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Crystal Falls region, Michigan: vicinity of Lake Mary: [specimens] 33314-33406. No. 296 1892

Bayley, William Shirley, 1861-1943

[s.l.]: [s.n.], 1892

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U. S. GEOLOGICAL SURVEY
FIELD SECTION BOOK

296

Crystal Falls Region
Michigan
H. S. Bayley

33314 - 33406

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.

296

1 ✓

Vicinity of
Lake Mary

1892

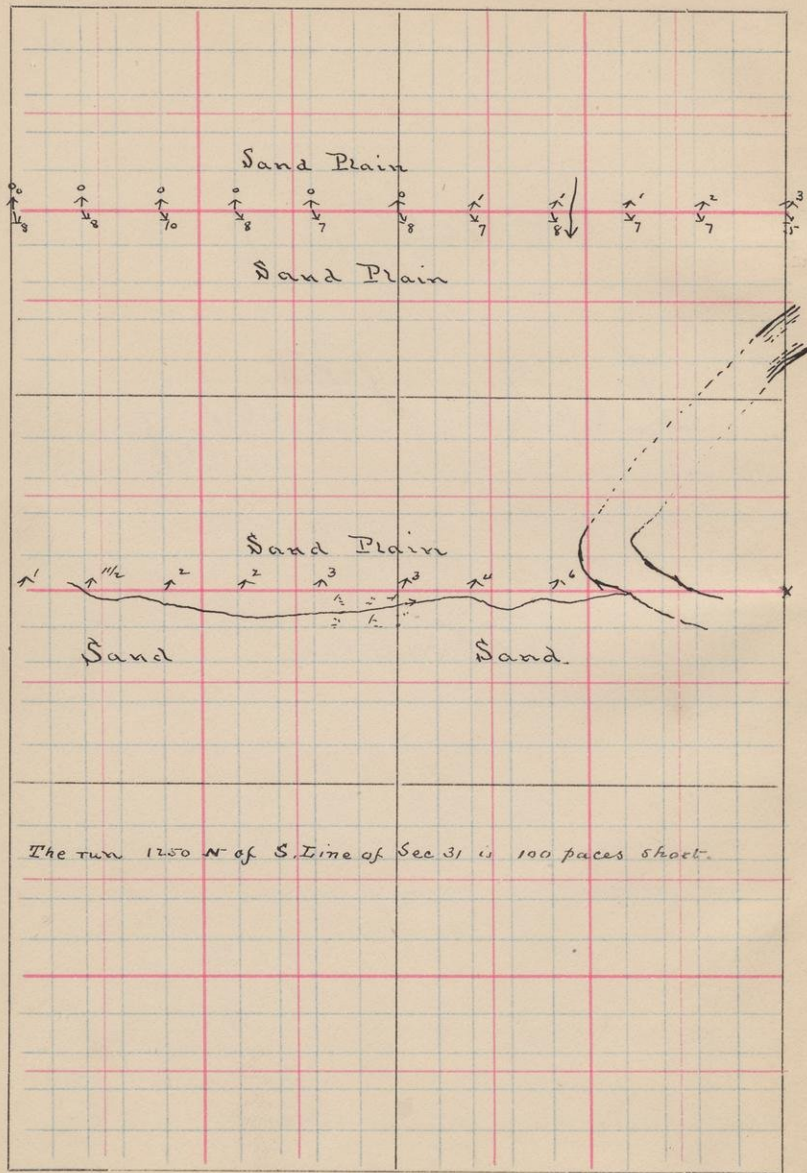
W H Bailey

N.E. 1/4

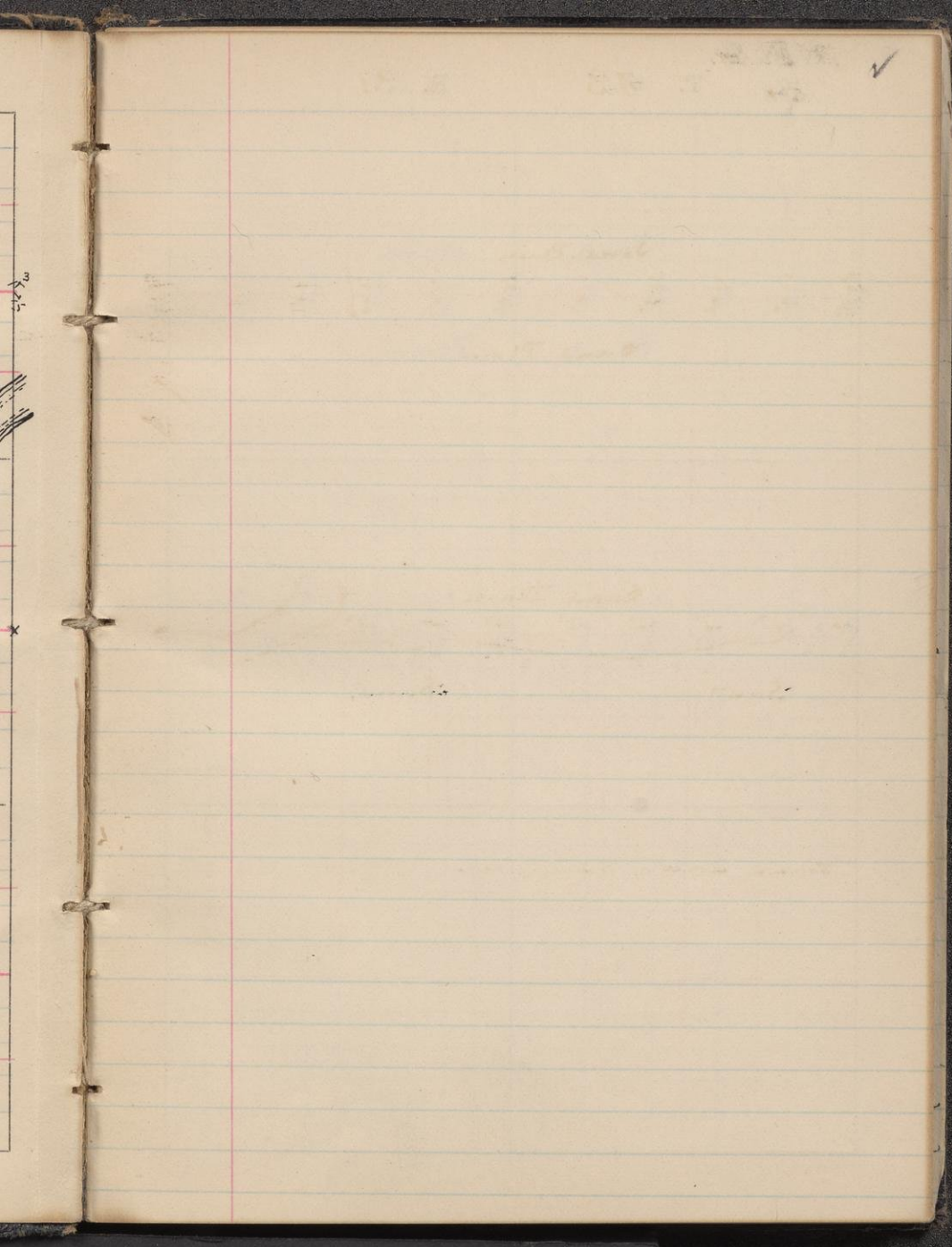
31

T. 43

R. 31



The run 1250 N of S. Line of Sec 31 is 100 paces short.



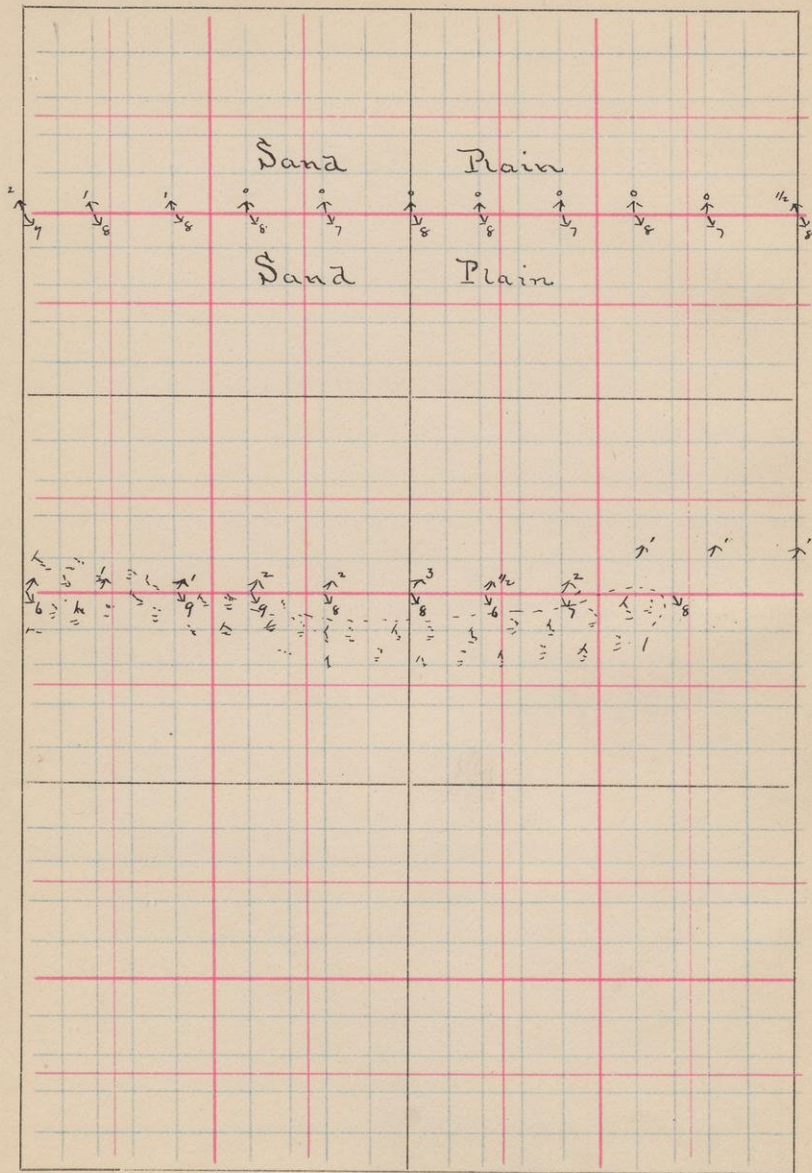
NW 1/4

31

T.

