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Marquette district: [specimens 24720-24751]. No. 162 1893

Phillips, H. F.

[s.l.]: [s.n.], 1893

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U. S. GEOLOGICAL SURVEY
FIELD SECTION BOOK

9-891

162

Marquette District

H. J. Phillips

1893

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 $2 \times 2\frac{1}{2} \times \frac{1}{4}$ 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. 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.

#162

160

Book 1-1893

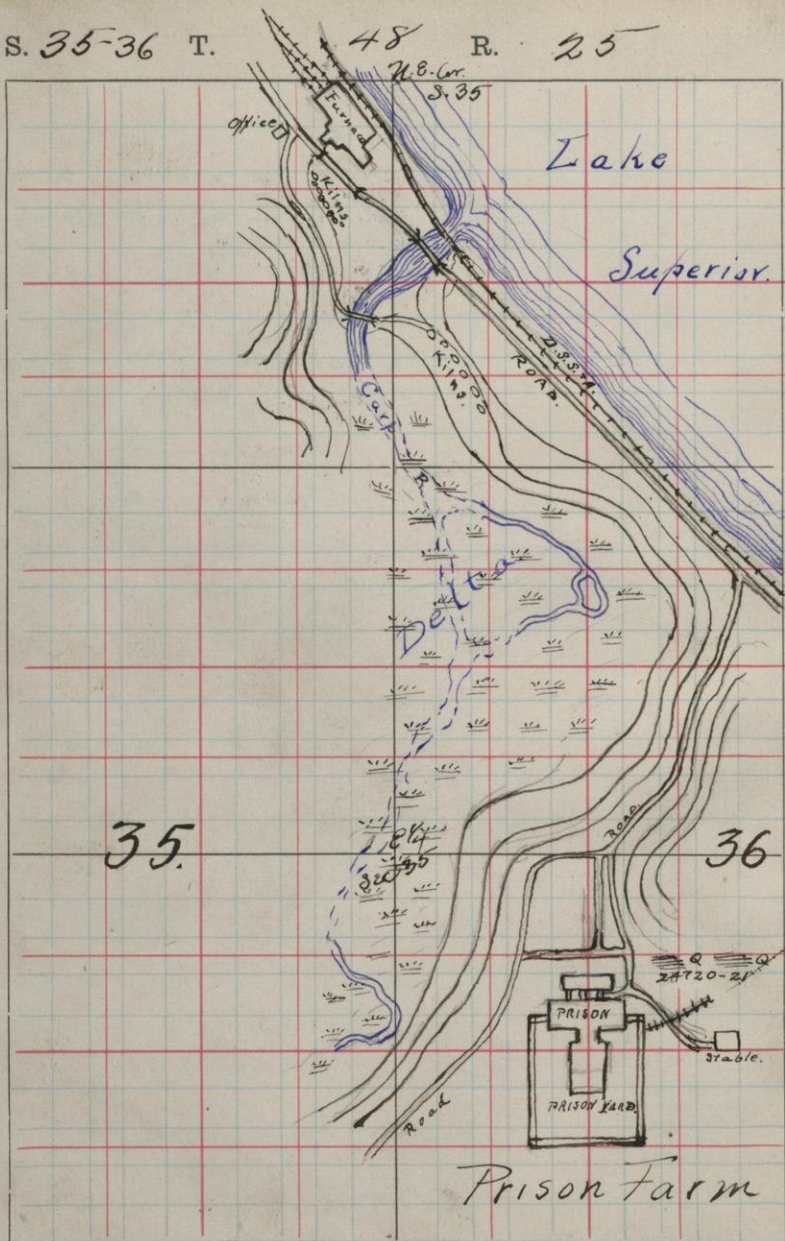
H. F. Phillips

S. 35-36 T.

48

R.

25



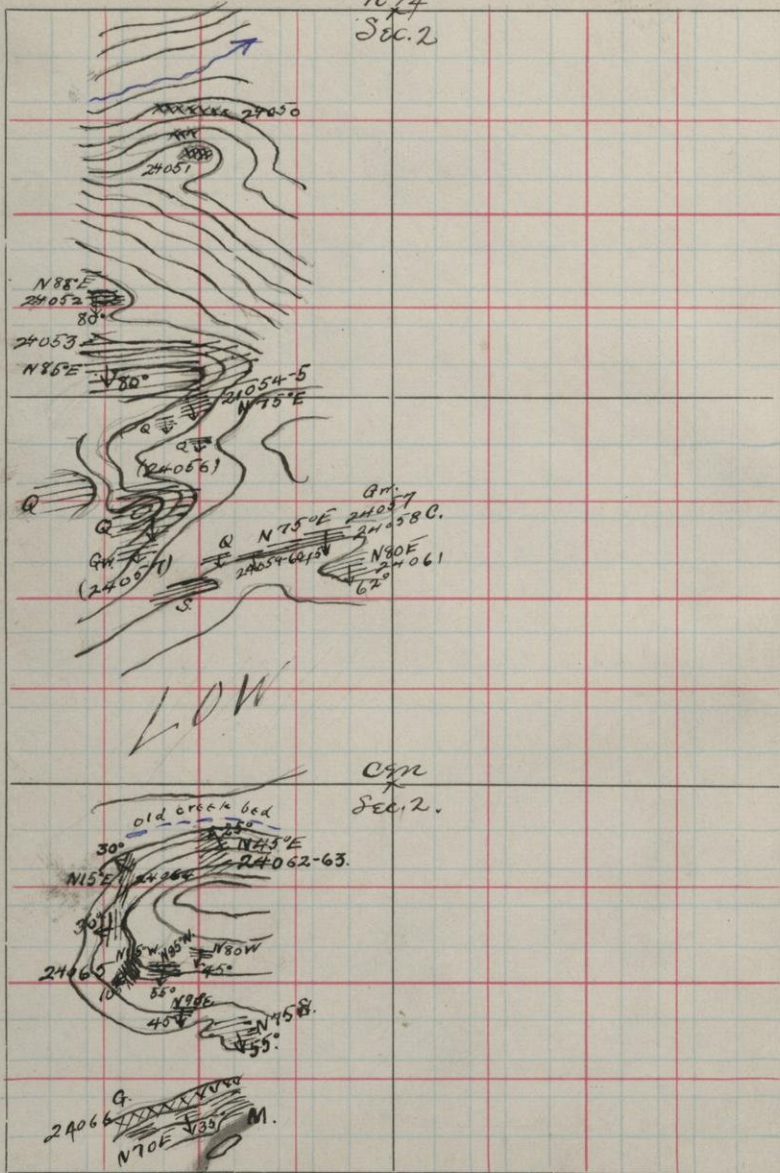
1
Course runs south 500 paces
from N.E. Cor. Sec 35-48-25.

