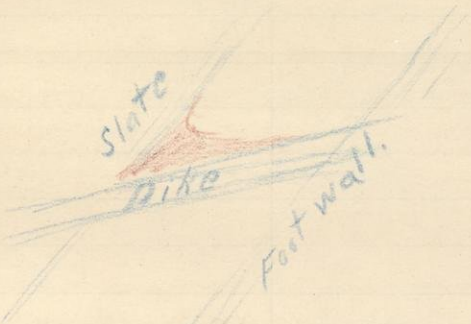
Sills & Talus Mine.

1 Mile

Thickness 40'

For next mile east 500-1000' ?

Palmer Mine

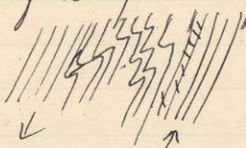


An occurring intrusion found by dike & interbedded slate.

Quail Mine 7½ NE¼ Sec 14-47-9
shows sandy hanging wall

Look up rocks of Vermilion Range S. of Ely for amphibolite rocks for Mt. Lab. work.

Describe folding east of Sunday Lake



Sunday Lake — Note accordance of cleavage with minor folds, except S. of folded zone. Axes of minor folds pitch east with topography

Disturbance probably later than folding, because cleavage is absent in some rocks, and what there is S. of folded zone indicates movement in direction opposite to that of folding

Folding of Vermilion type.

Ca O — Ca O in Fg. chl. compared with amph. mag. rocks

Thompson — Thinks that outlet for Ironwood - Bessemer series of mines is thru neck N. of Bessemer. Change of formation to east

Note effusive K-l arm at Sunday Lake as compared with intrusive on Meadbi.

CO_2

If amphy. rocks develop near intrusive this means loss of CO_2. What pressure + thickness would allow this.

Fe

Compare compositions of carbonate, ferruginous chert, amphibole magnetite rock, and jasper, to ascertain behavior of lime.

Spec No. 10.

Measured Sec. 5 of Birch Lake

~~Study~~ Green schistose iron carrys abundant magnetite

Lighter colored Itz + Norite carries pyrite + magnetite

Ripple marks (?) noticed in iron formation south of Palmer.

44004 Quartzite rock. S.W. corner Soudan Hill. At B.R. track just below Minnesota Mine buildings. Named on L.H.

44005 N. side of Montana shaft next to ore.

44006 Fresh gabbro exposed along B.R. track north of Allen Junction Minn. at the "y" track the weathering of the gabbro into boulders is well shown. Spec. 44006 is the fresh core of a weathered boulder
44007 and Sp. 44007 is the weathered outer portion of the same boulder. The feldspars are altered to kaolin and the ferromagnesian minerals are partially broken down but the mica is apparently only slightly altered.

44008 Ore from Biwabik mine showing granular texture of original granulite granules.

44009 Conglomeratic ore. Cretaceous Alice Pit Virginia Minn.

44010 Mesnard Quartzite, Schistose phase south of Clam Lake contains magnetite

44011 Miniature fold from east end of Sunday lake.

Analyses made at University of Michigan. Hygienic Lab.

Water analyses obtained from city clerk at Ironwood Mich.

Water from Brewery. Well.
Alkaline reaction
Hardness 165 parts $CaCO_3$ per million.
Total residue 393 " "
Inorganic " 256
Chlorine as NaCl 66

Spring Water. 1½ miles N. of Ironwood.
Reaction Alkaline
Hardness 323 $CaCO_3$ per million
Total Residue 660
Inorganic 550
Chlorin as NaCl 160

City Water - Montreal River :-
Reaction neutral
Hardness "
Total residue 53
Inorganic 30

#1 Water from well. Mansfield street. Rear of Peterson store

Reaction alkaline
Hardness 5.°5
Total Residue 500
Inorganic 251.2
Chlorin as NaCl 87.

#2 Well at 251 E. Pine St.

