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Marquette district: [specimens] 24863-24883. No. 160 1893

Clements, J. Morgan (Julius Morgan), 1869-
[s.l.]: [s.n.], 1893

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U. S. GEOLOGICAL SURVEY
FIELD SECTION BOOK

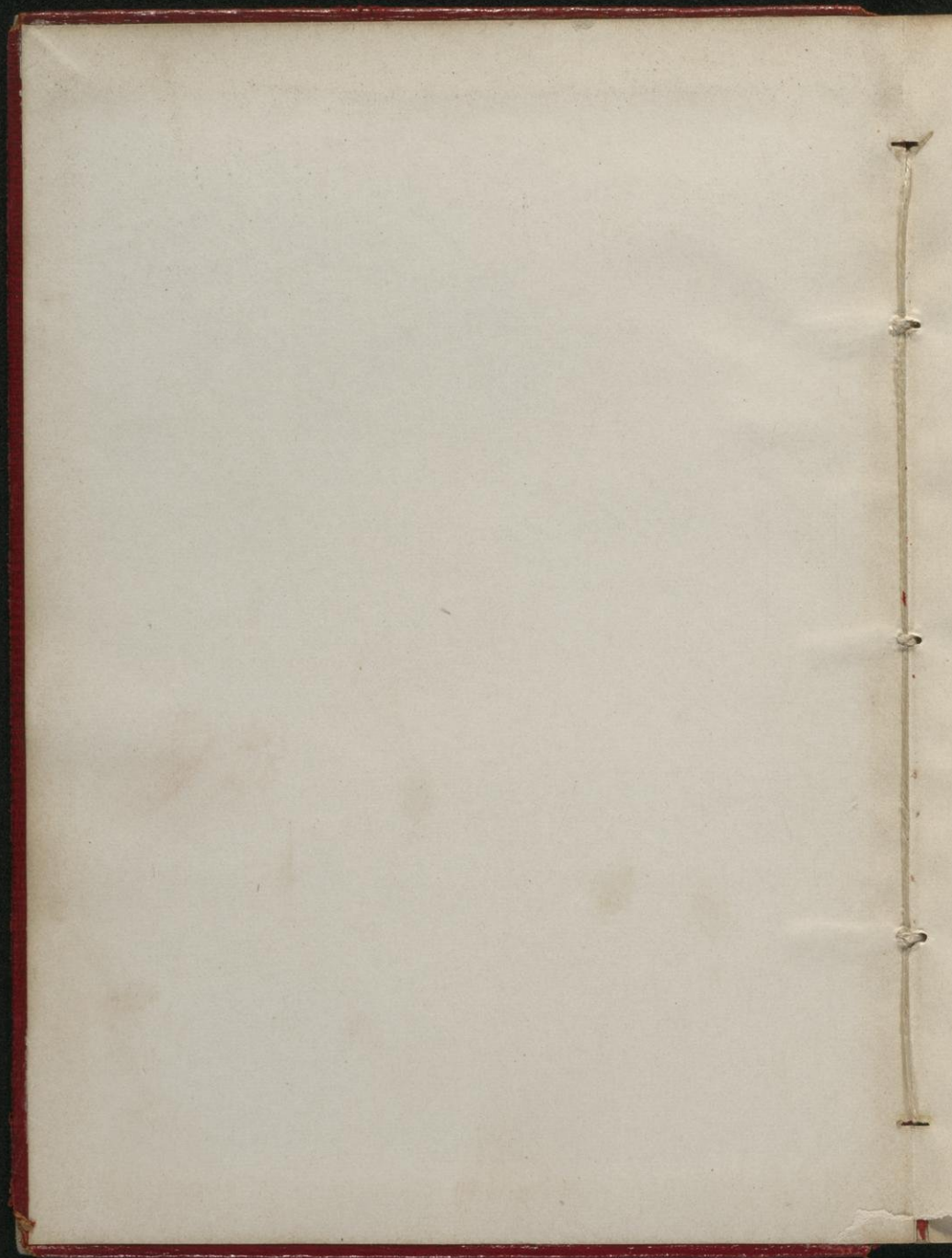
9-891

160

Marquette District.

J. Morgan Clements

1893.



#160

No. 24863-24883

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 ½ 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.