The "delta" of the Crook R.
was offset around and the
section line again picked
up at E $\frac{1}{4}$ Sec. 35-48-25.

Thence section line was
followed south to S.E. Cor
Sec. 35-48-25 where bearing
tree was found.

Country most entirely
dirt covered. Exposures of
24730-21 Schistose Quartzite (24720-21)
as shown on map. For descrip-
tion see Clements notes.

S. 2 T. 47 N. R. 25
 SEC. 2



Course running S. from 750 paces
East of N.W. Cor. Sec. 2-47-25.
(See also Bayley's notes.)

24050 1880 N 1270 W. S.E. Cor. Sec. 2-47-25
Fine grained schistose greenstone
but mass of exposure is com-
posed of a coarser greenstone.
as seen at 1835 N 1260 W.

24052 1640 N 1350 W. Sec 2-47-25.
Vitrous quartzite with schis-
tosity having $S. N 88^{\circ} E \div D 80^{\circ} S$,
which probably conforms
with the bedding though no
evidence of this has been here
but in the narrow ridge cut

24053 1540 N 1250 W $S. N 85^{\circ} E \div D 80^{\circ} E$.
The bedding and schistosity
are conformable. This strike
is for the main mass. Mr Smith
notes it as striking more to the
north on the eastern end with
some change in dip (see Bayley's notes)

24054 1500 N 1250 W occurs a band of
slates apparently interbedded
in the quartzite the contact
line having $S. N 75^{\circ} E$ and stand-
ing about vertically.

- 24055 is from a narrow band of interbedded quartzite in the slates
- 24056 The quartzite again occurs the south in large quantities with no slates. It has the same general ex. strike and steep southern dip. On the south side of large knob of quartzite at
- 24057 1300N 1300W gray wacke slate appears. At this point there would seem to be a gradation between the two but the east at
- 24058 1375N 1075W appears a conglomerate between the quartzite and gray wacke slate with chert and what also appears to be jasper pebbles. The quartzite, conglomerate and gray wacke slates are in apparent conformity the strike along contact plane of quartzite and conglomerate being $N 75^{\circ} E$ and $D 45^{\circ} S$. This bed of conglomerate is but a few inches thick and apparently grades in the gray wacke slate above as shown by the

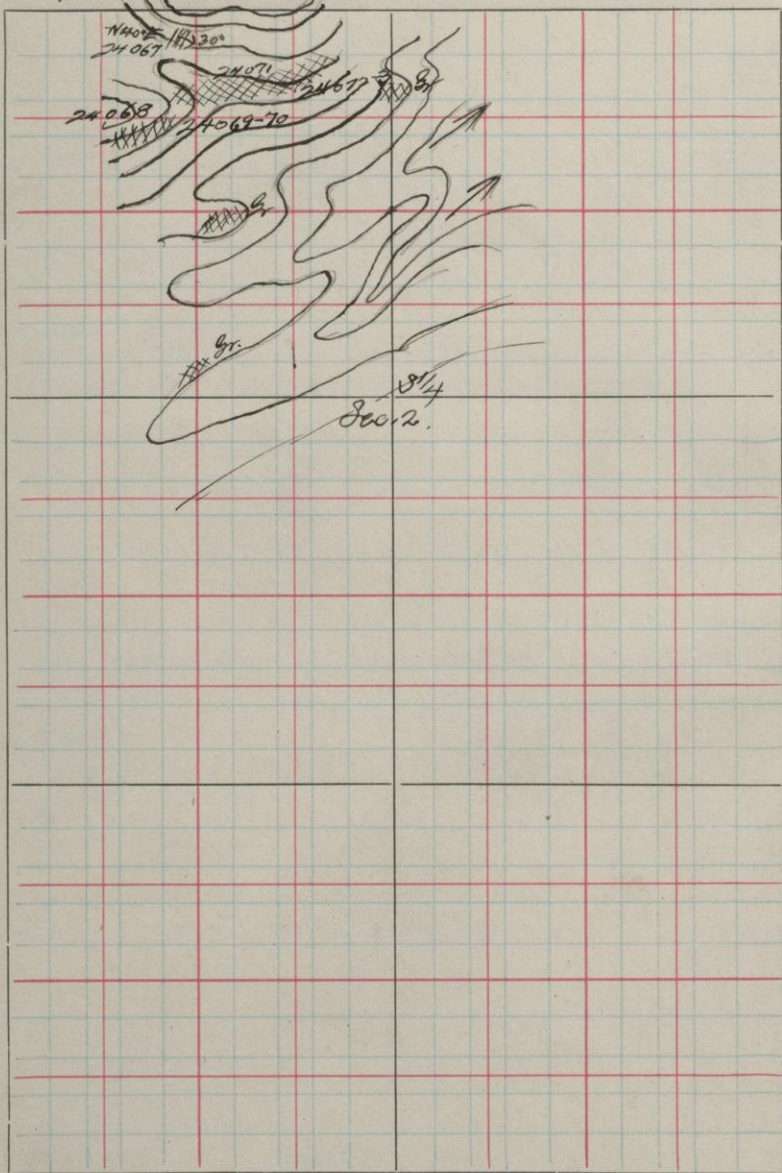
- 24059 alternation of the slate and re-
composed or quartzitic bands. Im-
mediately above this are the
24060 slates in which, to the south,
24061 occur interbedded bands
striking $N 80^{\circ} E$ with $D 62^{\circ} S$.
of calcareous quartzite.