43

R. 31

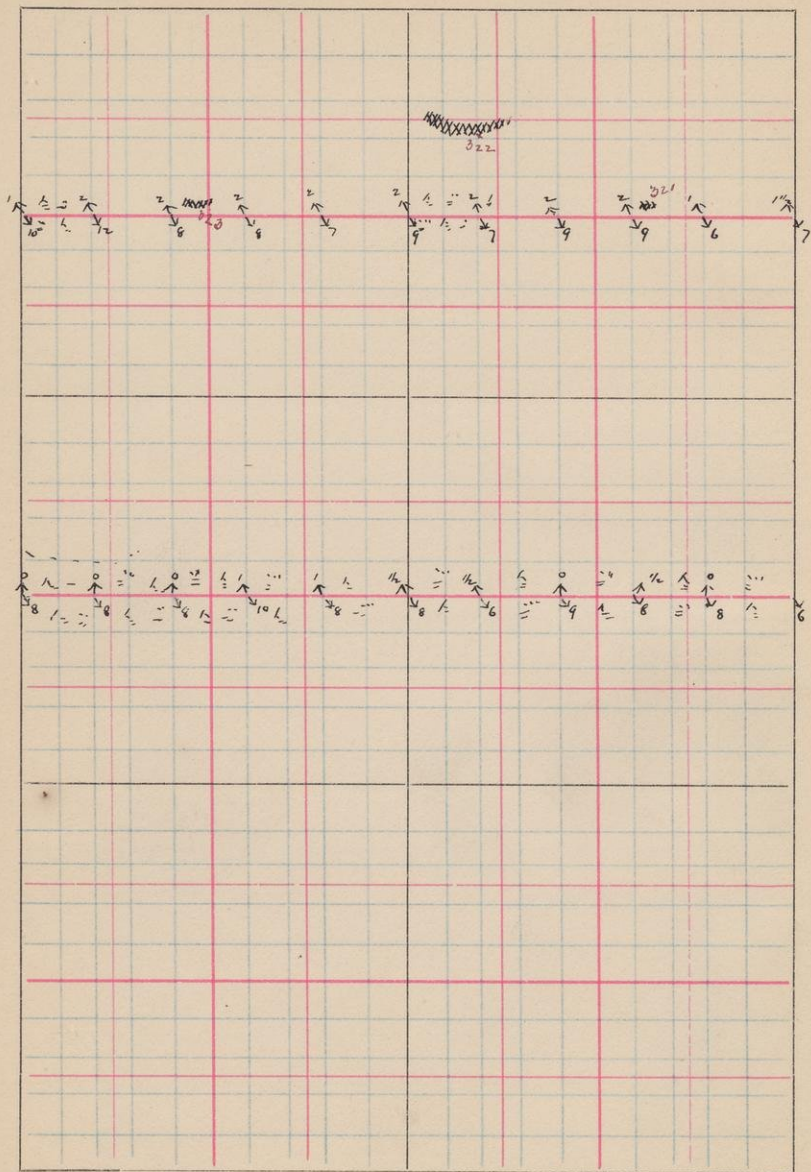


1/4
3/41/4
3/4

NE 1/4
36

T. 43

R. 32



NEW YORK

4

1771 1772 1773 1774 1775 1776 1777 1778 1779 1780

1781 1782 1783 1784 1785 1786 1787 1788 1789 1790

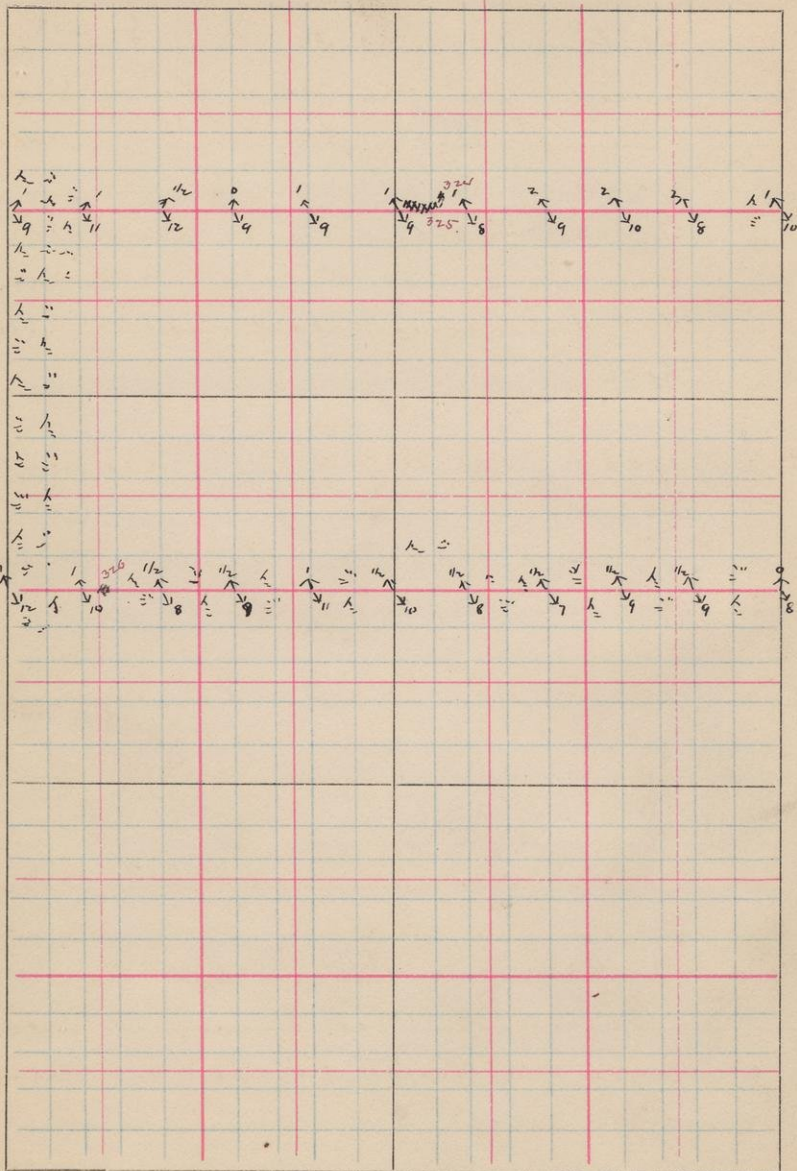
NW 1/4

36

T.

43

R. 32



Sections 31 and 36-43-32 are covered for the most part with sand forming plains and rolling hills.

A few exposures rise above the sand, usually as small ledges, but sometimes as considerable hills.

33310T

321

G.C. 2

1750 N 170 W of S.E. Cr. Sec 36-43-32.

Small ledge of schistose, fine grained greenstone.

322

33315

G.C.

1850 N 400 W of S.E. Cr. Sec 36-43-32.

Greenstone conglomerate from south side of large hill. The rock contains moderately large fragments of greenstone in a matrix of greenstone schist and small fragments all spangled with little glittering octahedra of magnetite.

323

33316

1770 N 760 W of S.E. Cr. Sec 36-43-32

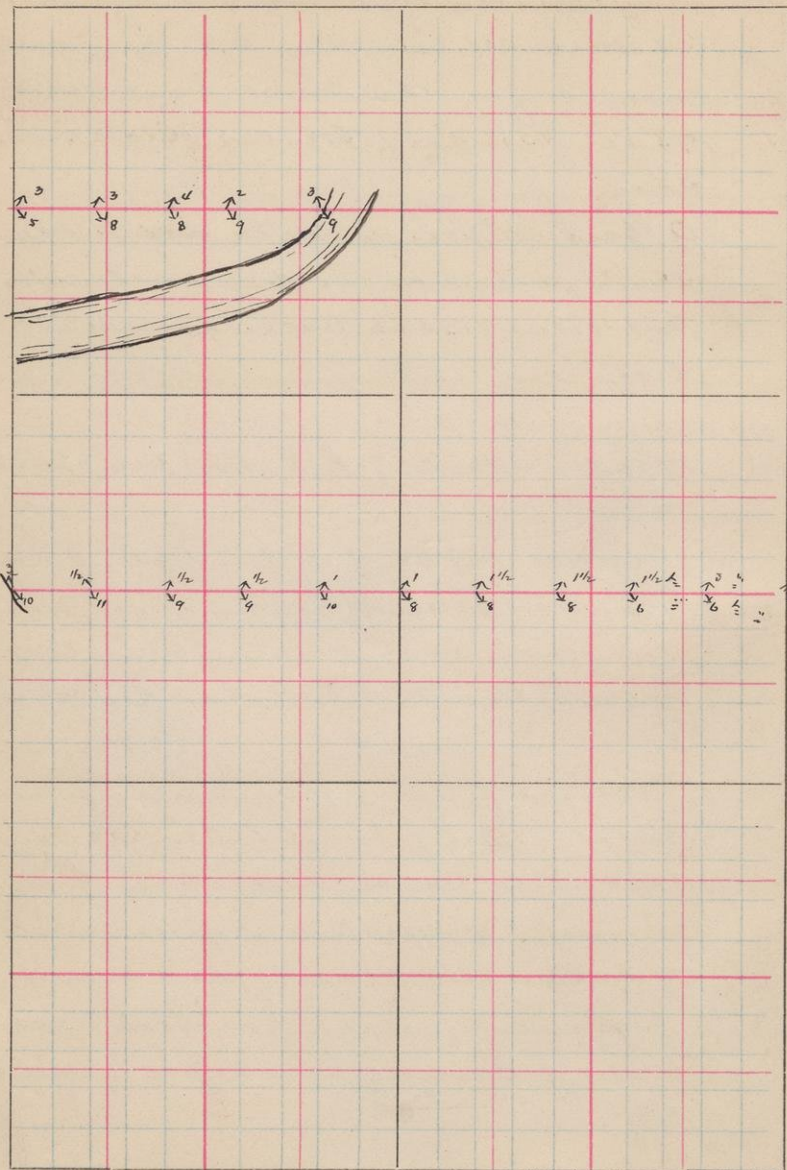
NW 1/4

32

T.