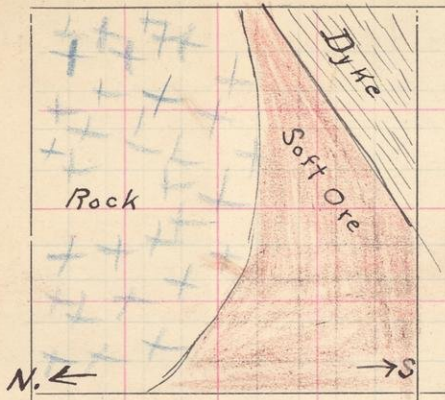
Reaction Alkaline
Hardness 7.°5
Total Residue 608
Inorganic " 348
Chlorin as NaCl 89

#3 City Water.

Reaction Alkaline
Hardness 1.°8 Clarkes Scale
Residue 125.6
Inorganic 36.8
Chlorin as NaCl 6.

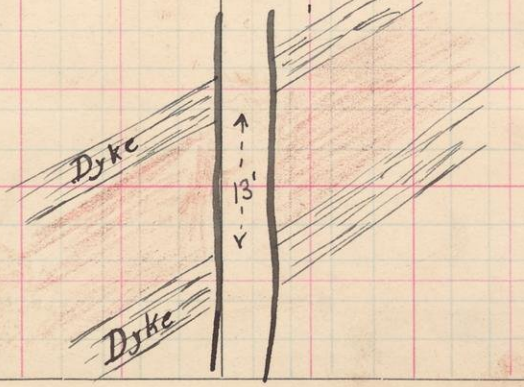
Ore between parallel dykes 10
C. Norrie. Old No between 15th & 16
levels.

S. T. R.



Section exposed in drift
16th level Cross cut.
121' E. of Shaft. Norrie.

Ore between parallel dykes.
E. Norrie between 15th & 16 levels.



G—747

Tuesday May 21. 1907.

Spent the day underground in company with Mr. MacNamara, at the Nipissing and E. Nipissing Mines. Ironwood. Mich.

The miners state that in general the ore occuring in contact with the upper surface of a dyke is much harder than the ore immediately below a dyke. also that ore against a hanging wall is harder than ore on the foot wall. Hard ore above dykes and soft ore below was observed in a number of places in the Nipissing mines, the ore immediately above the dykes being very hard "stull ore". while that occuring on the under side of dykes was much softer and more porous. An exception to this statement was noted in the West Shaft, 16th level of the E. Nipissing. Here ore is found beneath a dyke and is as hard as any of the hard ore observed overlying dykes. A considerable amount of movement appears to have taken place at this point, between the ore and the dyke. A brecciated zone of hard ore (Sp. 44012) several inches wide is found immediately beneath

44012

the dyke, and below this zone the
44013. ore is dense and hard (Sp. 44013).
1' from dyke.

On 17th level. B shaft. Norrie mine
in drift going west, hard dense
44014 ore (Sp. 44014) was found occurring in
44015 small masses, in softer ore. (Sp. 44015)
These specimens were taken about 5" from
each other and at a distance of about 2 ft.
from the dyke.

44016 Specimens taken from vug or opening
from which water was flowing.
17th level. B shaft. West drift. less than
ten ft. above dyke, 30' east of exposure
of dyke in drift.
A similar opening from which a
considerable flow of water occurs, was
found on 16 th level. E. Norrie Mine. North
Crosscut. 250' N. of footwall. Opening
is along strike and reported to have been
sounded for 40 or 50' without finding end.

Water openings

The dykes in genral are considerably altered in the neighborhood of ore bodies and are fresh and hard in the footwall rock and in the rock of the iron formation. The dyke immediately underlying hard "steel" ore was often found to be very soft and much altered.

44017 Specimens 44017 and 44017A are altered
44017A portion of a dyke. 16th level. B shaft. Norrie mine. 121' E. of shaft. about 2' from ore.

44018 Rock at ore contact. 17th level. B shaft. Norrie mine.

44019 Ore in contact with no. 44018. The ore here is soft and quite porous, made up of fragments of dense red hematite not cemented.