No. 24863-24883

Notes
on
Basement Complex
of
Marquette Area

(Region surveyed
extending from Michigan River
on W. to sand plains (approx C+N.W.R.R.)
on E, and from T 45 on S to
surveyed areas on N.)

J. Morgan Clements
1893

Charles Perry,
Geophysician.

Scale, unless otherwise
noted, is 4" = 1 Mile.

S. $\frac{12}{13}$

T. 46

R. 27

B. L. 24863

C. of sec.

Sec. 11

12

Sec. 7

SW. Cor.

SE. Cor.

NW. Cor.

NE Cor.

C. of sec.

13

Sec. 18

SW. Cor.

SE. Cor.

6-747

Sec. 24

24863 N40 W 1980 SE Cor. Sec. 13-46-27

Here begins outcrop of a medium grained grey granite. I find later that this predominates in this immediate region.

24864 N1930 W30-SE Cor. Sec. 14-46-27

Granite 24864, medium grained grey, cut by dyke of Diabase (P) like 235-99 of Phillips. Same granite occurs in numerous outcrops in SW 1/4 Sec. 12-46-27

N140 W00-SE Cor. Sec. 11-46-27

Granite like 24864 cut by dyke of Diabase like 235-99.

N. 680 W. 0-SE Cor. Sec. 12-46-27

Granite like 24863 cut by granite like 24865-

N. 450 W. 0-SE Cor. Sec. 12-46-27

Gr. 24863, including schist 24861, cut by gr. ^{like} 24865-

N. 375 W. 0-SE Cor. Sec. 12-46-27

Gr. 24864 - including schist 24861 - cut by gr. ^{like} 24865.

24869 N900 W 0-SE Cor. Sec. 13-46-27

Ridge of tan gr. 24869 knobs running little S of E and bounding drift hills to N.

S. $\frac{1}{12}$

T. 46

R. 27

Well Timbered

Table 20.5.5

162456

C. 662480

442467

600

Br.

1.2. 1944

Dr. H. H. H.

On 24/6/2

Lib. 24865

Lib. 24869-

like
24864 cut by Co. like 24865

C. of Sec.

24565

4214368

cut by 90
Ech. 400 4-

E. B. of Escanaba

SW. Co.

SE Cor.

Cor. 24345

NW En

N.E. Co.

Gr.  Lib. 24864

⑤ G. lib 24264

Di. 23600

④ C.
Liber 24864

12
C of Sec

Sec. 7

Gr. 244
lib 24068

Sec. 2

Sec. 11

6—747

24865 N. 80 W. 0-SE. Cor. Sec. 2-46-27

✓ Ledge of granite like 24863 cut by dyke of reddish granite of varying grain.

N. 65 W. 1980 SE. Cor. Sec. 1-46-27

Granite like 24864 cut by rd granite like 24865.

Along N section line Sec. 1-46-27 ledges are quite common and diabase (?) and hornblende schist are almost as common as the granite. Diabase cutting gr. or in bones with no apparent relations + schist included in + cut by granite.

Granite can be seen outcropping to N of us for at least $\frac{3}{4}$ mi.

24866 N. 1990 W. 1325-SE. Cor. Sec. 1-46-27

Outcrop of diabase (?) 24866. No relations!

N. 1975 W. 1120-SE. Cor. Sec. 1-46-27

Granite like 24864 cut by granite like 24865.

24867 N. 2000 W. 600-SE. Cor. Sec. 1-46-27

Large mass of green rock, moderately coarse grained diabase, which farther W. is separated from granite like 24864 by a mass of what appears to be sheared vein quartz.

The same diabase outcrops again at
N2000 W 490-SE Cor. Sec. 1-46-27
near granite like 24865.

N2000 W 400-SE Cor. Sec. 1-46-27
Outcrops hornblende schist like 24851
cut by granite like 24865.

N20 W 360-SE Cor. Sec. 36-47-27
Diabase like 24867 cutting Hb. Sc.

N2000 W 110-SE Cor. Sec. 1-46-27.
Granite like 24863 cut by granite like 24865-

N2000 W 0-SE Cor. Sec. 1-46-27
Large outcrop of granite like 24863
including masses of hornblende schist
and cut by granite like 24865.

N1900 W 0 SE Cor. Sec. 1-46-27.
Granite like 24863 cut by large mass of 24865-

N1665 W 0-SE Cor. Sec. 1-46-27
Granite like 24864 cut by granite like 24865-

24868 N755 W 0-SE Cor. Sec. 1-46-27
Large outcrop of medium grained grey granite.

S. $\frac{8}{17}$
24570

T. 46

R. 26

Sec. 2.
7th Lib 24876

C of Sec.