43

R. 31



323
33316
G. Sch.

Small isolated knob of black horn-
blende schist.

324.
33317
G. Sch.

1750 N 1500 W of S.E. cor. Sec 26-43.
32.

A small knob on north side of K
which is exposed a very schistose
black rock resembling slate. It
contains numerous crystals of
pyrite and is not banded.

It is probably a schistose green-
stone. For on the south side of the
same knob only a few feet south
of 324 is a greenstone that, on
its weathered surface looks like
a schistose amygdaloid.

325
33318
G. A.

1250 N. 1800 W of S.E. cor Sec 36
43-31.

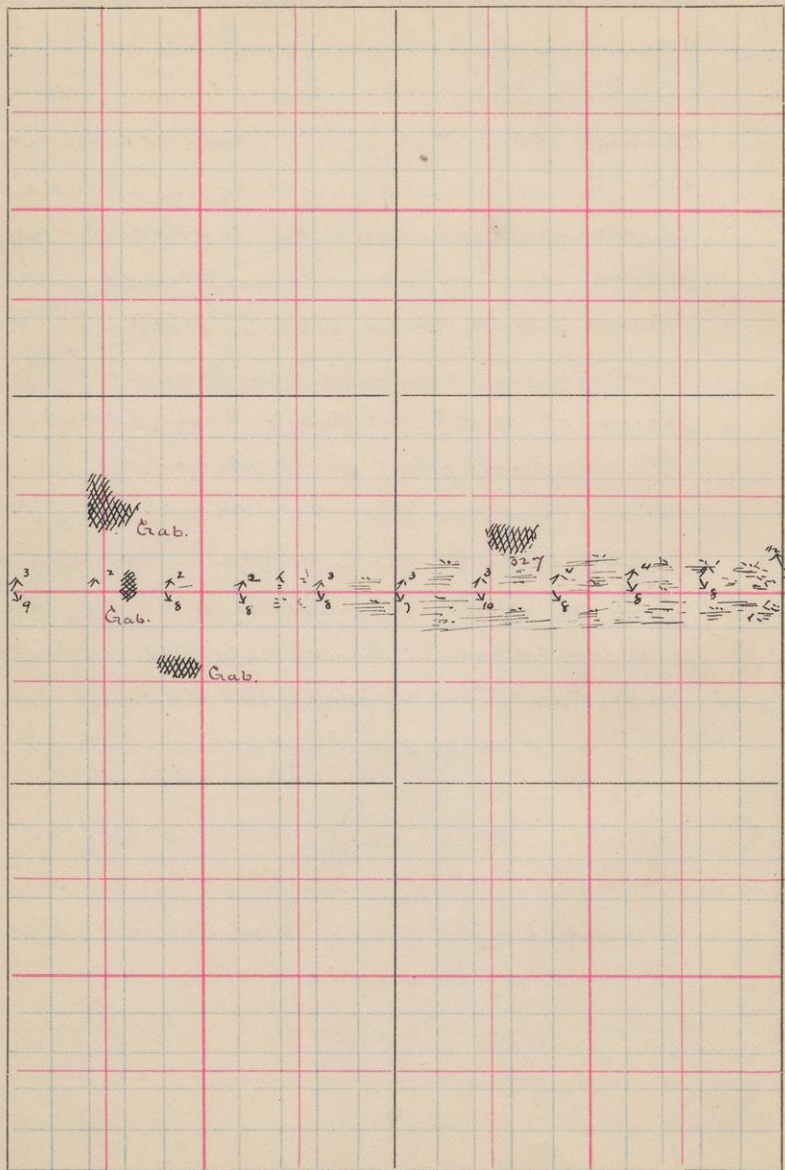
Small ledge of schistose green-
stone conglomerate.

326
33319
G. C. S.

NE 1/4
32

T. 43

R. 31



on the new East into Sec 32-43-31
on line 1250 N of S. line of section
crossed sand plains until reached
1100 E where begin to cross a ridge
of the gabbro like the rock north

327
33320
G.D.

1300 N. 350 W of D.E. Cor. Sec 32-43-31.

From south side of large knob
of gabbro.

At East line of section ran
south to the line 750 N of S.
line of section and west, finding
here country without ledges until
approached the river bank
where the gabbro again appears.

328
33321

750 N. 1530 W of D.E. Cor. Sec.
32-43-31.

Schistose, much jointed greenstone
on north side, East base of hill.

329
33322
G.D.

750 N. 1580 W of D.E. Cor. Sec 32.
43-31.

Massive diabase, from point
of material.

§ E 1/4
32

T. 43

R. 31

$\frac{3}{7}$ $\frac{3}{7}$ $\frac{3}{9}$ $\frac{3}{8}$ $\frac{4}{7}$ $\frac{4}{7}$ $\frac{5}{8}$ $\frac{4}{9}$ $\frac{3}{9}$ $\frac{1}{8}$ $\frac{3}{8}$

$\frac{3}{8}$ $\frac{3}{6}$ $\frac{3}{6}$ $\frac{3}{7}$ $\frac{3}{6}$ $\frac{3}{5}$ $\frac{3}{6}$ $\frac{3}{7}$ $\frac{3}{6}$ $\frac{3}{5}$ $\frac{4}{5}$

6
further west on same hill.

330

33323

520 N. 1856 W of S.E. Cor. Sec. 32.
43-31.

At the rapids of the river the rock is a greenstone that is massive like Specimen 330 generally, but is occasionally schistose, very much like 331.

331

33324

470 N. 1840 W of S.E. Cor. Sec. 32.
43-31.

Schistose greenstone at west end and base of large diabase hill. Strike of schistosity is 25° S of W.

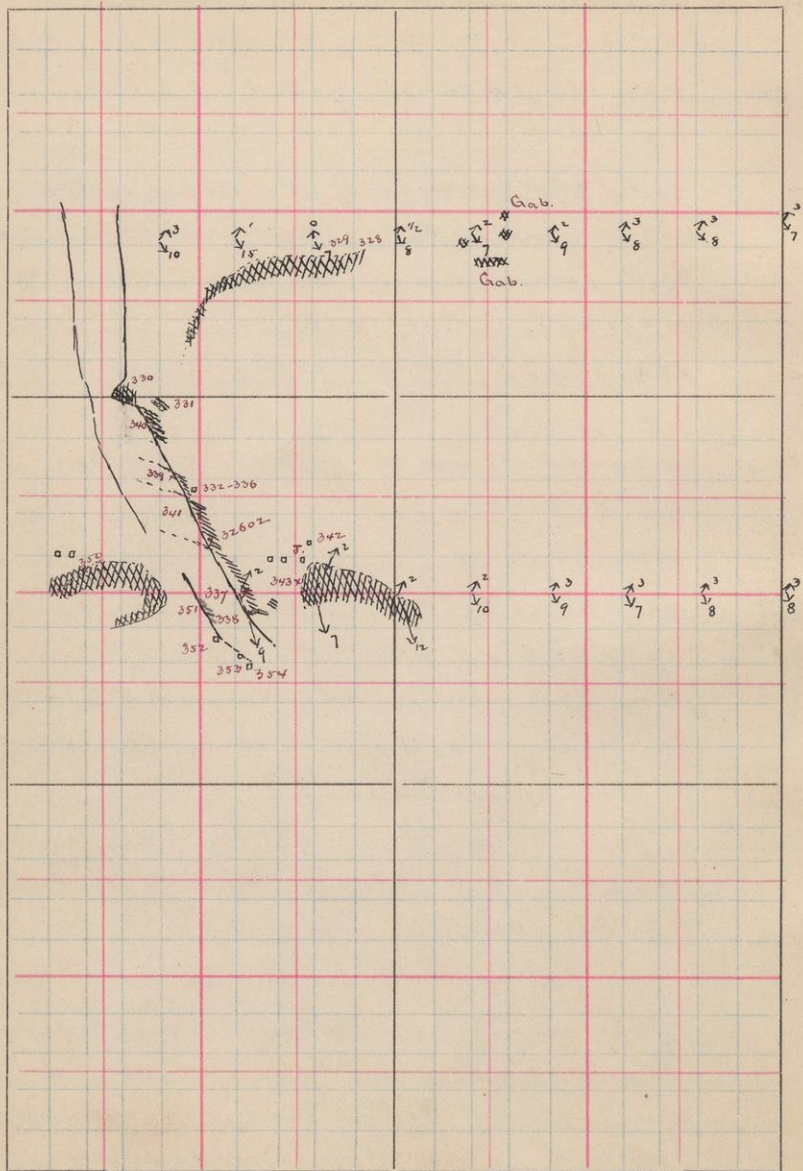
Running down the East Bank of the river soon reach a series of slates, conglomerates, exposed from a few paces below the rapids all the way to a point 330 N of S. line of the Section.

On the weathered surface the conglomerates appear corrugated in the direction of their strike, a phenomenon due to the intercalation of bands of large pebbles between those of the softer matrix.

\$ W 1/4
32

T. 43

R. 31



332
33325

At 380 N. 1760 W of S.E. Cr Dec 32
43-31 is a drift into the bank
of the river beginning in the con-
glomerates and extending ten ft.
to greenstone

Beginning at its bottom, toward
the East the rocks exposed in the
washes of the drift are

332
33320

Schistose greenstone, forming bot-
tom of drift.

333
33326

Carbonaceous chert, 2 ft. wide, in
top of greenstone.

334
33327

Alternating layers of ore and chert
about 5 ft. in thickness.

335
33328

At mouth of pit, a squeezed con-
glomerate, in which pebbles are
rather rare, the predominant
rock being like 336.

336
33329

The dip of the entire series is
63° to the N.W. and the strike of the
slates just above the conglomerate
15-35° N of W.

Above these rocks there are
slates and schistose greenstones
that may be fragmental.

341
33334

The first rock south of pit, those immediately above the conglomerate are light colored soft soapstone looking schistose, that may be of the same composition as the matrix of the conglomerate.

This is mottled in places giving rise to the rock 32602 described in Merriam's notes. The location of this specimen is 300 N. 1720 W. J.S. Cr. Sec. 32.

337
33334

Above these are thinly banded slates with a strike 15° - 35° N. W. 250 N. 1740 W. J.S. Cr. Sec 32-43-31. Finely banded, well cleaved slates.