At 950 N, 1250 N. S.E. 2-47-25
is a large knob of the marble
series being mostly inter-
bedded slates and quartzites
24062-63 having ex. vertical schistose planes.
The knob appears to

Narrow strikes and dips were
taken to show structure. At
950 N 1230 N-S-N 45° E $D 25^{\circ} NW$.
935 N 1350 N-S-N 15° E $D 30^{\circ} W$.

- 24064 At this point the limestone becomes
more abundant. The western slope
of the knob is most entirely
quartzite which in one place
24065 shows a peculiar fluting which
may be ripple marking. It is at
775 N 1300 W and has $S N 15^{\circ} W$ & $D 10^{\circ} W$.

S. 2 T. 47 R. 25



It is well up on the knob which
 probably accounts of the low dip
 775 N 1300 W - S - N 85° W + D. 55° S
 790 N 1250 W - S - N 80° W + D 45° S
 710 N 1275 W S N 90° E + D 45° S
 The top of the knob or ridge is
 composed mostly of slates which
 lie nearly flat. Along the north
 and south slopes as traced east
 the rock as general E.W. strike
 and corresponding north or south dips.
 Well down the south slope at
 1680 N 1275 W there is S. N 75° E D. 55° S.

At 600 N we come to another
 knob of the marble series. On
 the north side at base of knob
 24066 a diabasic dyke appears.
 Just south comes the quartzite
 580 N 1250 W with S. N 70° E + D 35° S.
 This is followed the south by
 interbedded limestone and
 quartzite but no slates. The
 talus of quartzite hides the contact
 with diabase (24066).

- 24067 460 N 1280 W S. N 40 E D 30° SE
Exposure mostly of limestone.
At 460 N 1250 W the hard
massive, cherty quartzite ap-
24068 pears with brecciated portions
containing fragments of a red
and white banded quartzite.
Just south of this appears
24069 the granite, almost a porphyry,
24070 and the greenstone. They are
probably in contact with the
quartzite along this slope
but it was not observed.
In close proximity to the
24071 quartzite appears 24071, proba-
bly the much sheared granite or
"white schist." To the east at
24072 400 N 1110 W a red granite ap-
24073 parently cuts the quartzite
though possibly the latter is
more material. It appears
however to grade back into the
massive vitreous quartzite.
No trace of a conglomerate was seen.
Outcrops of granite at 250 N 1225 W,
50 N 1250 W and 400 N 1200 W.

S.

2

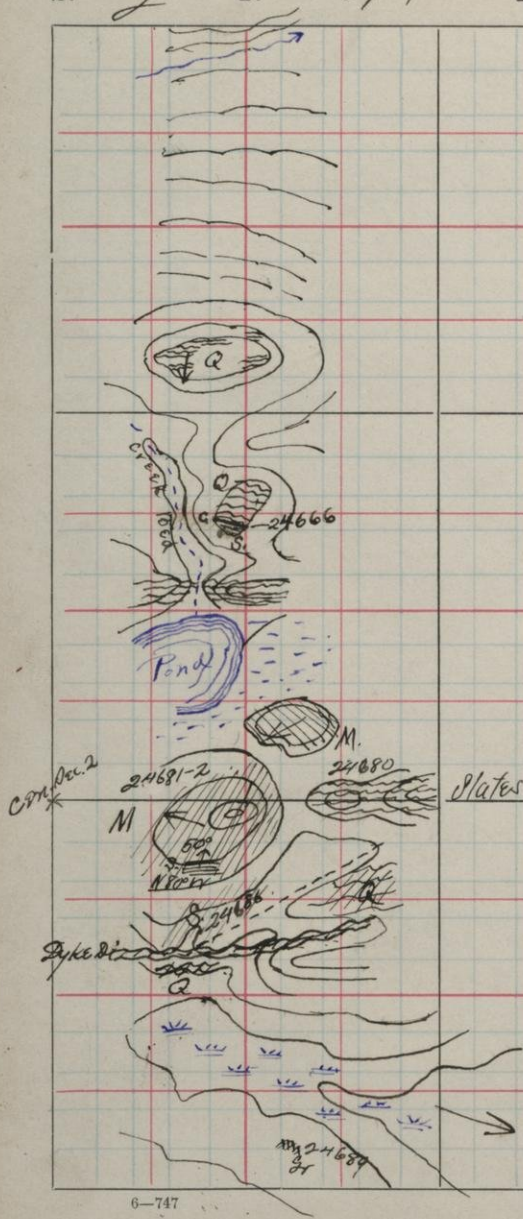
T.