A cursive lowercase letter 'f' is shown on handwriting paper with blue and red lines. The letter starts with a loop on the left, goes up to the top line, and then curves down to the bottom line, ending with a small hook on the right.

Sec
9

S.W. Cor.

S.E. Cor.

N.W. Cor.

NE Br.

C. of Sec.

1	2
---	---

Sec.
16

SW Co.

SE Co.

Sec. 20

Ran Non Section line 18/17-46-26 passing numerous outcrops of granite such as has already been specimened.

24870

N1000 W.O-S.E. Co. Sec. 7-46-26

Large outcrop of pinkish to grey granite weathering a bright red.

24873

N415 W O S E Co. S17-46-26

Granite medium grained pinkish now and then more of a grey.

N200 W.O-S.E. Co. Sec. 17-46-26

Granite like 24873 enclosing schist like 24871
Same again at

N150 W.O S E Co. Sec. 17-46-26.

Sec. 32-47-26

Sec. 32-47-26

S. 5 T. 46 R. 26

Cor.

N.W. Cor.

Schist is common in N. part of this section & in section north of this!

N.E. Cor.

C. of Sec. 5-

S.E. Cor.

N.W. Cor.

N.E. Cor.

F.B. of Escanaba.

F.B. of Escanaba.

To Cascade

To Farm

Lib. 24570

Lib. 24571

Lib. 24572

Lib. 24573

Lib. 24574

Lib. 24575

Lib. 24576

Lib. 24577

Lib. 24578

Lib. 24579

Lib. 24580

Lib. 24581

Lib. 24582

Lib. 24583

Lib. 24584

Lib. 24585

Lib. 24586

Lib. 24587

Lib. 24588

Lib. 24589

Lib. 24590

Lib. 24591

Lib. 24592

Lib. 24593

Lib. 24594

Lib. 24595

Lib. 24596

Lib. 24597

Lib. 24598

Lib. 24599

Lib. 24600

C. of sec.

0-747

Schist is common in N. part of this section & in section north of this!

C. of Sec.
5-

Sec.
4

C. of sec.

See
9

Sec. 7

6—747

N1800 W0 SE Co. Sec. 7-46-26

Granite like 24870 breaking through and including blocks of schist like 24861. Same again at N1960-W0

N.0 W.0 SE Co. Sec. 6-46-26.

Large outcrop of gr. 24870 including schist 24861; same at N250 W50-SE Co. Sec. 6-46-26.

N.390 W0-SE Co. Sec. 6-46-26

Large dyke of rock like 24866 cutting gr. like 24870. The gr. includes schist like 24861 & 24851.

N695 W0-SE Co. Sec. 6-46-26

Gr. like 24870 including schist like 24861 and same at N.750 W0-SE Co. Sec. 6-46-26. Co. 24870 + Se. 24860 + 61.

N.O W.1470-SE Co. Sec. 32-47-26

Granite like 24870 cutting and including schist.

N.O W1120-SE Co. Sec. 32-47-26

Granite like 24870 including blocks of schist.

24871 N.O W300 SE Co. Sec. 32-47-26.

Here there is quite an area of schist which is very much broken up and contorted and varying from dark to lighter phases. It is cut by a granite like 24865-

S. $\frac{16}{21}$

T. 46

R. 26

C. of Sec.

16

Cor.

G. L. 24573

inclining St. L. 24571

a. G. 24573

L. 24573

G. 24574

inclining St. 24571

L. 24574

24574

L. 24574 +
cut by 24566

G.

L. 24574

Cor.

L. 24567

C. of sec.

21

Running E on section line $\frac{16}{21}$ -46-26
 we find outcrops for most part
 small of granite like 24873 including
 schist blocks like 24871.

24874 N100W 625-SE. Cor. Sec. 16-46-21

Granite medium-grained - very much
 like 24868-70+73 - including schist
 like 24871.