338
33331

220 N. 1685 W. J.S. Cr. Sec 32-43-31. Slate from southern end of exposure.

339
33332

400 N. 1780 W. J.S. Cr. Sec 32-43-31.

Schistose rock from river bank just north of pit. The rock also forms the shore line immediately in front of the drift.

340
33333

Schistose gneiss forming bed
of river for 60 paces south of
rapids.

At the north end of this series
of bedded rocks the dips are from
 63° - 90° to the N.W. and at the
Southern end they are nearly 90° ,
inclining slightly to the S.W. About
at specimen 337, there is a
slight bend in the strata res-
embling in appearance the top
of an anticline, and south of
this occur the high S.W. dips.

At 200 N. 1660 W of S.E. Cor. Sec 32
is a 20 ft long ledge of black
slate striking 220° N by W and
dipping about 65° to S.W. On the
hill N.E. of these slates are
three pits in chestnut leaves
one, which pits were located as
follows:

300 N. 1660 W of S.E. Cor. Sec. 32
300 N. 1648 W "
300 N. 1620 W ..

14
Large quantities of bog chert
and bauxite were taken from
the eastern pit; the others yielded
principally chert.

A number of other pits dug into
the same hill were not located
because they penetrated no fur-
ther than the drift.

342
33335

325 N. 1605 W of D.E. Cr Sec 32
H3-31.

C2.

Chert from pit thus located.

N.B. Of the numerous pits exis-
ting here only the one located shows
rock in dump heap.

A large knob of coarse diabase
occurs west of the slates and
south of the chert. Its N.W. corner
is at 1605 W. 382 N of S.E. Sec 32
250 N. 1600 W. Coarse Diabase from
west side of this bluff.

343
33336
G.D.

250 N. 854 W of S.E. Cr. Sec 32.
H3-31. Red ferruginous slate.
from dump heap of bauxite pit.
1267.

344
33337
R.S2.

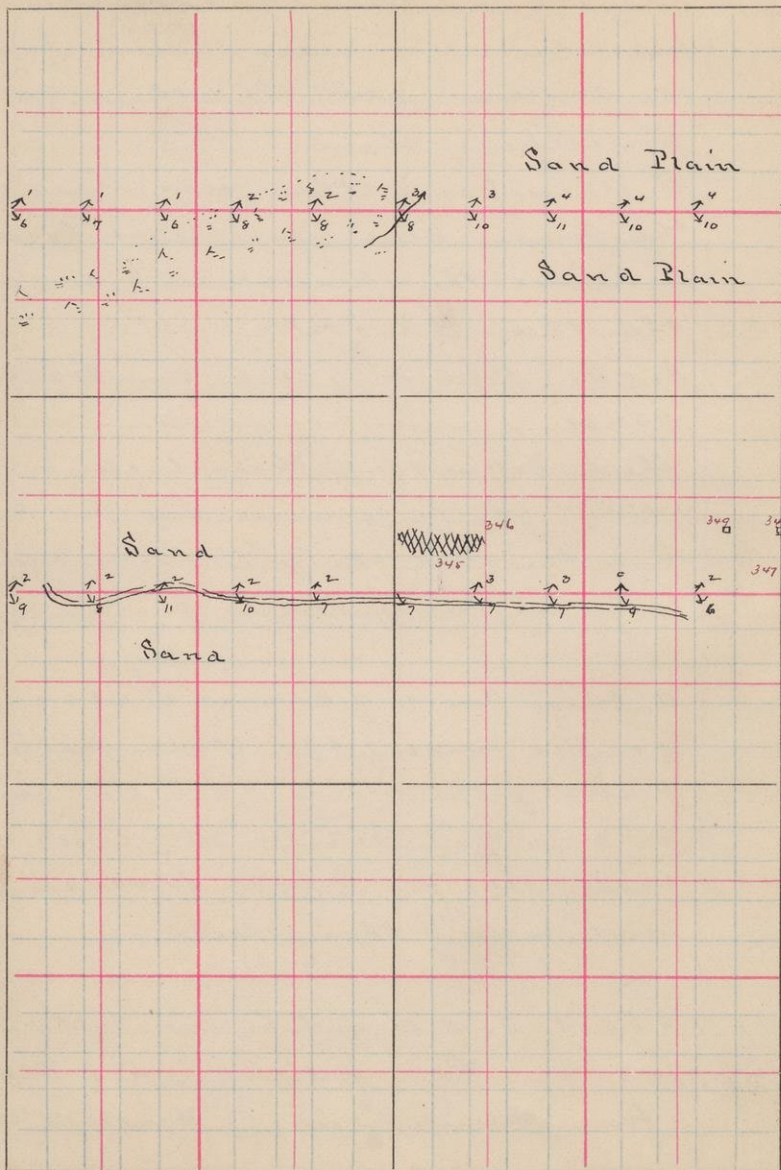
No other rocks were seen in

\$ E $\frac{1}{4}$ T. 43
31

31

T. 43

R. 31



the N. 1/2 of this section, than those described.

345
33338

G.D.

250 N, 200-500 N of S.E. cor. Sec 31-
43-31.

Coarse grained diabase from knob
in midst of sand plain.

346
33339

G.D.

Fine grained phase of 345 from
N.E. corner of same knob.

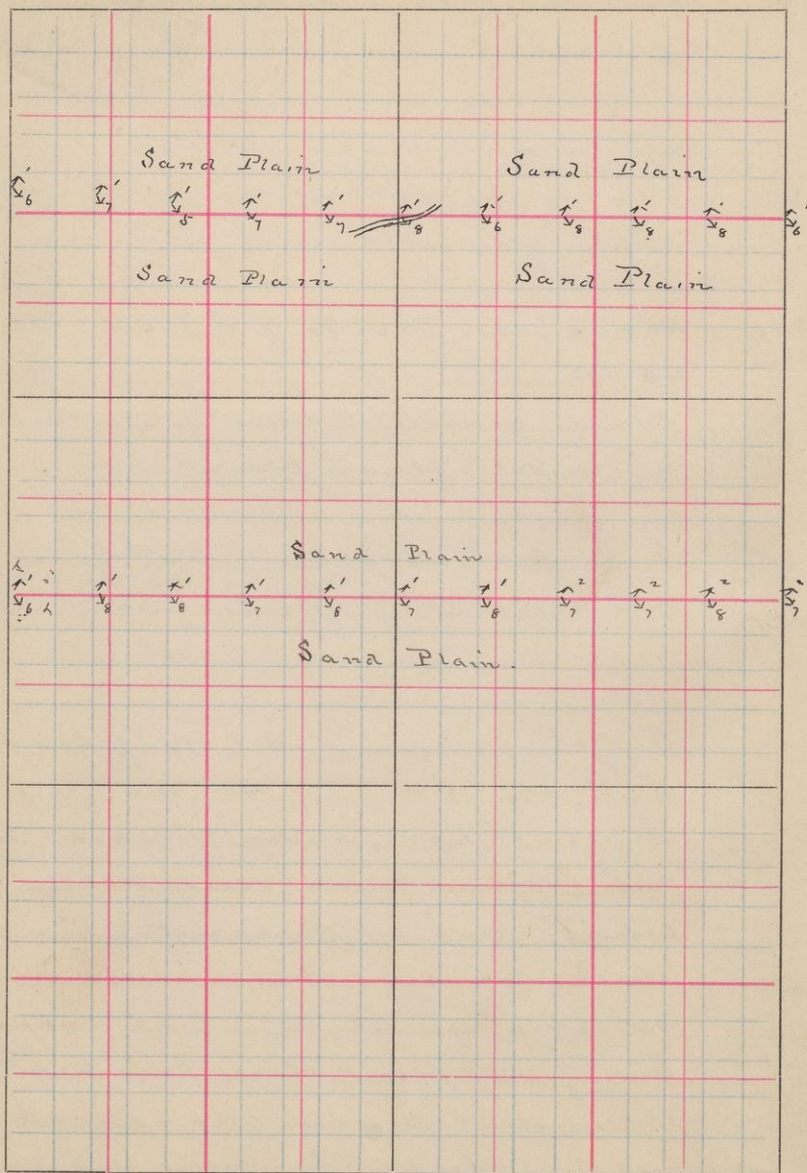
In the extreme S.E. 1/4 of Sec 31
and the SW 1/4 of Sec 32 are
several pits, some of which have
been abandoned, and others of
which are at present (Aug '92)
being worked. From most only
Christine greenstone was taken,
but from others there has been
obtained a small quantity of
iron ore and chert. The main pit now
being prospected has yielded some

SW 1/4

31

T. 43

R. 31



good one, but whether enough to warrant extensive working is not yet determined.

347
93344

290 N of S.E. cor. Sec 31-43-31

Soft, decomposed, greenstone, from dump heap of pit.

348
93341

325 N of S.E. cor. Sec 31-43-31

Dump heap of this pit contains only paint rock

349
93342
Ch. 90.

325 N. 65 W of S.E. cor. Sec 31-43-31

The new working pit is in chert and ore. Some soft brown ore has been taken from the hole, and of course also much chert and paint rock.

From the pit at 300 N 1940 W of S.E. cor. Sec 32, only paint rock was taken. This pit was worked on a large scale a few years ago but never returned the least yield of ore. Its situation, at the north base of the big greenstone bluff would indicate that the exploration had been in this rock exclusively.