44020 Rock in contact with hard ore. 15th level C. Norrie.

44021 Hard ore immediately above 44020

44022 Ore 2" from dike (44023) 16th level E. drift E. Nonie mine.

44023 Dike 2 ft. from ore (44022). shows results of considerable amount of movement.

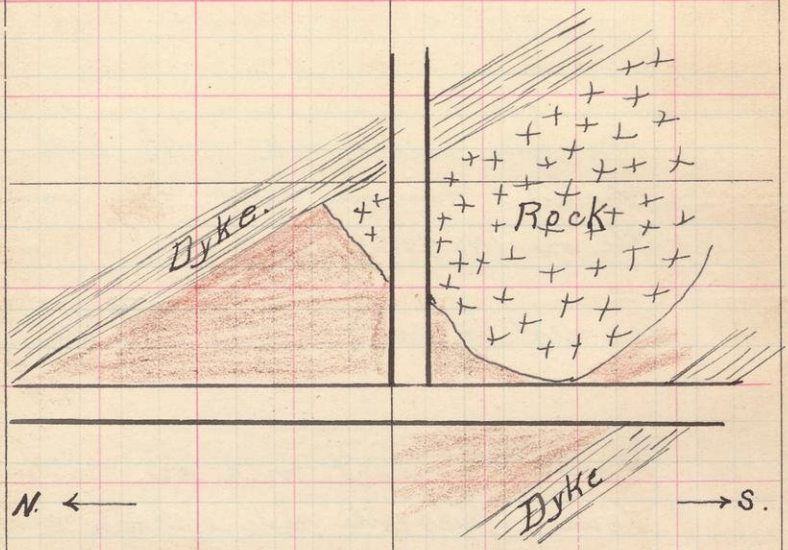
44024 Hanging wall rock 15-th level E. Nonie. Hanging drift. In contact with ore (No. 44025)

44025 Ore next to rock (44024) 15th level. E. Nonie.

44026 Rock at contact with ore 15th level E. Nonie. Opposite side of rock mass from No. 44024.

S. T. R.

Ore in inverted Trough.
15th level Aurora Mine
E. of A. shaft.



6—747

Facts obtained in Norrie & E. Norrie Mines indicating

Direct Concentration of Fe by solution	Removal of SiO_2 in solution
1- Masses of hard steely ore surrounded by softer ore (44015)	1- General porous nature of ore.
2- Ore completely filling space between two parallel dykes.	2- Veinlets of quartz in ore and rock. and small cavities in ore lined with quartz.
3- Hard ore beneath dyke where slumping could not occur without movement of dyke.	3- Sandy mass in ore, showing fresh crystal faces.
4- Ore following water course through break in dyke.	
5- Altered dyke impregnated with iron. In some cases hardly distinguishable from ore.	
6- Veinlets of hematite in dyke and quartzite.	
7- Crystalline & botryoidal hematite	

Newport Mine.

Underground at A & K. shafts. May 22
in company with Mr. Blackwell, engineer.

Specimens collected.

44027 "Aluminum Ore" said to run high in Al. Apparently a slaty phase of ore. A shaft. 15th level 300' E. of Pabst line. 450' N of shaft.

these numbers used later.

~~44028. Hard ore in contact with above.~~

44029 Sandy phase of quartzite footwall 14th level A shaft. behind shaft. Appears to be disintegrated quartzite. (Shows solution of silica.?)

44030 Slaty ore. A shaft 17th level. shows original bedding.

44031 Peculiar phase of ore 15th level A shaft. not far from 44028

S. T. R.

44035 Chert, Gogebic Range.

6—747

44032 Much altered dike 15th level. A 500' E. of Pilot line. Apparently iron has been concentrated here by solutions.

44033 Sandy material between ore and footwall. (Not part of quartzite.) 17th. level K. Newport.

44034 Same place as above. This sandy material is found in lenses in the formation. (Original or secondary?)

~~44035~~ ~~Sandy phase of quartzite footwall.~~ ~~(same as 44029.) 17th level K.~~ Duplicate

44036 Red (ferruginous) slate. lying on quartzite footwall. Thin & persistant. 16th level. K.

~~[redacted]~~ ~~from large rug.~~

~~K shaft.~~

44027 Manganiferous material from large rug. K. shaft Newport Mine.

44038 Centre of dike K shaft. 16th level. comparatively fresh.

~~[redacted]~~ Altered portion at top of dike 50' along drift from 44038.