This same granite continues SE of
 above location and also extends
 along E section line of Sec. 16-46-26

S. $\frac{10}{15}$

T. 46

R. 26

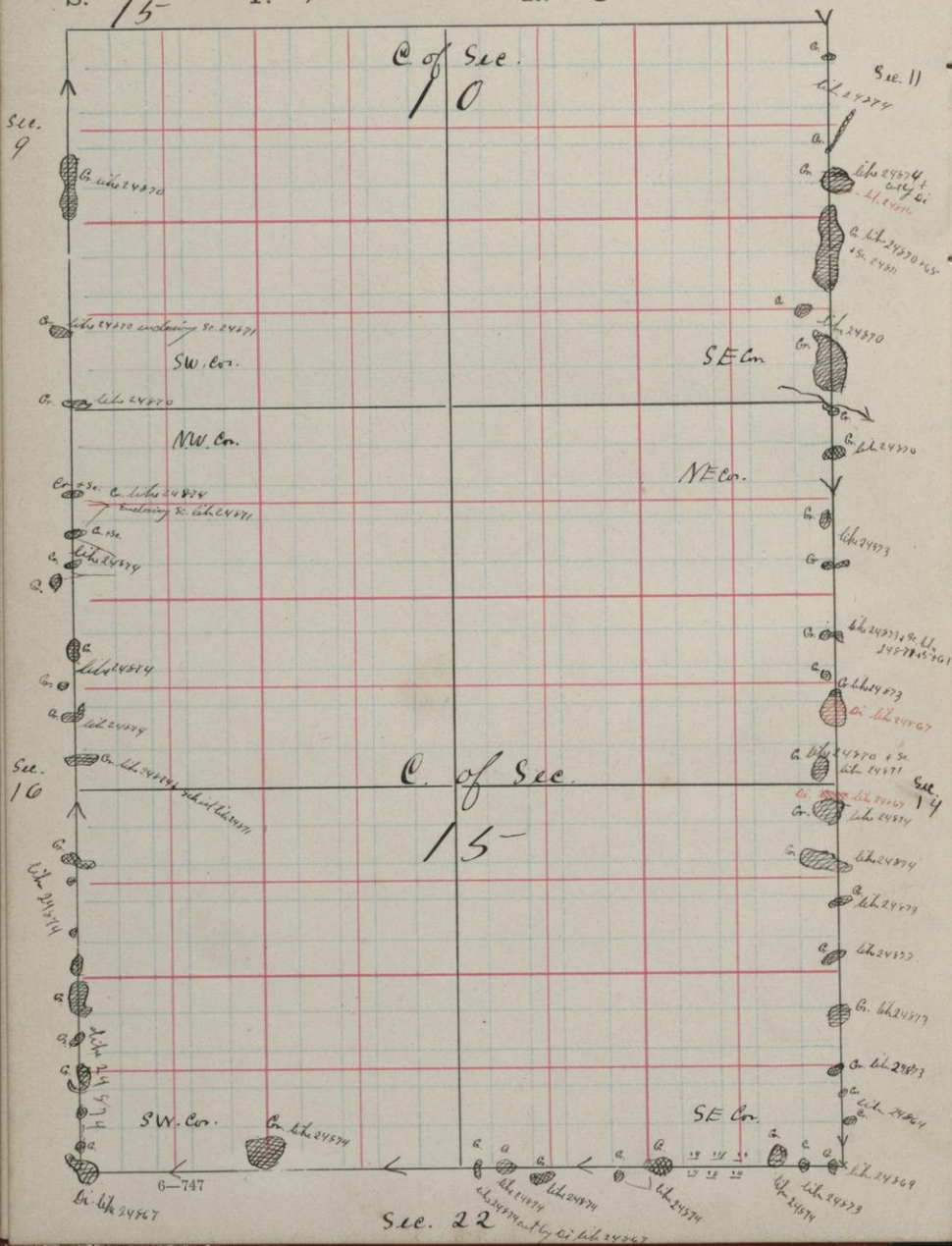
Q. of Sec.

C. of Sec.
15-

Sec. 22

See 1)

See
14



Granite like 24874 extends along Section line 16/15-46-20
in places including schist like 24871
+ in other places cut by diabase like
24867.

Now Section line between 9-10-46-26 the
granite is more like 24870

24875- N1555W O-SE sec. 9-46-26.

Outcrop of granite like 24870 + more it, but relations
not to be seen, hornblende schist 24875-

Running S. on section line 15/14-46-26

we pass a number of outcrops of schist
+ granite, though ~~granite~~ schist
is not nearly so common as farther
north.