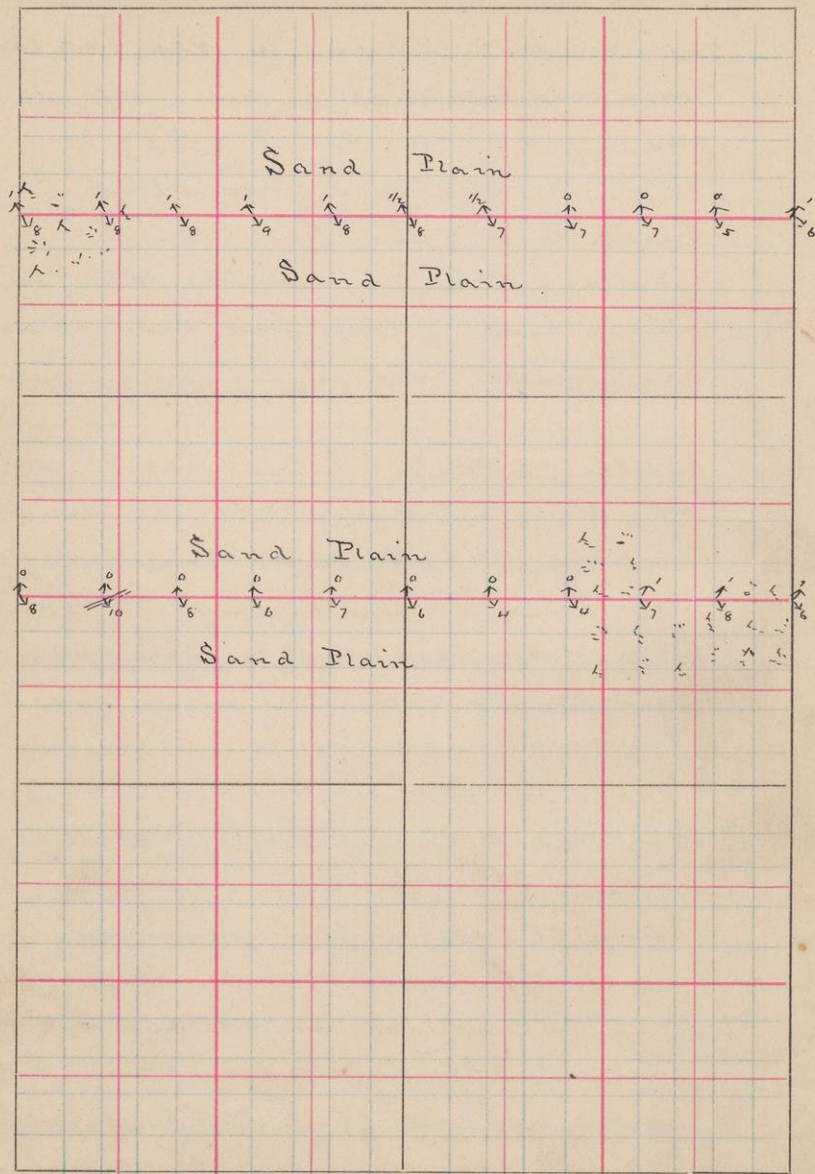
SE 1/4

36

T.

43

R. 32

350
33343
G.D.351
33344352
33345

C7

350 275 N. 1900 W of S.E. cor. Sec 32-43-31.
33342
Q.D. Coarse greenstone from north side
of bluff.

351 225 N of S. line of Sec 32-43-31.
33344
The river's bank from 225 N to the
south line of Sec 32-43-31 is com-
posed of slate rocks, dipping and
striking like those on the east bank
further north.

South of this point are a number
of large pits - drifted into the high
bank of the stream just above
flood mark. In most of these the
only rock found was the schistose
greenstone.

352 175 N. 1725 W of S.E. cor Sec 32-43-
33348
31.

Banded one and chest from the
largest of these pits? In the dump
heap the rock is mingled with schis-
tose greenstone.

Two other pits at about

S W $\frac{1}{4}$
36 T. 43

T. 43

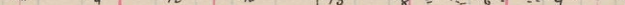
R. 32

Sand Plain

Handwritten notes on lined paper showing a sequence of numbers and arrows. The sequence starts with 11, followed by a series of arrows pointing to 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100. The arrows indicate a path through these numbers, often branching or looping back.

Sand Plain

Sana Plain

6. 

Sand Plain.

33346

33347

150 N 1690 W of E Cr Sec 32, and
140 N 1680 W "

are drifted into bank, exposing
at their west ends a parent rock.

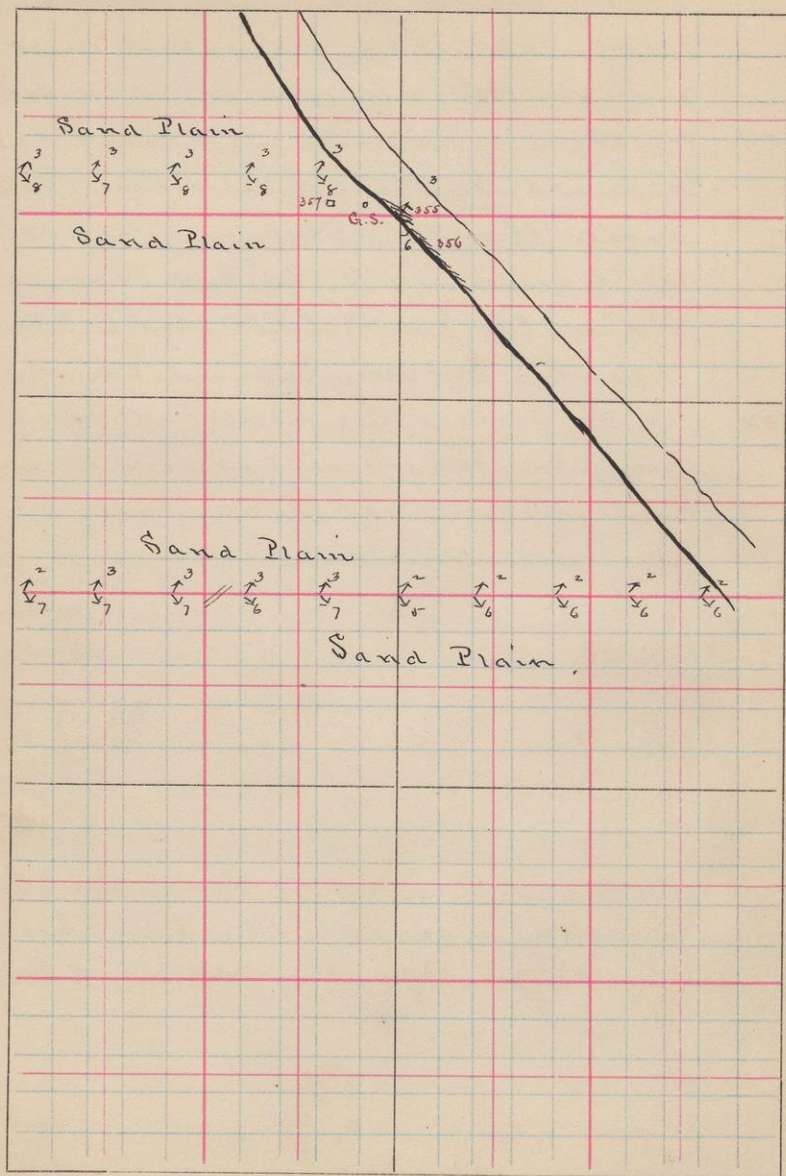
In reaching this greenstone the drift
passed through a series of bedded
rocks dipping to the S.W. In a few
places the bands look like chert,
but the predominant material
is a greenstone slate - a rock that
may be fragmental, but which
consists almost exclusively of
greenstone materials.

In the S.W. $\frac{1}{4}$ Sec 31 - 43 - 31
and the S $\frac{1}{2}$ of Sec 36 - 43 - 32
no rocks were found. The entire
sections so far as seen in the
map mapped on the four preced-
ing pages, are covered with sand.

NW 1/4
5

T. 42

R. 31



355
33348

356
33349
R. 52

357
33300

In the river, on its west bank
at 1750 N. 1500 W of S.E. cor Secs
42-31, are exposures of schistose
rocks like those north, in the
Drift^d (354)

355
33348

is schistose greenstone. Probably
chlorite^d schist, from this point

356
33349
R.S.

1700 N. 1450 W of S.E. cor. Secs 5-42-
31.

Red slate^d, about 50 paces south of
355. These slates are nearly ver-
tical and strike 30-45 N of W.

357
33350

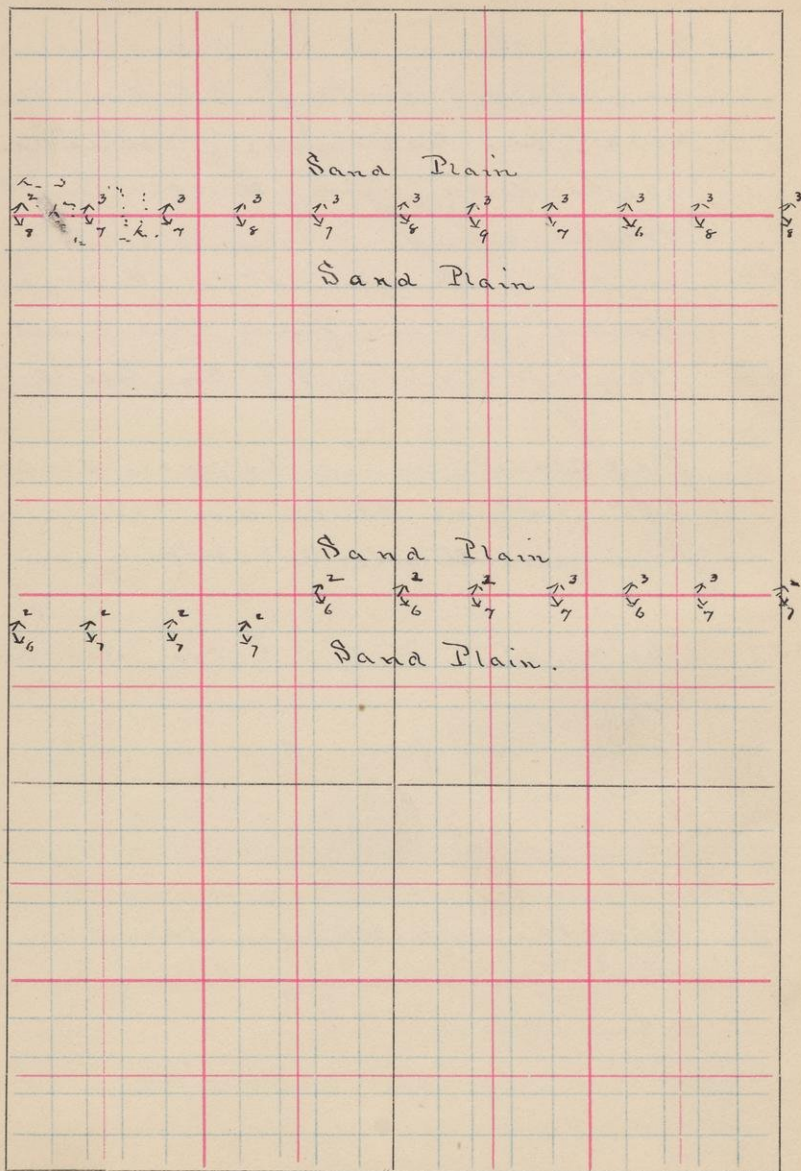
1760 N. 1575 W of S.E. cor. Sec 5-42-
31.