47

R.

25

M. E. Gov.



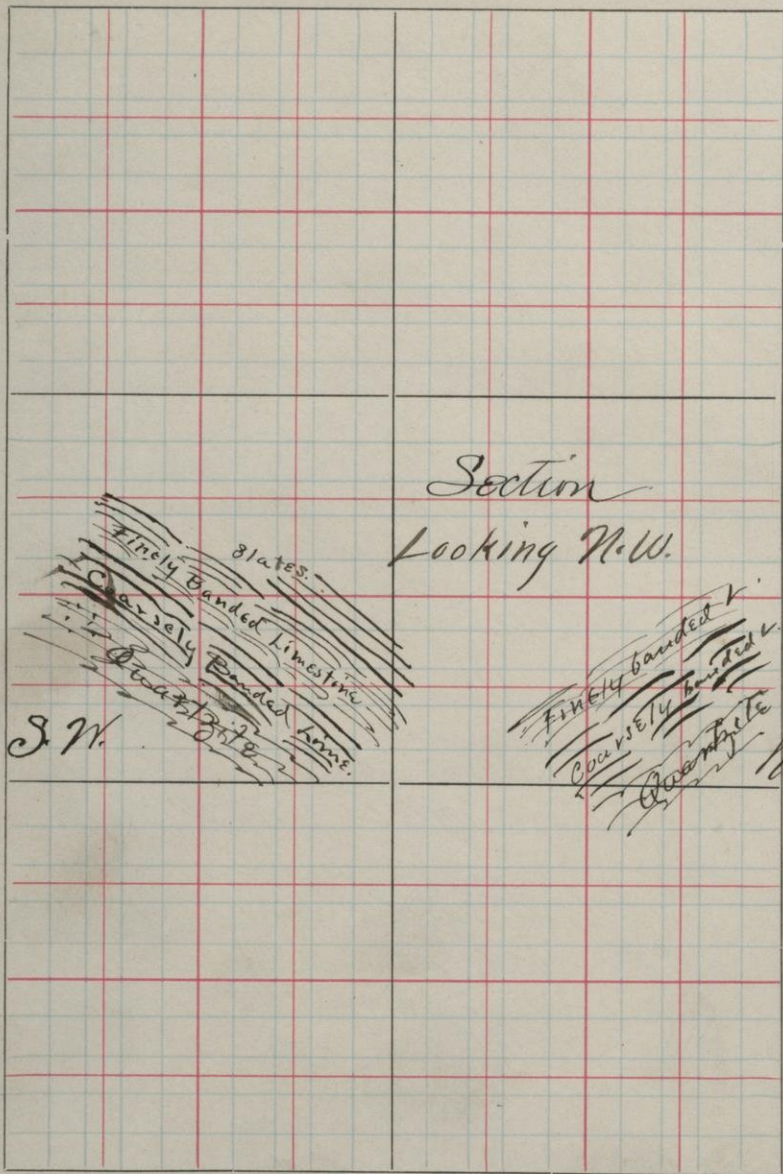
Course running South from 750 N.W. cor. 2
(See also Clements notes)

Quartzite forms a knob at 450 south where no structure where no structure can be made out further than the schistose beds with the general E-W strike and southern dip which probably agree with the bedding. At 600 south the quartzite again forms a knob on the south side of which the slates appear in contact with the quartzite. Along the contact plane is a narrow bed of conglomerate (or breccia) striking N 80° W with dip of 60° N. The slates are much contorted but in my judgement have a general southern dip. The unusual dip of the conglomeratic bed, ~~together~~ the angular appearance of the fragments indicate that it may be a brecciated band. A somewhat similar band occurs along an undoubted slipping plane in the quartzite.

S.

T.

R.

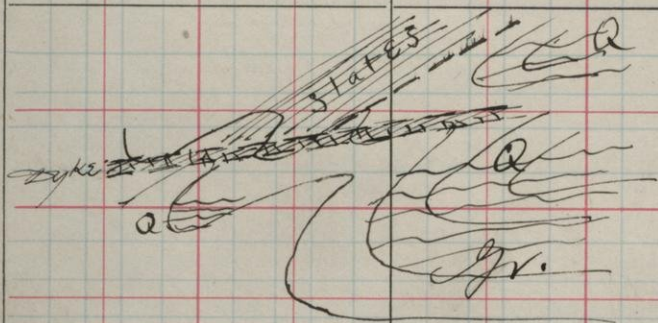


The slate in the ridge at
 24667 1275N 750W S.E. Cr. 2 is dense and
 black and shows no bedding
 but has an approximate ex-
 stinct schistosity. It is in-
 24668 terbedded with siliceous and
 calcareous bands. East of
 line at 890 S the marble series
 forms a knot which as seen on
 24669 the north side is composed of limestone,
 24670 fossiliferous calcareous quartzite,
 24671 and the slates having a general
 S.E. and N.W. strike dipping
 to the S.W. Figure shows
 N.E. & S.W. section looking NE 
 S.E. showing banding of the
 beds. the average dip being 35° to 40° .
 The knot at 1000 north is form-
 ed of the same series but
 has a general strike east of
 north and gentle dip north of
 west. The different members
 of the series may be traced
 over to those of the knot at
 890 S. This is shown in the
 figure on the opposite page.