Along S. section line of 15-46-26
the granite is like 24874.

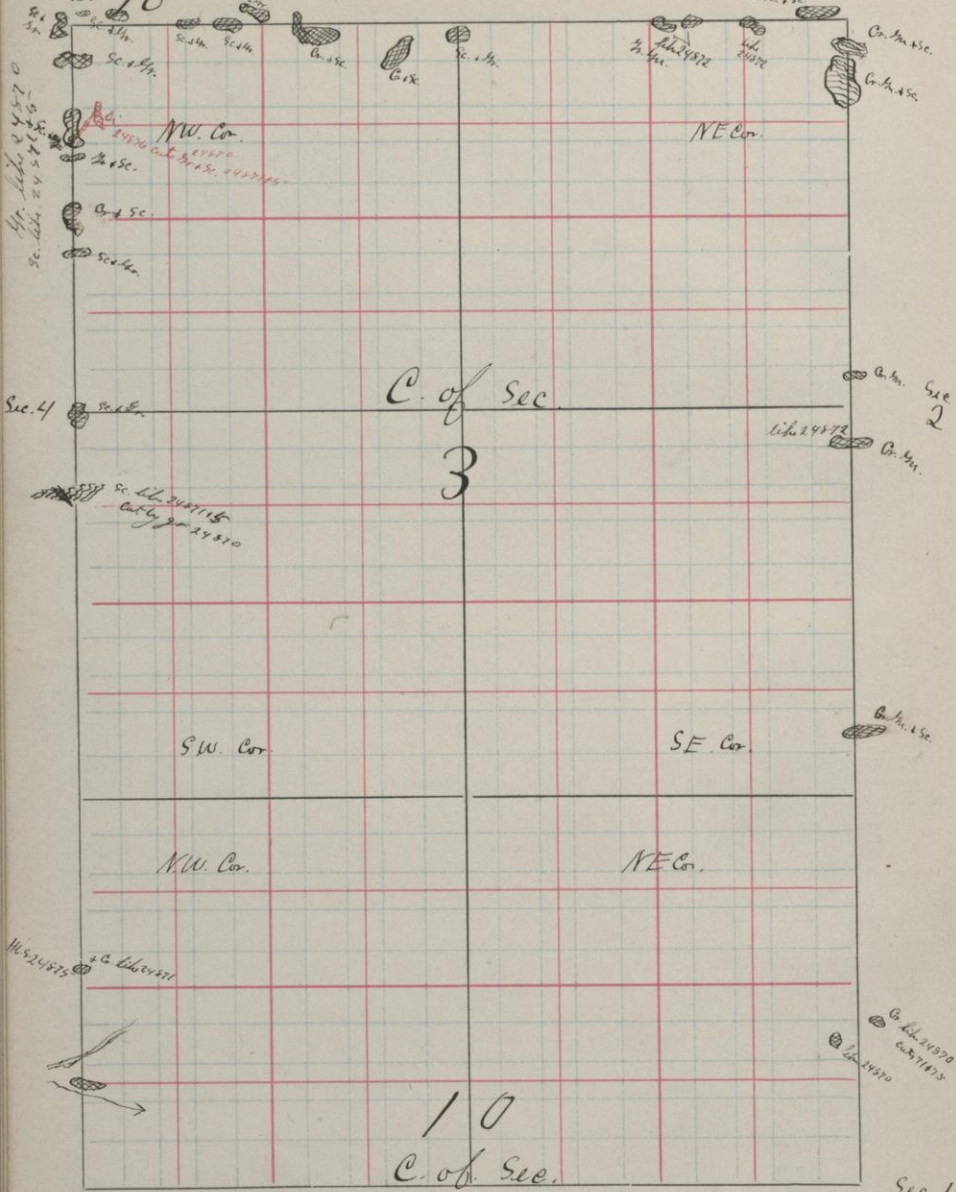
Sec. 34-47-26

S. $\frac{3}{10}$

T. 46

R. 26

Lib. 24477-244



Sec. 9

Sec. 11

Running N. on line between Secs. 4/3-46-26
we come at

N 41° W 10° SE Cor. Sec. 4-46-26

Is an outcrop of basal congl. like that near Platt Mine at Cascade. Outcrop is about 40 paces long E-W by 20 N-S. Test pits have been sunk all around it but nothing on dump heaps but drift. Occurs in a wide valley just on edge of marsh. I think it is only a very large drift boulder as I could find no traces of anything like it anywhere near it.