Greenstone from pit in 15 ft. of bank
of river.

No other rocks were seen in this
part. The covering being every-
where sand.

NE 1/4
6 T. 42

R. 31



Sand plains cover this entire
1/4 sec. so far as was seen.

NW 1/4

6

T.

42

R. 31

Lake

Sana Plain

Sana Plain

No rocks in NW $\frac{1}{4}$ Sec 6 - 42-31
so far as seen. The covering is
everywhere sand.

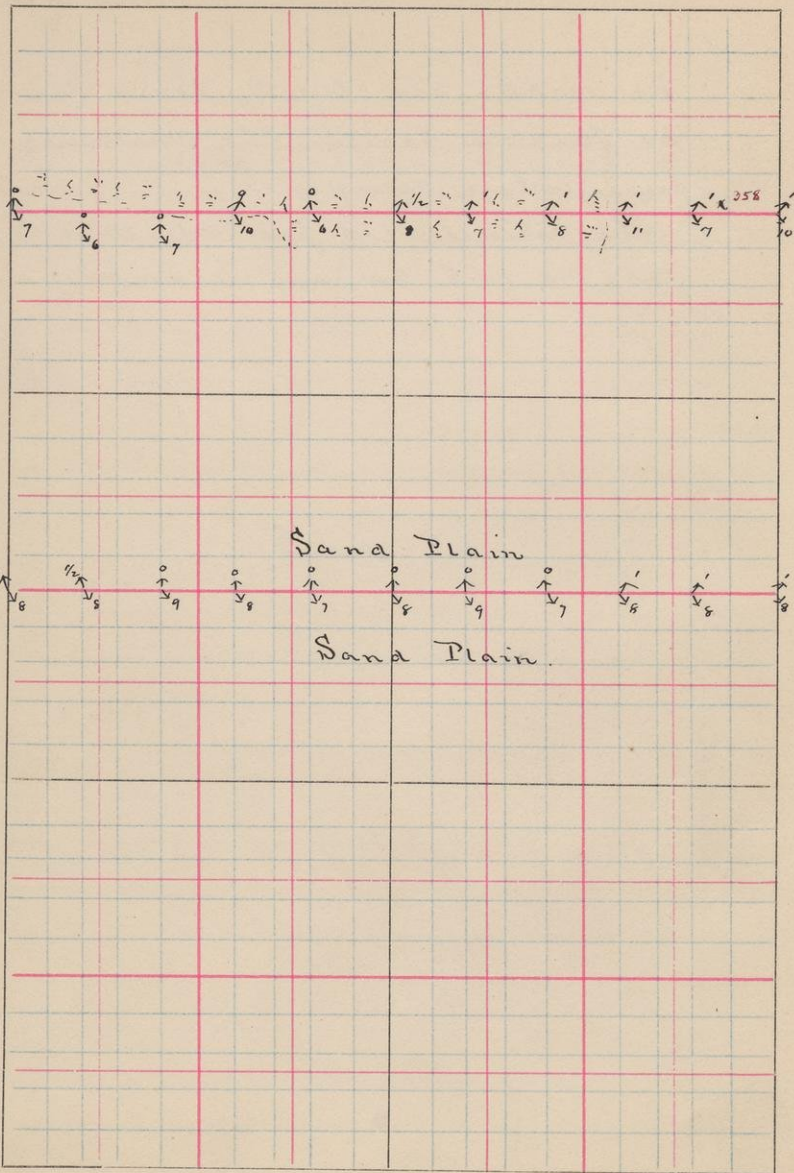
The small test pit at 1270 N.
1200 W 7th E. Cor. is in drift.

NE 1/4

1

T. 42

R. 32



Sana Plain

Sana Plain.

358
33357

G.L.

358
33367

A.O.

1755 N. 130 W. of S.E. cor. Sec. 1. 42-32 is a fine grained Diabase. It is from one of a number of bowlders so thickly scattered over top of sand hill as to indicate near presence of a ledge of the same rock.

Everything else in this $\frac{1}{4}$ Sec. is sand covered.

91

The only rocks seen in the NW
1/4 Sec 42-32 are in the
S.W. corner. There are knobs in
which the greenstone conglomerate
is exceedingly well exposed. It
contains enormous rounded
and angular, besides lenticular
pebbles, of an amygdaloid in a
schistose gray matrix of greenstone
composition. The schistosity of the
rock strikes about 25° E of W; and
since this is the strike also of cer-
tain ill defined bands in the
conglomerate it is probably the
true strike of this rock.

359

33352

GC

1150 N. 1950 W of S.E. Cor. Sec 8-1
42-32.

From north side of hill.

360.

33353

GC

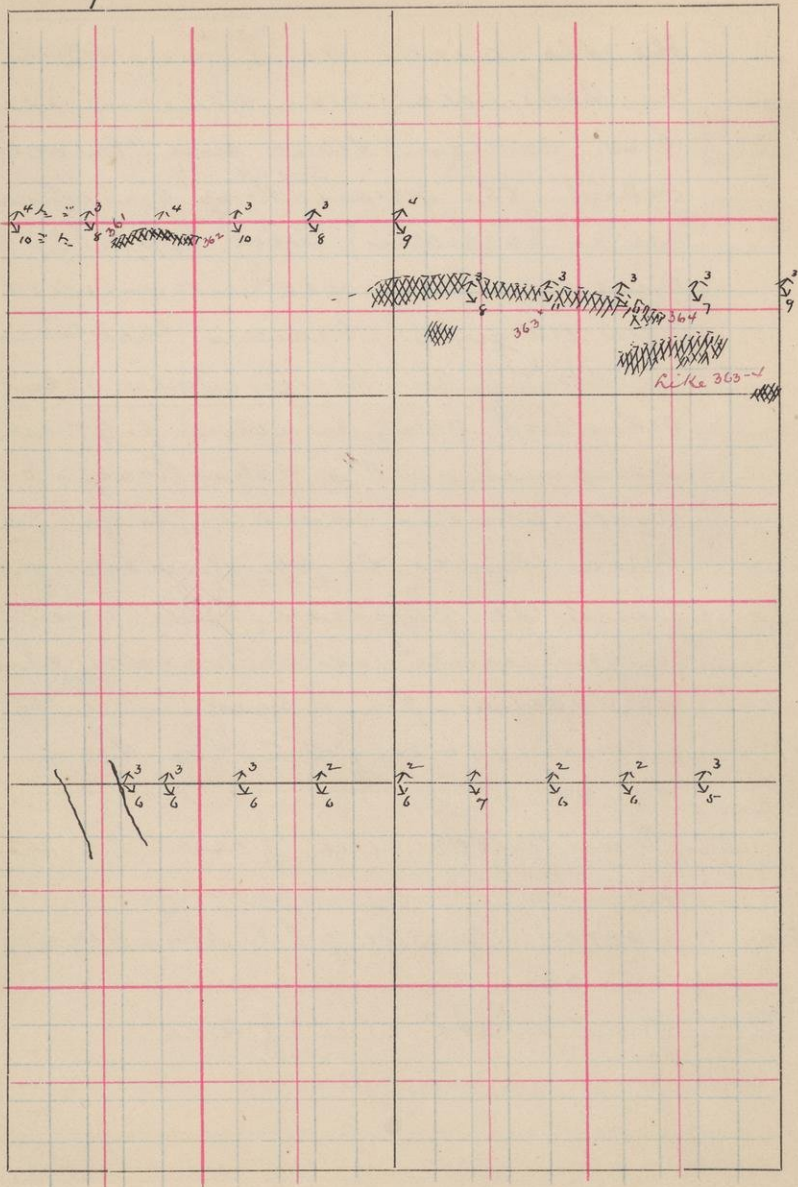
1100 N. 1900 W of S.E. Cor. Sec 8-1
42-32.

From south side of hill.

NE 1/4
9

T. 42

R. 31



36
3338

36

3338

36

323

36

323

36

323

36

323

36

323

In the U.E. 1/4 Sec 9-42-31 a
row of hills stretches half a mile
Eastward from the river, on a line
about 1650 ft of S. line of Section.

These hills are all composed of
practically the same rock - a
fine grained Diabase, in places
Schistose, in places showing the
spheroidal parting, in places ob-
scurly amygdaloidal and in other
places porphyritic. These differ-
ent phases are distributed irregular
in the hills - a fact probably due to
the deformation produced in the
rock mass by pressure.

Specimens of these are as follows
1740 N. 850 W. of S.E. cor. Sec 9-42-31
From U.W. cor of westernmost hill.

1730 N. 725 W. of S.E. cor. Sec 9-42-31
From U.E. corner same hill.

1600 N. 300 W. of S.E. cor. Sec 9-42-31
From top of next E. hill.

361
33384
G.D.

362
33358
G.D.

363
32356
G.D.

364
33357
A.D.

1600 N. 1400 W of S.E. Cr. Sec 9-42-31
from East end of this same hill.

365
33358
A.D.

1450 N 1400 W of S.E. Cr. Sec 10-42-31
West end of hill of Schistine diabase
showing spheroidal parting.

All the rocks in this section thus
far described evidently belong with
the old series of flows etc. The la-
ter intrusive gabbros etc are no
longer to be found.

366
33359
367
33360
C.

In the river at 800 N of S. line
line Sec 9-42-31 are several
low ledges of slate or Schistine
conglomerate, dipping nearly ver-
tically and striking 15°-25° N of
W. The ledges run about 50 steps
along the bank, exposures being
almost continuous in this distance
366 is from S-end of exposures
367 " " " "

NW 1/4

10

T. 42

R. 31

NW
Cor.

Lake

Lake 365

365

369

369

368

3336

C.A.

369

3336

C.A.

368
33361
G.D.