S.

T.

R.



Plat showing diabase dyke
as it leaves the slates of the
marble pries and enters
the quartzite.

The point of the ridge of quartz-
ite is at 825 N-790 W S.E. cor.
Sec. 2-4 N 20

There has been considerable minor folding and consequently almost any strike and dip is attainable.

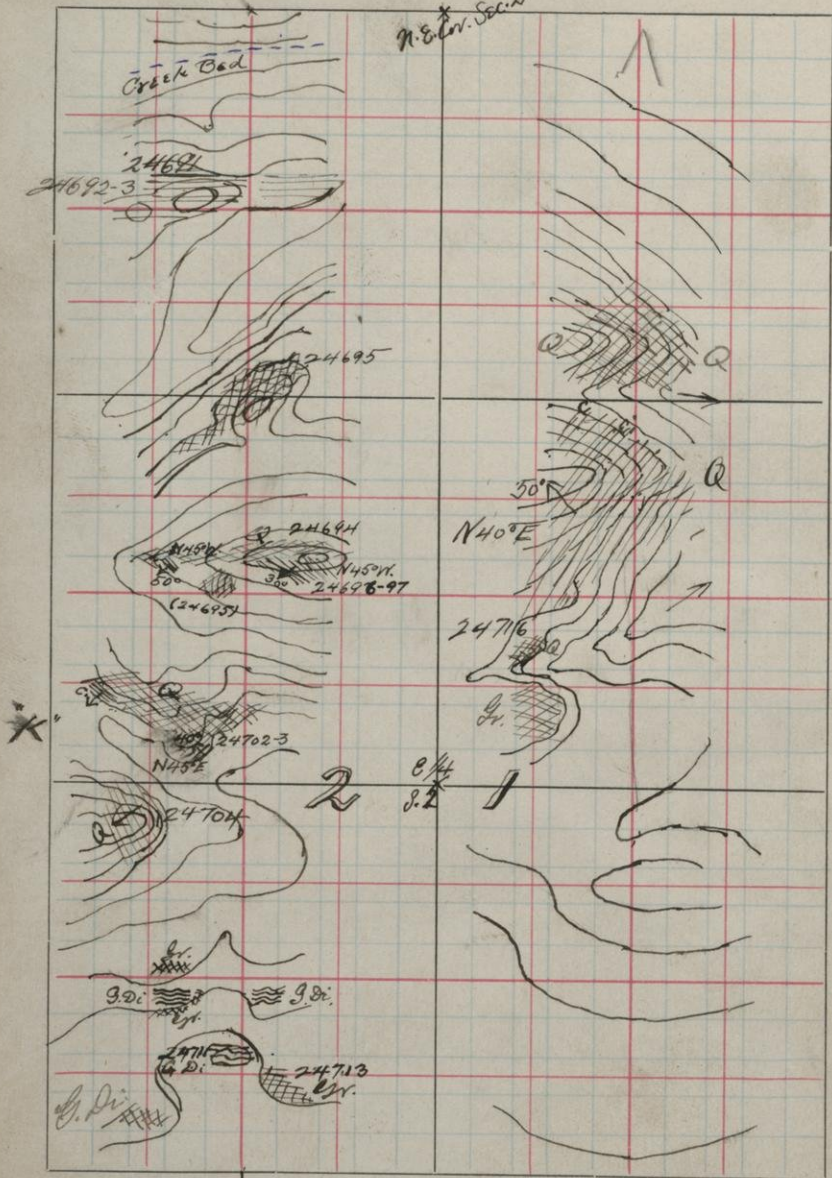
At 825 N 790 W S. 2-47-25 is a
 24685 dyke of diabase which is con-
 24686 tact with the slate and at
 this point is the western
 end of the quartzite that is
 to the north of the dyke but
 the direct contact of it with the
 diabase or slate is not exposed.
 The diabase near the contact
 24685 is finer grained and more
 altered than the main mass

N.B. Two specimens numbered 24685
 one shows fine grained phase
 the other the coarse phase.

South of this at 790 N. comes
 in the quartzite with granite
 just to the south of it.

S. 2-1 T. 47 R. 25

N.E. Sec. 2



Course running south from 250
paces west of N.E. Cr. Sec. 2.

(See also Clements notes)

At 2255. is a ridge of quartz-
ite on the north side of which
24691 occur some cherty "shale-slates"
The slates and quartzite have
been considerably sheared
24692 and bent producing a nor-
24693 ulitic phase in the quartzite
and some brecciation and
minor faulting.

At 525 south the quartzite
forms a knob on the north slope
of main ridge. Here it has
24695 a small spotted staining
probably due to an iron oxide.