To the N the outcrops are almost exclusively of schist like 24871+74 cut by included in granite like 24870

24876

N 72° 25' W 0° SE Cor. Sec. 4-46-26

Large outcrop of schist, alternating beds like 24871+57, cut by granite like 24870 & both schist + granite cut by diabase 24876.

Running E on N. section line Sec. 3-46-26

the outcrops are of schist like 24871+74 ^{Some 24861} and some gneissoid granite like 24872, especially in NE Cor. Sec. 3. Schists are cut by granite like 24870. In general schist has E-W strike & dip 45° to N. Predominates over gr.

Running Son S. line 3/2-46-26

we pass large outcrops of schist like
24861 + 71 + 75 ²⁴⁸⁶¹ cut by granite like 24865 with
a strike SE dip 40° NE

These rocks continue on to S.

N. 140 W. O.S.E. Cor. Sec. 3-46-26.

Ridge of gneissoid granite like 24872 +
schist like 24861, 71, 75

Son Section line 10/11-46-26

Going S. we pass schist cut by granite at
locations indicated on map.

N. 400 W. O.S.E. Cor. S. 10-46-26

Granite like 24870 enclosing masses of schist
like 24871 + cut by granite like 24865.

S. $\frac{14}{23}$

T. 46

R. 26

C. of Sec.
14

Cr.

lib 24567

a.

b.

lib 24569

a.

lib 24568

a.

b.

a.



Brachiozoum

lib 24570
including 24561
cutting lib 24559

lib 24571

Cr.

C. of Sec.
23

Ran E along S. section line 14-46-26
Granite, for most part rather
coarse grained like 24869.
In few places outcrops finer
grained granite like 24873174
with schist like 2487185.

S. $\frac{12}{13}$

T. 46

R. 26

C. of sec.
Sample 2 Plains.

Pine Plains.

Sand Plains.

C. Lh. 24520

C. + Sc.

C. Lh. 24520

C. + Sc.

C. + Sc.

C. + Sc.

C. + Sc.

C. Lh. 24527

C. Lh. 24520

C. Lh. 24520 cut by 24526

1"

1"

1"

Sc. + Gr.

C. Lh. 24527

C. + Sc.

C. Lh. 24527

C. + Sc.

C. + Sc.

C. + Sc.

Unconformably 24525

Unconformably

Unconformably 24525

C. Lh. 24527

C. Lh. 24527

C. Lh. 24527

C. Lh. 24527

C. Lh. 24527

C. Lh. 24527

C. Lh. 24527

C. of sec.

13

E. Br. of E. Canaba

C. Lh. 24525

C. Lh. 24527

C. Lh. 24527

C. + Sc.

C. + Sc.

C. + Sc.

C. + Sc.

C. + Sc.

C. + Sc.

C. + Sc.

C. + Sc.

C. + Sc.

C. + Sc.

C. + Sc.

C. + Sc.

Sec. 24

Running N on W. section line Sec. 13-46-26

We pass outcrops of granite like 24877 cut in places by a granite like 24865-

N. 670 W. 0 SE Cor. Sec. 14-46-26

We come to schist like 24871-24875 included in ²⁴⁸⁷⁰ N 875 W 1880 - SE Cor. Sec. 13-46-26

Schist like 24871 & 4 cut by 24874 set in turn cut by 24865-

N 11725 W 0 SE Cor. Sec. 14-46-26.

Tr. like 24874 & schist like 24871 & 4.

N 1270 W 0 SE Cor. Sec. 14-46-26

Schist like 24871 & 5 - cut by 24865-

N 1400 W 0 - SE Cor. Sec. 14-46-26

Schist like 24871 & 5, strike about E-W, dip N 35°, cut by 24877

N. on ^W section line 12-46-26 we pass large outcrops of schist like 24861, 71 & 75 cut by granite like 24870 and then come to fine plainst N. 900.

Along S. section line S-13-46-26 we find granite like 24877 predominating but frequently inclosing and cutting large masses of schist like 24860, 61, 71 & 75-

24877 N. 0 W. 1730 - SE Cor. Sec. 13-46-26. Medium grained grey granite.

N. 0 W. 1445 - SE Cor. Sec. 13-46-26

Outcrop of granite like 24877 inclosing & cutting schist like 24860, 61 & 71 & both cut by granite like 24865-

S. $\frac{1}{12}$

T. 46

R. 26

Plains

S.