44022 probably about 10' from centre of dike.

S. T. R.

This banded material in cave at Newport, shows direct alteration of carbonate to ore.

Facts observed in Newport Mine indicating

Carrying of Fe in Solution	Carrying of SiO_2 in Solution
~~1- General occurrence of ore in pipe troughs.~~	1- Disintegrated quartzite footwall (44029 & 44035) ? shows ability of water to dissolve SiO_2
1- Hard ore & soft, occurring together	2- Sandy masses showing fresh crystal faces (44033-34)
2- Iron impregnated dyke rock.	3- Veinlets and cavities filled with quartz.
3- Veins of iron in dyke and in sand. (44033)	4- Breccias cemented by quartz.
4- Iron minerals deposited from solution in vugs.	
5- Ore filling space between broken ends of dyke, and under edge of broken dyke.	
6- Brecciated ore cemented by iron.	
7- Iron concretions and nodules in sand.	

Evidence of later solution of SiO_2

+ SiO_2 coating oxide.
Fe coating SiO_2
Induration of Quartzite footwall.

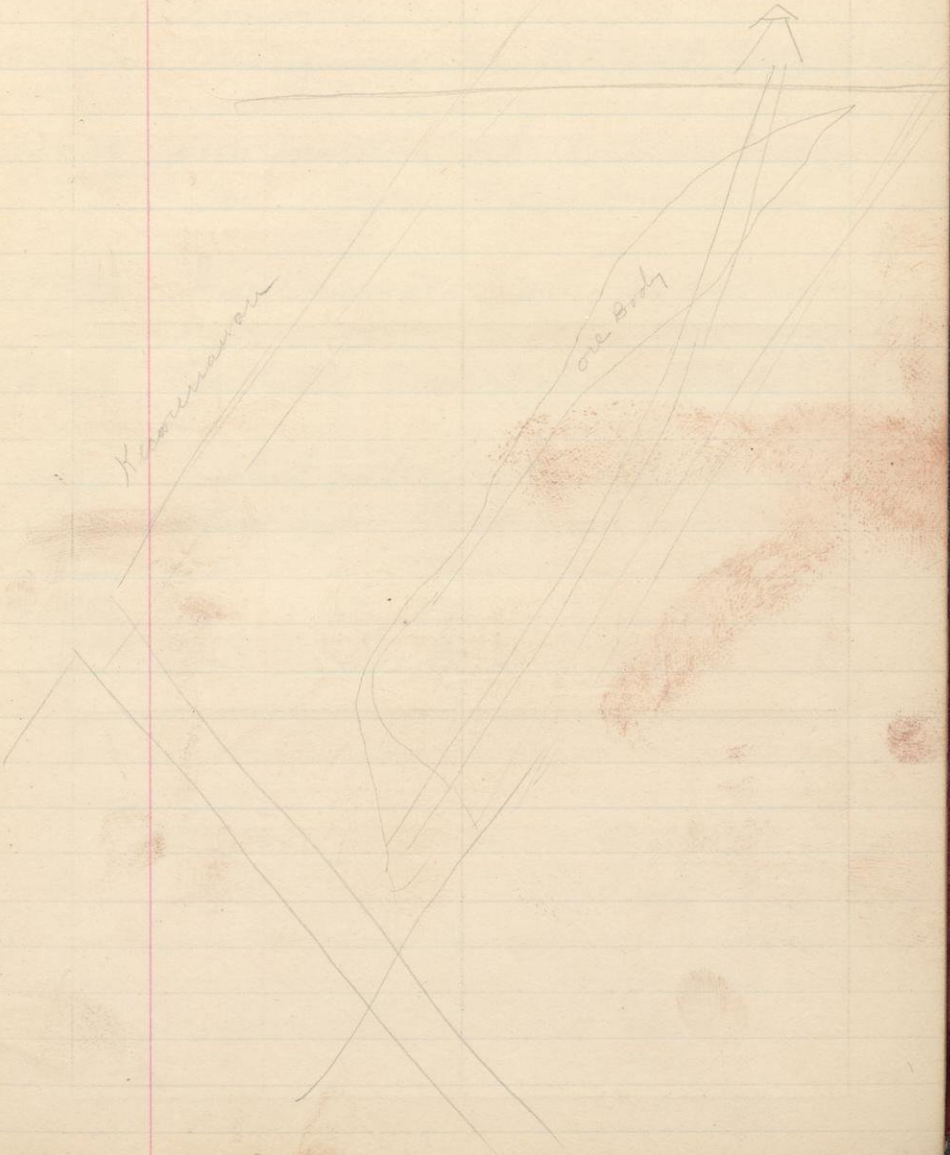
Ore directly from clean carbonate
No granular ore found.
Granular ore enrichment
apparently due to loss of SiO_2