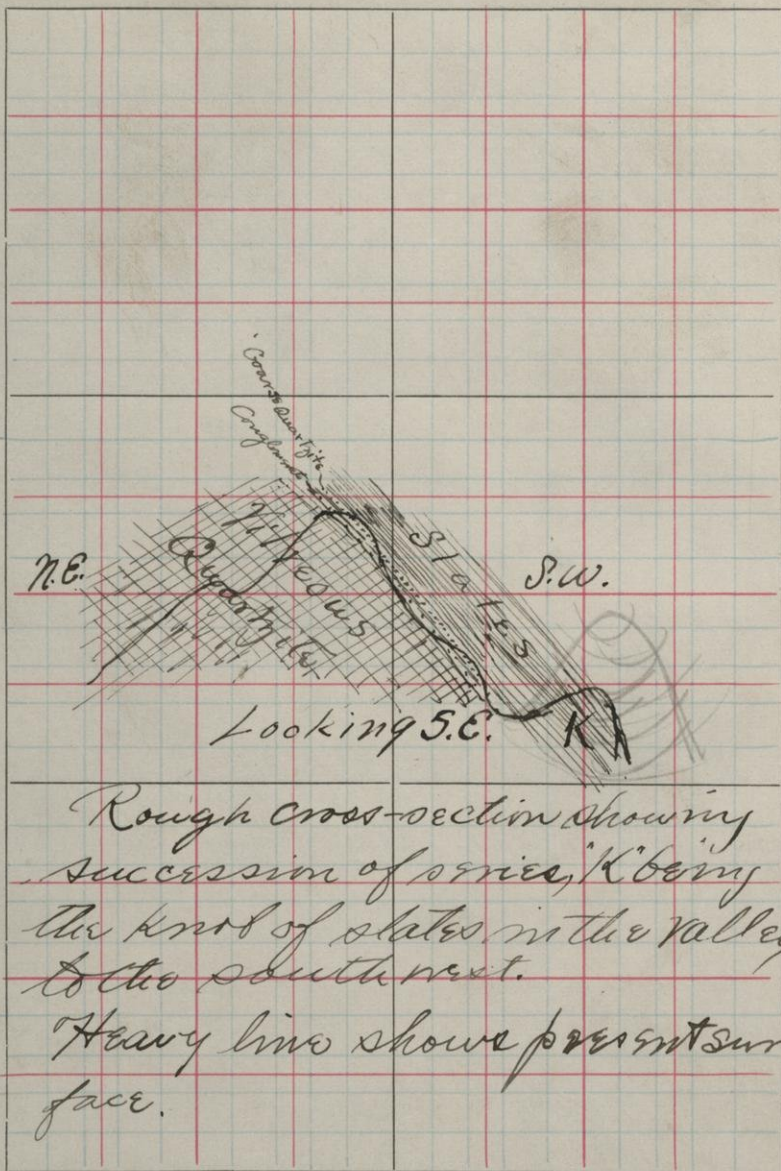
The main ridge is composed
24694 of the ^{white} vitreous quartzite and
24696 ~~adarker~~ less vitreous quartzite
^{original matrix} above it with a thin bed of
24697 chert conglomerate, having a
dark red matrix, above it. Quartz
and possibly gneiss pebbles in it.
At 1290 N 360 W. S. 247-25 this bed has
S. N 45° W + 250° S W.

(See Clements notes for other strike and dip)

S.

T.

R.



On the south slope the spotted quartzite ⁽²⁴⁶⁹⁵⁾ again appears and is probably but a phase of the pure white quartzite.

The bed of conglomerate is the only trace of bedding and this lies flatter on the crest than on the slope.

- 24698 Small patches of slate deposited on the graywacke-like quartzite above the conglomerate show this quartzite to be of little thickness and merely an intermediate between the conglomerate and the slates. These slates have been most entirely eroded away from this portion of the "facies" but form a knob well down in it to the southwest (See Bayley's notes). At about 1100 N 450 W Sec. 247-25 occurs another skin of this conglomerate dipping southwest under the knob of slates mentioned above.

At 1065N 290W S.E. Cor. Sec. 2-47-25

24702 is what appears to be an eruptive
evidently cutting the quartz-
ite though possibly not. Assoc-
iated with and probably above

24703 it is a breccia with a dark
greenish matrix. Some of the
fragments are somewhat
rounded but think this is
due to mechanical movement
by rubbing and grinding on each other
in place.

At 1030N 310W a bedding can be
seen in the quartzite giving
S-N 45° E + S. 40° N.W. This is proba-
bly around on the southern flank
of the syncline though may
be a minor folding near the crown.

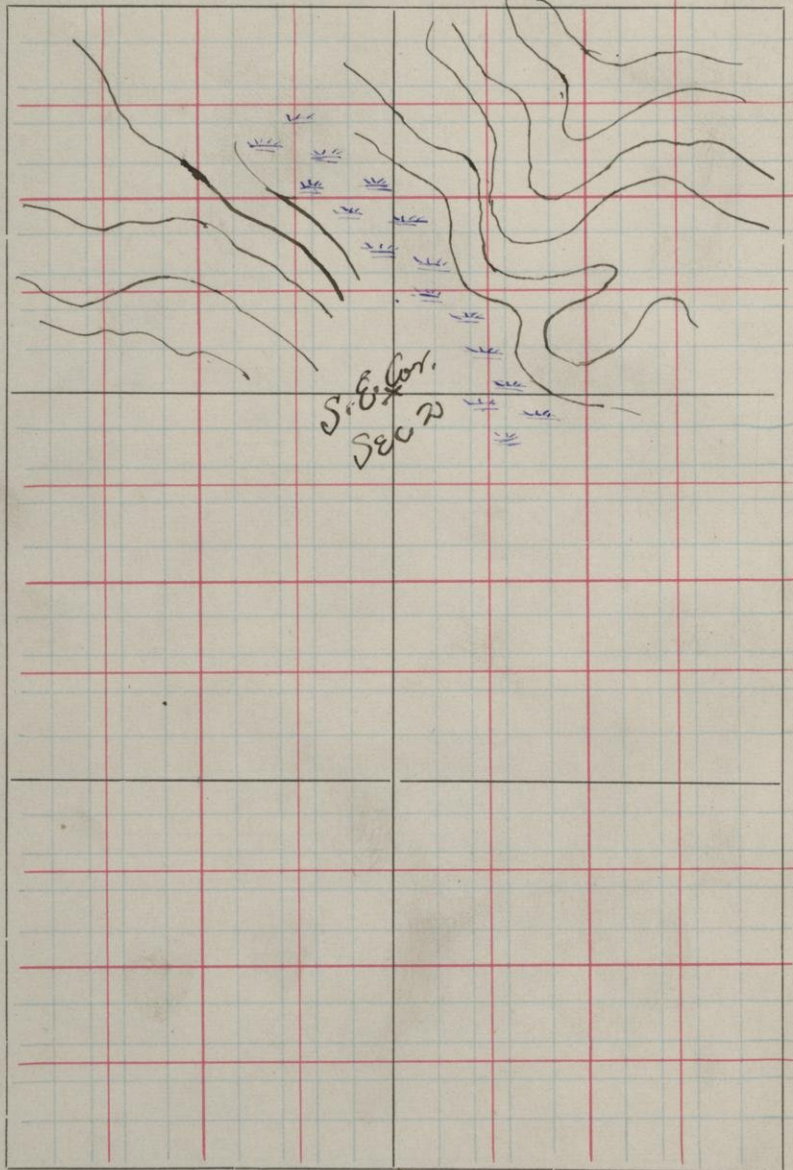
At about 1000N 350W S.E. Cor. 2-47-25
is the N.W. corner of a large
quartzite knob at which point
ripple marked beds show essen-
tial S.E. & N.W. strike and dip to
the south west. It has been
much sheared and slaty, norae-
ulitic layers developed.