Sand



Gr. Sec. No.

Co.

Sand Plains

C of Sec.
pt
Sand

Sand

12
C of Sec.12448
G. Bu.G. Bu.
SC
F400

Set G. Bu.

Along E section line of 13-46-26

See field large outcrops of schist like 24871, 75+78 cut by a granite like 24865.

Sec 12-46-26

This section is most of it covered with sand & with outcrops in SW $\frac{1}{4}$ and few isolated knobs surmount of it.

N1030W125-SE cor. Sec 12-46-26

Isolated outcrop of gneiss & schist like 24871, 75, 78+79 cut by granite like 24865.

N435-W115-SE cor. Sec-12-46-26

Outcrop standing alone in sand plain of schist like 24871 cut by granite like 24865.

Section 1 is a low sand plain, few jack pines, with isolated outcrops for most part low & rounded of schist & gneiss like specimens 24871, 75, 78+79 cut by granite like 24865.

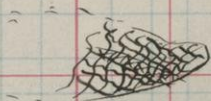
R. 26
S. 35/36 T. 47

Co.

Co.

Sand plains N to
GOOSE LAKE.

Range Line.

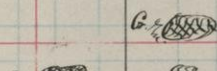


Cr. + Sc.



Cr. + Sc.

Cr. + Sc.



Cr. + Sc.

Cr. + Sc.

Cr. + Sc.

Sand Plains

C. of Sec.

C. of Sec.

Sec.
31

35-

36



Cr. + Sc.

Sand Plains
with

Isolated Knobs of Cr. + Sc. in
TOWN LINE.



24879

Cr. + Sc.

171-0

Sec. 2

Sec. 1

Co.

Co.

The Northern limit of the barrenet complex is reached in Sec. 36-47-26 and the rounded isolated outcrops as located on map consist of schistose rocks, hornblende schists & gneiss like specimens 24871, 75, 78, 79 cut by granite like 24865-70.

General strike of schist seems to be about SE dipping NE.

No more ledges were seen to N. of those located, that is, between them and the range of hills just S of Goose Lake. N1300 W1855 SE Cr. Sec 36-47-26.

Low rounded outcrop of schist like 24871+75 cut by granite like 24870.

24878 N1250 W1200 SE Cr. Sec. 36-47-26

Rounded outcrop of schist like 24871+74, gneiss like 24872+78 & granite like 24870.

24879 N400 W0 SE Cr. Sec. 36-47-26

Ridge of 24871, 75, 78+79 cut by gr. 24865 & this cut by diabase like 24867

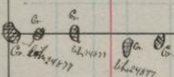
S. $\frac{18}{19}$

T. 46

R. 25

C. of Sec.
18

C. Cor.





C.

Lh 24950



Cor.

C. Lh 24950 + sec. Lh 24971 int.

E. Br. of Escanaba

C. of Sec.
19

Running E on section line $\frac{18}{19}$ -96-24
we find the predominant
granite is a medium grained
grey granite like 24877.

Sec. 8

Cor

Sec. 9

Co.

Sec.
18

Sand Plains.

G.

2458142

sc. 16

24875

2471175

40

sc. 16 24871175
Cutty 34000

sc. 16 24871

0. 16 24871175
sc. 16 24871175

46

T.

0. 16 24871

S. 17/16

Co.

G. 16 24871

24871

G.

0. 16

24871

24871

24871

24871

24871

24871

24871

24871

C. of Sec
17

C. of Sec
16

Camp

Cor

Cor

Cor

G-747

Running N. on W. section line
 Sec. 17-46-25 we pass at first
 over outcrops of granite like
 24880 and then come into a
 zone of schist like 24871+75 cut
 by gr. 24880.

24880

To the N of these ridges of schist
 begin the sand plains with
 here and there bare glaciated
 outcrops of schist and gneiss
 cut by granite.

24881-2

N. 15-40 W. 0 S E Co. Sec 18-46-25

Small outcrop of granite like 24877 cut
 by red granite. 24881+82. No. 24881 is
 a coarse phase of 24882, latter predominating

Sec. 5-

Sec. 4

Con

C₁₂

Same!

2487155 cut by 8.2

same!