1150 N. 1625 W of S.E. Cor. Sec 10-42-31.

Fine grained Diabase, showing small porphyritic crystals on weathered surface. The rock in place is schistose, with a strike well schistosity of about 40° N of W.

369
33362
G.D.

1270 N 1425 W of S.E. Cor. Sec 10-42-31

Schistose greenstone from top of hill.

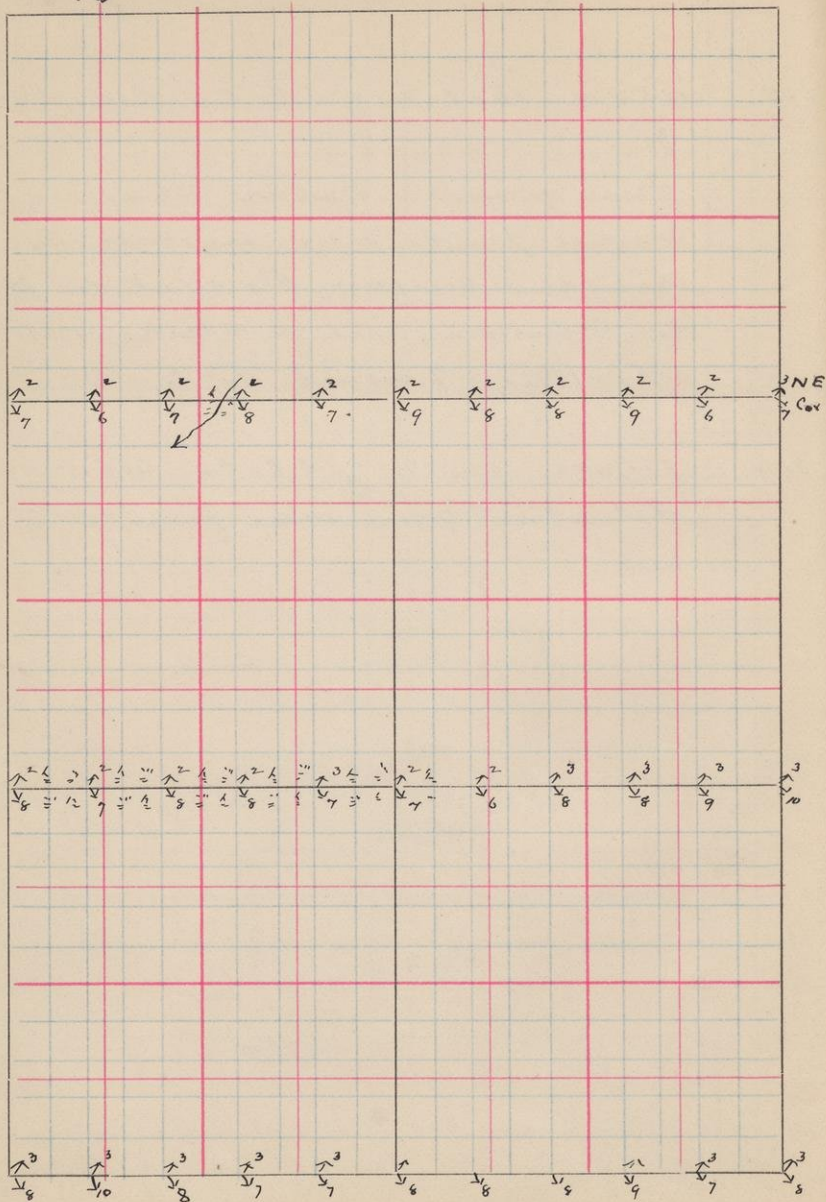
NE 1/4

10

T.

42

R. 31



40 314 75
191

No rocks seen in NE 1/4 Sec 10
T 42 R. 31.

S W $\frac{1}{4}$ T. 42
10

R. 31

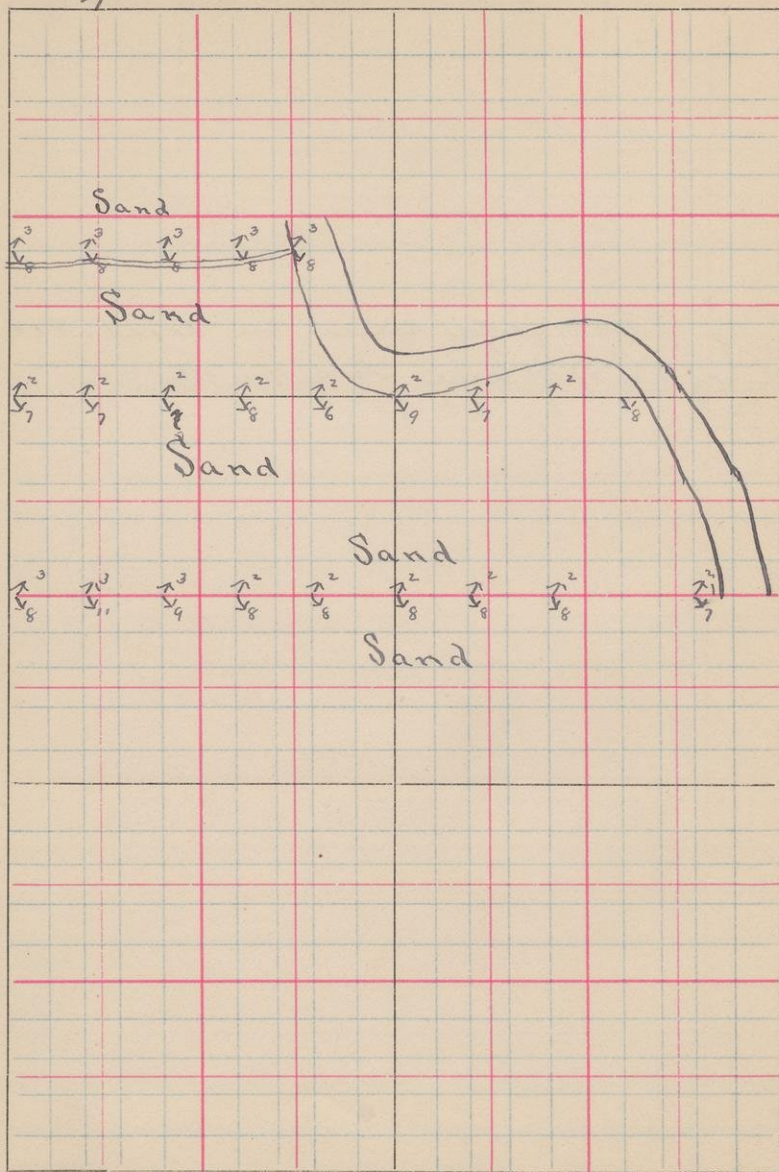
$\frac{3}{7}$ $\frac{3}{7}$ $\frac{1}{6}$ $\frac{3}{7}$ $\frac{3}{7}$ $\frac{3}{6}$ $\frac{3}{7}$ $\frac{3}{6}$ $\frac{3}{7}$ $\frac{3}{6}$

3
56
Two rocks seen on line 500 N
gs. line Sec 10-42-31

No rocks seen in line 500 N
of S line See 10. 42-31

S W 1/4 T. 42
4

R. 31

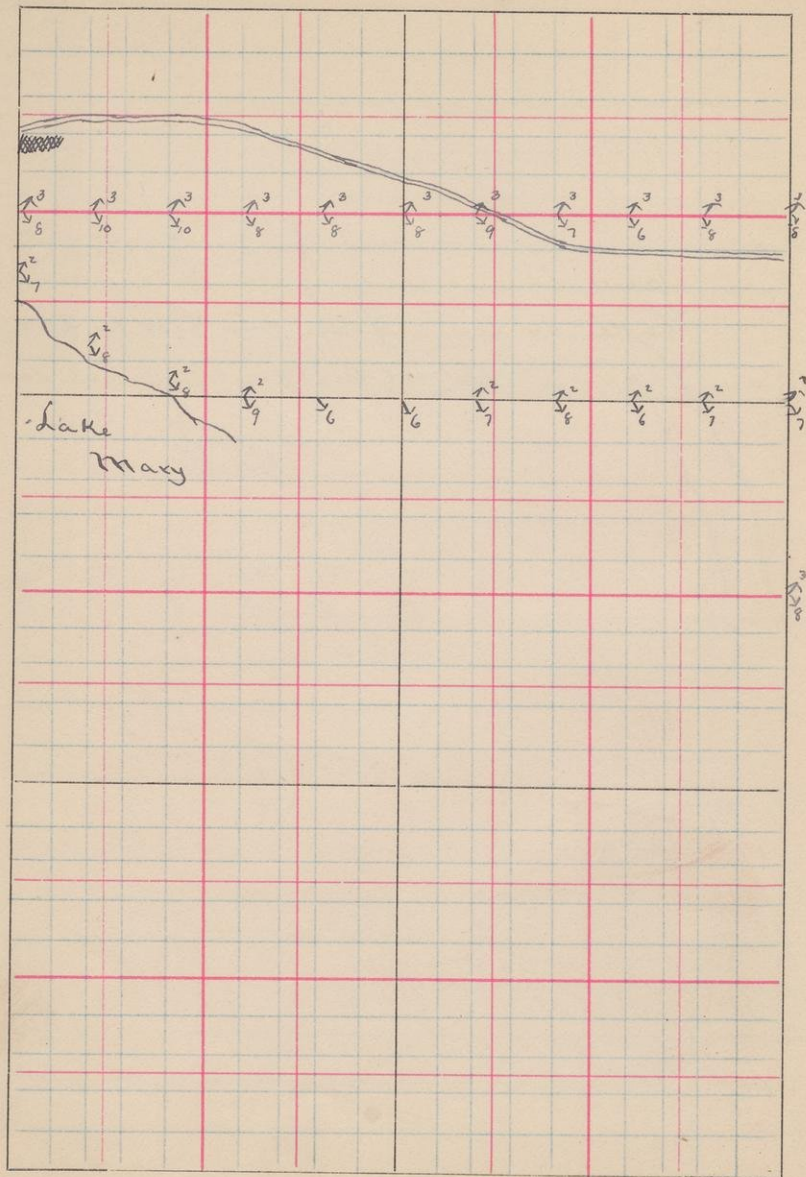


No rocks were seen in S 1/4 Sec
11 - 42 - 31.