Cherty Iron Carbonate exposed
South of street East of School house.

Take section in slates Shaft No. 3
Atlantic.

Drifts through Fe formation from
qtz. to slate, Norrie 630', Atlantic 665

Sketch of Vertical X section
Burkhuntore Mine No 2 Shaft



44037 Slaty phase iron formation containing cordierite. Exposed E. of Ironwood.

44038 Manganese ore. K shaft. Newfoat Mine

44039 Iron formation rock. Contains $FeCO_3$ 300' from Tyler Forke Mine.

44040 Iron Carbonate - Cave - Newfoat mine.

44041 Chutty ore - Newfoat mine - (Slide)

44042 Freshest part of dyke, Atlantic mine

44043 Altered dyke 15 ft from — 42

— 44 " " 30 " " — 42

— 45 " " 50 " " — "

— 46 " " 80 " " — "

Stevenson Mine 6/9 '07.

1- Discrimination between hard, and soft layers. Hard layers extending directly thru taconite & ore but broken more in ore. Soft layers obviously developing from leaching of silica

2- Granulite texture to be seen in cherty layers and in resulting ore layers, not in others.

3- Soft chert or sand, an intermediate stage in leaching of cherty layers. always found between hard chert on one hand and soft ore on the other Where the layer thins

4- Comparative absence of distinct iron veins, both in ore and wall rock

5- Iron layers in chute do not seem to represent segregation because of 4 and because of preservation of texture

6. Pore space should increase from hard chute to soft ore because of taking out of SiO_2, not through alteration of iron bands of the chert.

7 Thickness diff. in vol. between chert & ore often correction is made for the hard layers, measure slump + pore space. Probably not introduction of iron.

8 Diff. in pore space between hard and soft layers measured against theoretical pore space should measure slump.

9. Slump vertical, being partly prevented by benches.

10. What is difference if any, from top to bottom?

12 Abundance of taconite islands corresponding to less leaching of SiO_2 in west end of district.

13. Sandy layers crossing bedding diagonally near erosion surface.

14. Greatest porosity apparently found in limonite layer, smaller amount in hematite layer.

15. Limonite ore usually in upper part of ore bodies. This together with "14" indicates greater pore space in upper part of ore body.

16. Slaty phase of Fe formation, which alters to paint rock, in fresher phase shows indications of iron carbonate. This slaty material overlies the ore.

Screening test

6	Held on No 8		29.1
Passing 8	" "	20	10.4
20		40	13.3
40		60	7.4
60		80	3.6
80		100	3.3
Passing 100			12.9

	Iron	Phos	SiO_2	Mno	Al_2O_3	Mg	CaO
D	58.77	.022	12.13	.44	1.42	.10	.17

S	Organic
.014	2.00

53.48	.020	11.04	.40	1.29	.091	.153

.0127 1.82 Moist 9.00

Specimens collected in Hibbing Dist.