S. 2-1 T.

47

R.

25



To the southeast of this knob comes in the squeezed granite or white schist. Cutting this is the eastern continuation of the diabase dyke ~~which~~ this is at 840 N 325 W. south of which the white schist. again appears. ^{or poss}

24711

From basic dyke at 650 N 250 W. Main dyke of diabase 75 ft width.

24713

Phase of granite south of 24711 and which cuts or is cut by 24712

Course runs N. on line 1750 ft west of.
S. E. Cor. Sec. 1-47-25

At 1140 1850 W. S. E. Cor. 1-47-25
is a knob of pink granite
and just to the north ap-
24716 pears the massive quartzite
the contact between the
two being eroded. Northeast
along the ridge the bedding
is well shown with S. $N 40^{\circ} E$
 $D. 50^{\circ} N. W.$ On the top of the
ridge or knob the quartzite
is massive but on the
north slope appears a thin
bed of conglomerate showing
bedding to be about the
same as form above. This
conglomerate is interbedded
in the quartzite and only
serves to indicate the bedding
in an otherwise massive
quartzite. Just north of this
ridge separated by a ravine is a-
nother ridge of massive quartzite
having reddish spots before mentioned.

S.

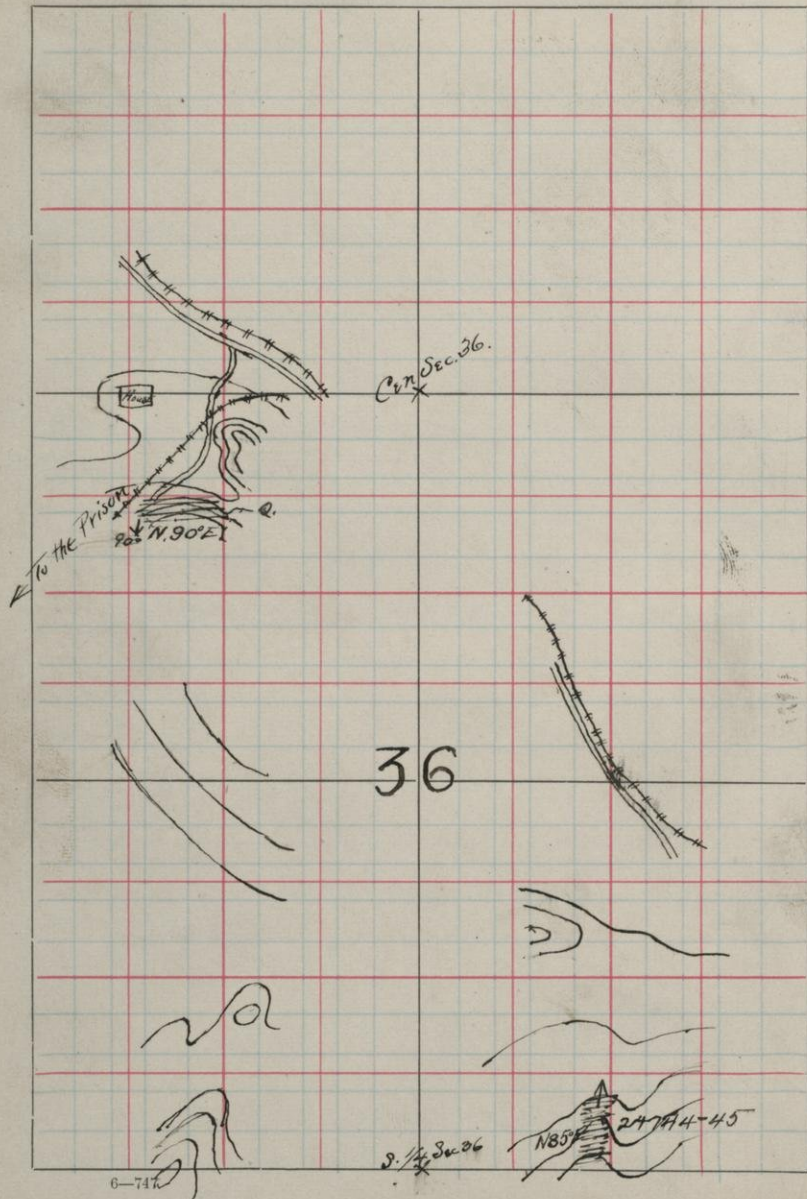
36

T.