$248715 = 15 + 9$ only 24852

Gr. In. lib. 24375-9
cont by Dr. lib. 24382

2482549 cut by 24882

Q. G. lib. 24874

lib. 24578-9
Conty 74

24575-9
Gr. 9m.

~~C+N-W.R.R~~

6. 4h 24m 30s

G. Gr.
cut by G.

C. of sec
F

~~C of Sec~~
9

Sec. 17

Sec. 16

Con

Cor.

Sec. 7

R.

三

შ

6-747

Along W. section line of Sec. 8-46-25-
the predominating rock is, as is
shown on map, gneiss & schists
cut in places by various granites.
The outcrops are low, rounded.

General strike as well as could be
determined was to SE dip NE,
latter not at all regular as beds
are very much bent & twisted in places.

Co.

Co.

Sand Plains N. To Goose Lake Hills!

Sec. 6
R. 25-

24 miles east of S.
T. 46

S. 5-4

Co.

C. of Sec
5

C. of Sec
4

C. + N.W. R.R.



G.C. + S.
Attyla + M.

Sec. 8

Co.

Sec. 9

To the W. of W. section line sec. 5-46-25 at
 N650 W200 + N850 W300 are outcrops of
 contact schist like 24871+5 - cut by granite
 like 24882. No more outcrops show
 between these locations and the hills
 just S of Goose Lake.

I then wandered the NE edge of
 the granite to determine the boundary.
 Line run as indicated on maps
 and ledges located as on maps.

The ledges consist of gneiss and
 schists like No. 24871, 5, 8, 9, 83 cut in
 places by granite like 24882 + diabase
 like 24867. Strike of the schist is
 in general SE. Outcrops appear
 as low flat ledges easily overlooked
 on the plain or in few cases as
 low rounded knobs.

$$\begin{array}{r} 910 \\ \text{S. } 16 \overline{) 15} \end{array}$$

T. 46

R. 25-

C of suc.

C of Sec.
10

Sand Plains

C + M + M + R + R

Sc. 4. (2)

C of Suc

16

Col Sec.
15-

Set. Co.

Sand Plains.

6-747

Cor

24883 N1200 W275-SE Cr. S16-46-25-

Outcrop of gneiss like 24878 + gneiss
like 24883 all cut by granite like 24882

S. 15-

T. 47

R. 25-

Sand of sec.
15-

Plains

Rough sand Hills.

Before coming in at end of season
ran W, S & E, section lines of
S 15-47-25 and also to W in S. 16
in order to see whether the hills
south of Lake Mary (in Sec. 9-47-25)
were granite or sand.

Found no granite outcrops at
all on runs.

On E section line one run now
and then a boulder of Potsdam
sandstone but no rocks in situ.

The Barreault Complex area examined by me in Sept-Oct 1893, with S. F. Phillips as Assistant, extends, in general, from the Michigamme River on the W to the sand plains on the E (C+N-W R.R. approx E. boundary), and from T⁴⁵ on the S to an irregular line on the N, joining the previous surveys which have been made of the Marquette Iron Area.

The region under consideration is heavily drift covered and contains no high hills. Hills pretty generally of same height and alternating with numerous swamps + marshes. The roughest portion of the country is that along the northern boundary.

The SW part of T⁴⁶ from Michigamme River on W, to about half way across Range 27 on E, is drift covered - E part nearly flat - and bare of outcrops, one showing now and then in N. part along water courses.

The predominant rock is of course massive granite which appears in oval, flat, or rounded outcrops on the summit of the hills or at the foot of them, on the sides of the streams and marshes.

Beginning in the West about Sec 19-47-29 there seems to be a zone in which a coarse granite — for the most part grey though in places pinkish-predominates, which runs S.E. and then runs to the E on about 2 to 3 miles south of N. line T⁷ 46.

To the N of this there is then apparently a zone of finer grained grey & reddish granites containing numerous masses of schists (hornblende for most part) which are ~~cut~~ cut by the granites. Cutting both granites and schists we find dykes of basic rocks (diabase?) varying from fine to coarse grained.

Farthest from centre we then find a third zone in which the schists predominate and in which the granite appears chiefly in moderately fine grained red dyke granites cutting the schists. All again cut by the basic dykes.

This schistose zone is quite marked on N.W. border and then just South of Cascade. Also along NE boundary of granite area, the outcrops in the sand plains consisting almost exclusively of schist and gneiss.