44047 Stevenson Mine. ~~Hard tac~~ Sandy taconite. When saturated, water = 7.56% W.

44048 Same as above. " " " = 6.66% wt.

44049 Crosby Mine. Sandy Taconite. analysis by Leech Bro. Hibbing. Pore space = 23.9 %

44050 Crosby Mine. Sandy Taconite. Analysis by Leech Bro. Hibbing. Pore space = 10.94 %

44051 Hard Taconite: same land as 44049. Analysis by Leech Bro Hibbing.

44052 Hard bands in ore Crosby mine. Analysis by Leech Bro Hibbing

44053 Hard bands in ore. Crosby Mine. This specimen was taken from richer ore than 44052 and the bands were softer, apparently slightly altered. Analysis. by Leech. Bro.

44054 Sandy Taconite showing granular texture Crosby Mine.

44055 Sectoria Mine.
Granular ore. % H_2O when saturated is 9.94 Analysis by Such Bros.

44056 Granular ore, same mine.
% moisture when saturated = 6.95
Analysis by Such Bros.

44057 Granular ore, same mine.
% moisture when saturated = 10.7

44058 Sandy Taconite Lake Mine.
altered from #44059. Taken from same band of Taconite about 6" distant
Analysis by Such Bros.

44059 Hard Taconite Same locality.

44060 Morris Mine.
Specimen shows alteration of Taconite to ore.
Two analyses by Such Bros.

44061 Yellow Limonite ore Morris mine
Analysis by Such
% Saturated H_2O = 28.4

44062 Same as above.
Analysis by Such.
% Sat. H_2O = 29.65

44063 Steel Ore Monia Mine.
Analysis by Leech Bros.

44064 Slaty Taconite. Sectonia Mine

44065 Specimen showing alteration of taconite to limonite ore. Adams Mine Eveleth.

44066 Lean gray ore. Adams Mine. Eveleth. Slaty.

Amphibole Magnetite rock, collected near Syndicate Camps. E. Mesaba range.

44067
44068
44069

44070

44071 Ore from Myers Mine. Mesabi Station.

44072 Altered Taconite, Burt Mine, Hibbing. Analysis by Such Bros. H.

44073 Altered Taconite, Burt Mine, Hibbing. Analysis by Such Bros. H.

44074 Paint Rock, Burt Mine. Hibbing Analysis by Such Bros. H.

44075 Paint Rock. Burt Mine. Hibbing Analysis by Such Bros. H.

44076 Altered Taconite. Burt Mine. Hibbing Analysis by Such Bros. H.

44077 Altered Taconite Burt Mine. Hibbing. Analysis by Such Bros. H

44078 Altered Taconite. Burt Mine. Hibbing Analysis by Such Bros. H.

The above specimens of altered taconite (-73, -76, -77, -78) were collected from same locality in Burt Mine, and should show various stages in the alteration of the same original taconite.

44079 Paint Rock. Morris mine Hibbing
Analysis by Lucke Bros. Hibbing.

44080 " "

44081 " "

44082 (2 Sec) Concretions of limonite in dark hematite ore. Mahoning Mine. Show concentric arrangment of hydrated ore and quartz centre.

An attempt was made to collect a series of three or more specimens from the same band of taconite showing successive stages in the alteration of the taconite. The following six specimens were taken from a band of taconite at the Stevenson mine.

44083 Most unaltered of the series.
44084 Slightly more altered than above.
44085 } These two represent practically the same
44086 } phase, and will be treated together.
44087 } Most altered phase. Very much alike.
44088 }

A second series was collected from another locality in the Stevenson mine.
Beginning with the least altered one