48

R.

25



Course running S. from point 750 E.
of $N\frac{1}{4}$ stake Sec. 36-48-25

Quartzite ridge at $840N/250W$
S.E. of Sec. 36-48-25 is the eastward
continuation from which 24720-21
were taken and contains the same
fine slaty orems (24721). Bedding
strikes $N90^{\circ}E$ and stands vertically
or with steep southern dip.

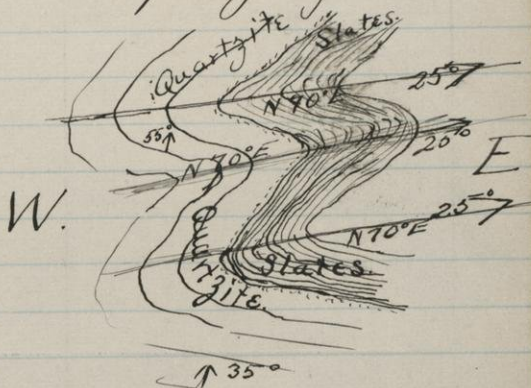
$N50-100N$ and $775-790W$. S.E. 36
is an exposure of quartzite
24744 with interbedded slates.

24745 The slaty quartzite bands have
strike $N85^{\circ}E$ dipping steeply
to the the north.

Course running south from 750 E.
of N.W. Cor. Sec. 1 - 47-25.

At 325 South strike west
slope of large hill. To the east on
top of the hill have seen in such
position as to indicate a plung-
ing synclinalorium with axes
striking N70°E plunging 25°.

Plan.



Just to the south of the
sharp folding the dip is
but 35° N. while well on
the sides it is steeper, 55°.
This folding is probably
the crumpling at the crown
of a syncline which would
appear to be the structure.

On the northwest corner of
the hill at about $1675^{\circ}N/1800^{\circ}W$.
S.E. Cor. Sec. 1-47-25. The series
are seen bending around
forming a syncline. Figure
 shows section looking
Easterly giving general
structure with slates
in the centre and a heavy
bed of quartzite below. The
crown itself is much broken
and on the limbs the bend-
ing gives a variable dip
from 25° to 55° as indicated.

Strikes and dips of
the strata at this point
These strata can be traced
to those up on the hill proper.
They include a peculiar brecciated or conglomeratic band
having a dark red matrix
with white and banded frag-
ment or pebbles. One belt of
the slates evidently bears a small
percent of copper and two deep
pits have been sunk in it just

beneath a heavy bed of quartzite. Strike in pit $N 80^{\circ} W$ & dip $55^{\circ} N$.

South of these outcroppings of the marble series appears 24728 the vitreous quartzite which at 1500 N 1325 W. strikes $N 65^{\circ} W$ and dips $70^{\circ} N.E.$ Though dipping at a high angle at this point and also east of this, it probably lies conformably under the marble series.

At one point this quartzite 24733 comes in contact with the slate but relations are obscure.

24729 Sheared, slaty quartzite and 24732 local conglomerate or breccia appear. Very close to the quartzite, though not seen in direct

24734 contact, comes the white schist or squeezed granite and then

24736 the granite proper, and also

24735 gneiss with dykes of

24737 diabase.

(See Clements notes of locations and further description)

At 1000 N / 2500 ft run east 500 ft and then north.

- 24738 Drift covered country up to 1450 N when some slates are reached striking $N90^{\circ}E$. the granite not being met with at all. Just north of these
- 24739 slates ~~there~~ the quartzite forms a mass of considerable size. It shows various phases of texture and on the south slope the bedding has $S. N90^{\circ}E$ and Dip $60^{\circ}N$. On the top and north slope it is more
- 24740 massive and broken in appearance with local brecciated bands. On the north slope at
- 24741 1800 N the marble occurs outcrops with strike $N80^{\circ}E$ and a steep northern dip. Direct relations with quartzite south are not exposed. Farther down the slope at 1920 N quartzite again appears in small exposures.

(See also Clements notes)

Running south on line 1650 ft
east of N.W. Cor. Sec. 1.

At about 100 ft north of N. Sec. line
Sec. 1 - and west of line was seen
small outcrop of quartzite with
strike approximately E.W. Also out-
crop east of line (Clements). To the south
the marble forms a ridge or
knob with strike about E.W. On
the south slope quartzite is
exposed west of the line from
440 to 500 south. No structure
made out.

Running N. on line 100 W. of E. line S. 2.
1420 N. 100 W. S. E. Cor. 1-47-25.

24749 An exposure of much sheared
rock taken to be a mica schist.

At 1525 N to 1550 N is an exposure of
quartzite with strike $N 80^{\circ} E \pm 50^{\circ} N$.

Above this at 1600 N the marble
series outcrop, - the limestone
forming a point at 1600 N. 140 W.

24751 1725 N. 100 W. S. E. Cor. 1-47-25. Quartzite
with strike about E.W. and dip $65^{\circ} N$.
while at 1800 N it appears to have a
flat dip to the south.

Platted