44089
44090
44091
44092
44093

44094 Taconite from Same Mine, Nashwauk. only slightly altered.

44095 Altered taconite. Same location. shows removal of iron. (?)

44096 Same as 44,095.

44097 A third phase of alteration of same taconite.

44098 Bands of hard ore in ore. Cuyuna Mine
44099 " " " " in taconite " "

44100 Bands of hard ore in ore. Stevenson
44101 " " " " in taconite "

44102 Virginia Slate. Longyear.
Holes. 1 & 2 - 19-58-16 Analyses

44103 Interbedded slate in Iron Form.
51 - 5-58-15
2 - 10-58-15 Analyses
62 - 7-57-20

2 10-58-15
51 5-58-15
2 16-58-16

44104 — 05 — 06 — 07 — 08 — 09 — 10 Specimens of ore from Norrie group of mines. Ironwood, Mich. Selected to represent a variety of phases of lump ore. Analyses by Wm S. Ferm, Iburley. (Record Nos. 1 - 7)

44111 — 12 — 13 — 14 — 15 Fresh and altered phases of carbonate rock, outcrop. S.E. of ball park. Ironwood. Analyses of 44111-12-13 & 14 by Ferm.

44116 Banded Chert. Palms Mine.

44117 Black Formation Slate. Pence Mine.

Marquette Range.

Aug 30.07.

Area between Negaunee & Palmer

44118 Hard steel gray phase of Iron formation at Palmer. Slightly magnetic

44119 Same location as above. More magnetic.

44120 Magnetic-siderite slate. about 2 miles N.E. of Palmer.

44121 Siderite slate. slightly magnetic. between Palmer & Negaunee.

44122 Weathered outside shell of outcrop from which 44121 was taken.

44123 Slaty ore. Probably result of katamorphism of slate similar to #44121

44124 Slaty ore showing bands grading from red hematite to yellow limonite.

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38-51

Skipped

: michiticotens

44200 Fresh boulder from Borgen Lake
44201 Altered " " " "

?

Questions. (Gogebic)

1- What is relative solubility of SiO_2 and Fe_2O_3.

In acid solutions? Alkaline solutions?
In Neutral solutions
Effect of heat and pressure on above?

2. Relative solubility of Manganese + Iron?

Could SiO_2 be deposited from solution in the form of sandy material? (Newport)

4- Were the dykes altered before or after, or simultaneously with development of ore?

In Norrie mine hard blue ore is found directly on soft altered dykes. If hard ore was made so by pressure, the alteration of dyke must have been subsequent.
If hard ore was formed by Fe in solution, why was not dyke indurated with Fe?

5- Since Fe formation is sedimentary, different beds had varying amounts of Fe, originally. Are bodies of quite uniform Fe content occur on dykes, running right across bedding of Fe formation. Conclusion — Fe was carried in solution.

6. From law of mass action, parts of formation high in Fe and low in SiO_2 should lose SiO_2 and gain Fe, and conversely. (?)

7. Alumina is supposedly removed only by hot solutions. Hence when ore is high in Al the Al. is original. Slaty phase of Fe formation.

8. What is soft white material in the ore?
Clay, carbonate, or magnesium?
How did it get there?

Hunkey Mine 14-58-19

3½ miles E. of Bule. M.E. Richards Supt.

Manganese cement in Conglomerate

Taconite - Stephenson Mine.

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56-59

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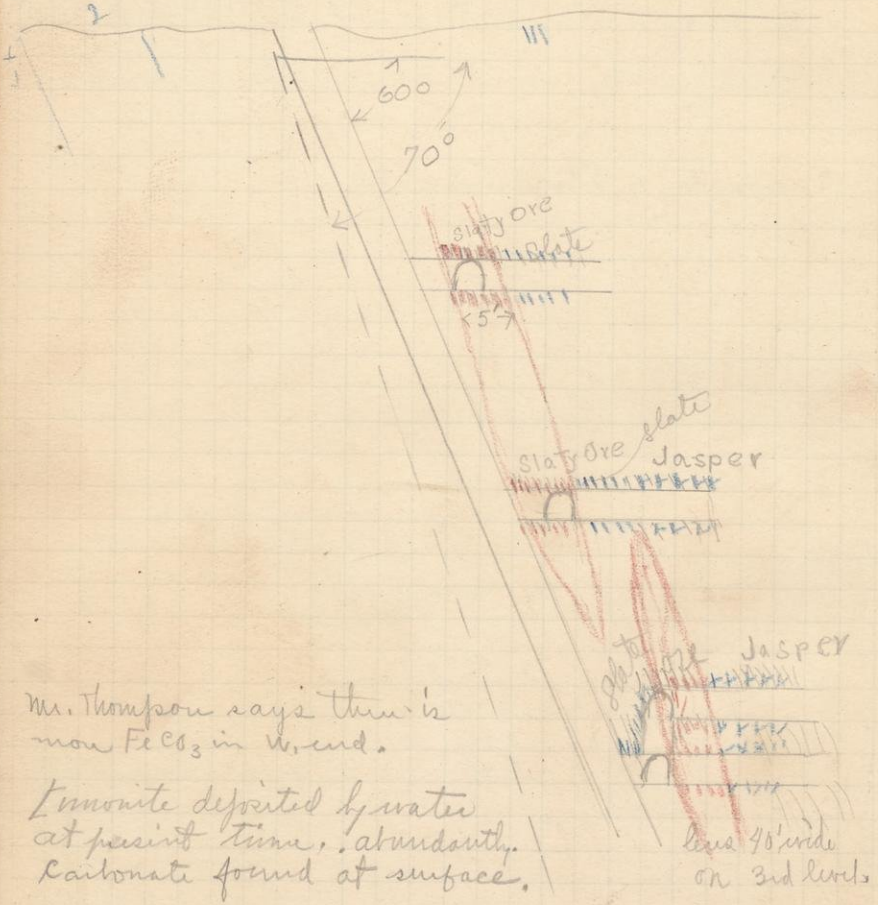
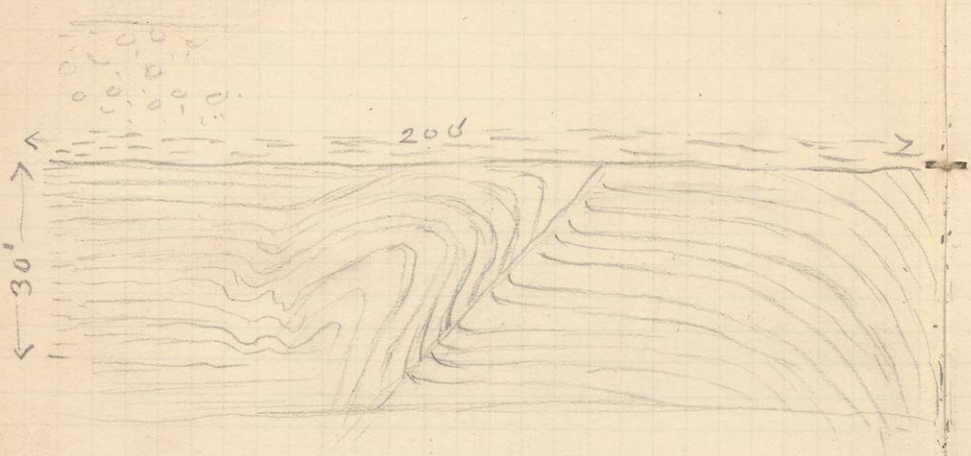


Mr. Thompson says there is
more $FeCO_3$ in N. end.

Limonite deposited by water
at present time. Abundantly.
Carbonate found at surface.


200
30'

Approach to Olson mine.

Dimensions of concretions

Width.		Diff.	% shrinkage
6	2 1/2	3 1/2	
2 1/2	3/4	1 3/4	
3	1 1/4	1 3/4	
3	1 1/4	1 3/4	
10	4	6	60
4	1 3/4	2 1/4	
6	2 1/2	3 1/2	
4"	2	2	50
5	2 3/4	2 1/4	
3 1/2	1 1/2	2	
6	3	3	50
6	1 3/4	4 1/4	
3 1/2	1 1/4	2 1/4	

Sent to Search for analysis

I
- #107 25-57-22
- #301 24-57-22
- #101 25-57-22

2-
- #1 19-58-16
- #2 19-58-16

SiO_2
Al_2O_3
Fe
CaO
MgO
H_2O

Marshall Wells Hardware