S.E. 1/4
5

T. 42

R. 31



Sand plains and hills occur around
Lake Mary in the S.E. $\frac{1}{4}$ Sec 5-42-31
Except in its N.W. cor. where occurs
a single knob of rock described on
next page.

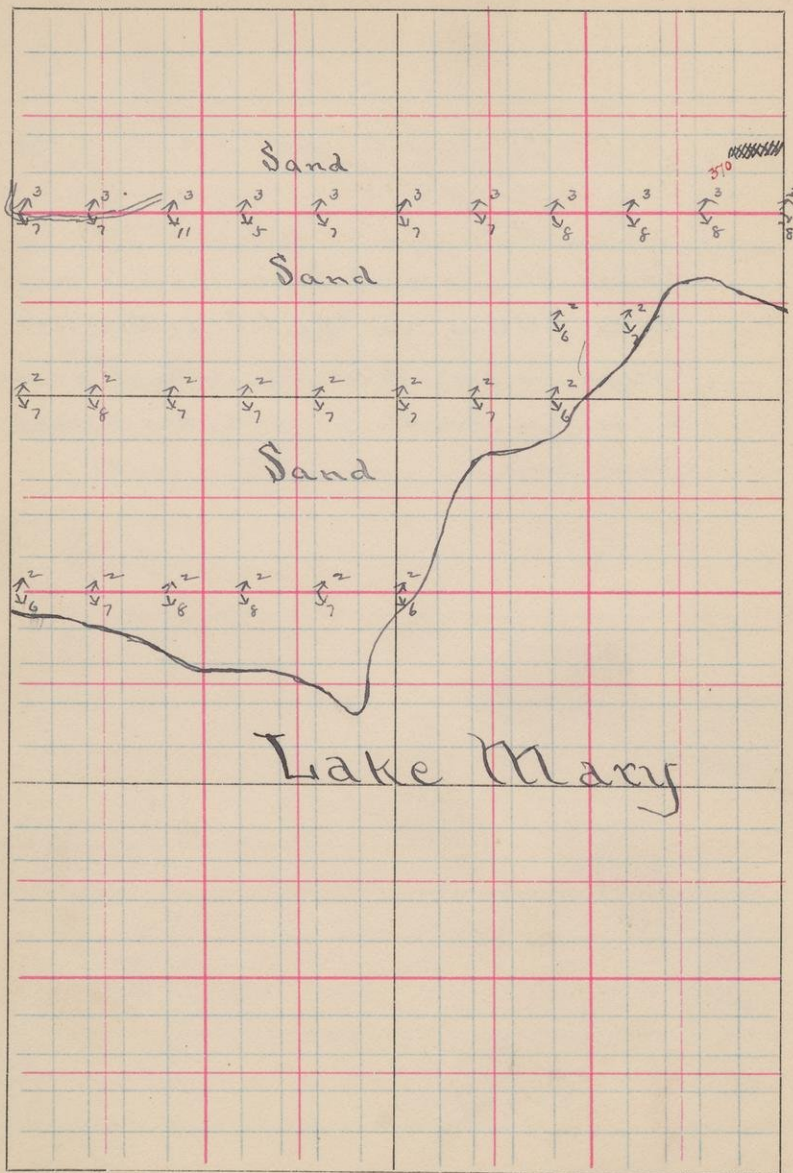
S W 1/4
5 T. 42

5

T.

42

R. 31



370

93363

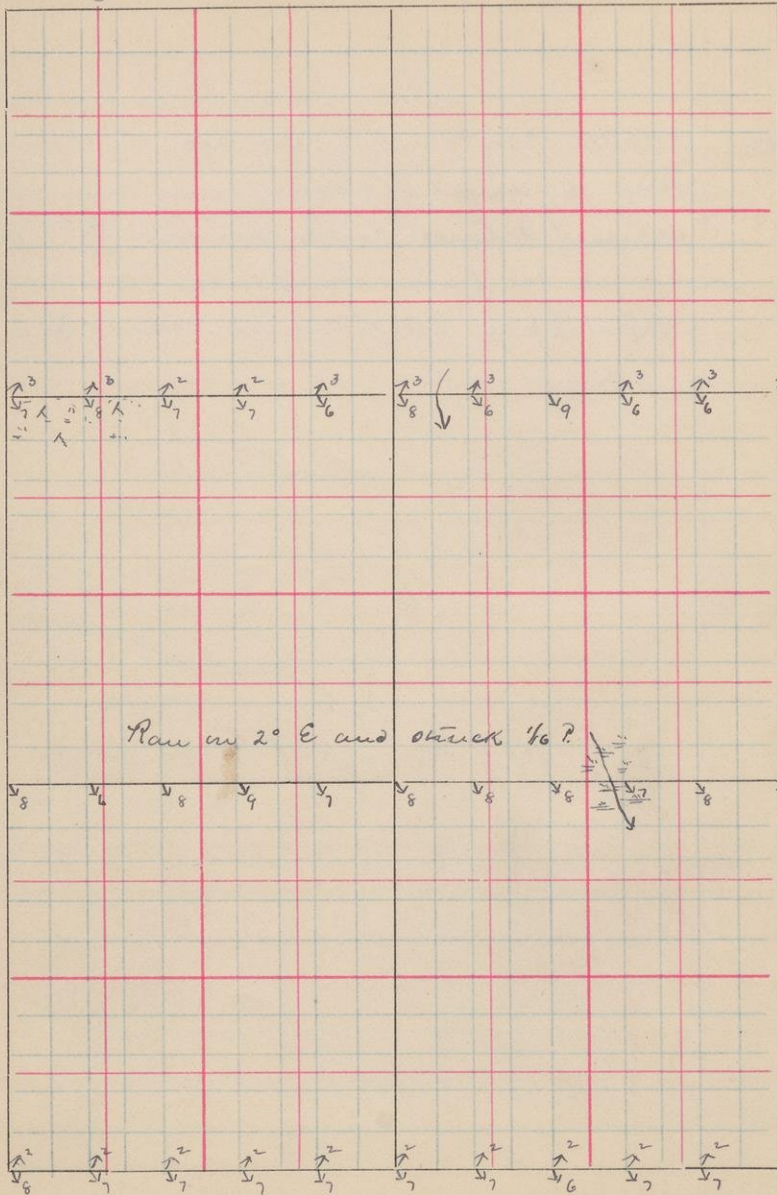
Q.D.

830 N. 1060 W of S.E. Cor Sec 5-42-31

Fine grained Diabase from west end of
series of small knobs running N E for
about 100 paces. In places the rock is
spheroidally pitted and schistose.

NE $\frac{1}{4}$ T. 42

R. 31



3
E
Cor.

4
S

2
S

NW $\frac{1}{4}$ T. 42
8

R. 31

NW
Cor

Lake Mary

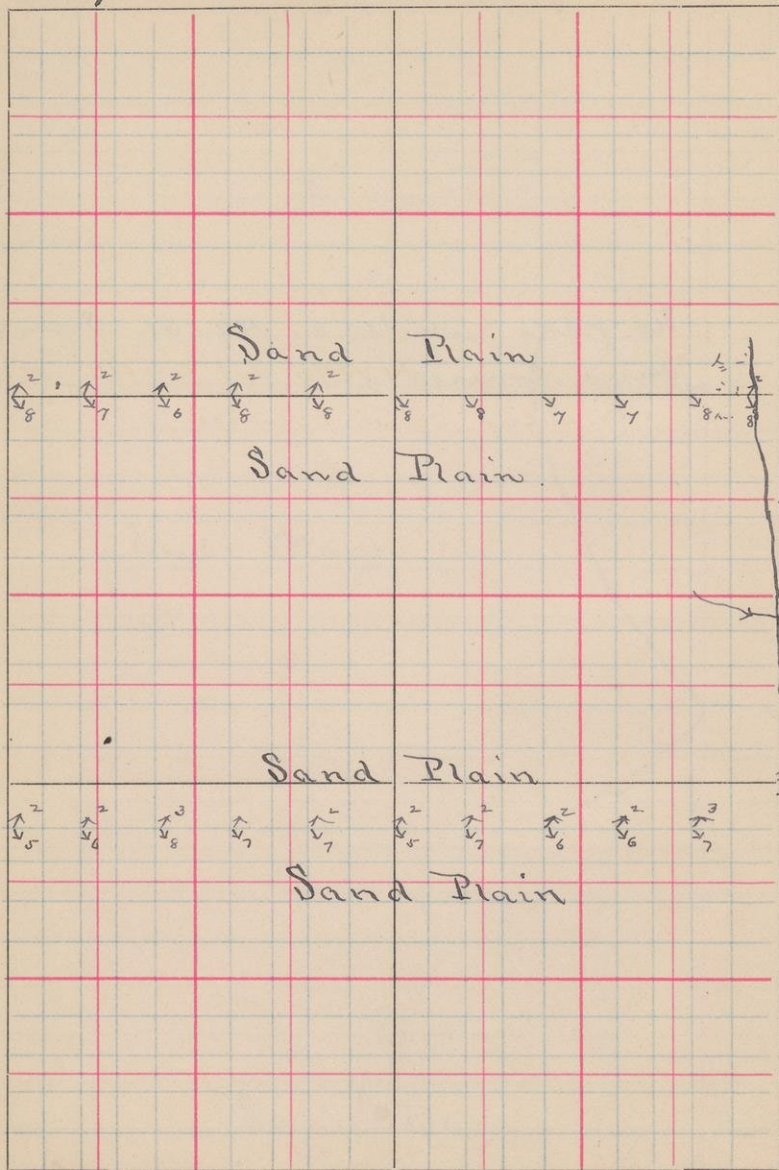
Sand Plain.

$\frac{1}{8}$ $\frac{1}{7}$ $\frac{1}{6}$ $\frac{1}{5}$ $\frac{1}{4}$ $\frac{1}{3}$ $\frac{1}{2}$ $\frac{1}{1}$ $\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{4}$ $\frac{1}{5}$ $\frac{1}{6}$ $\frac{1}{7}$ $\frac{1}{8}$

No rocks in Dec 8. 42-31. Country
sand covered

NW $\frac{1}{4}$ T. 42
9

R. 31



No rocks in NW 1/4 Sec 9-42-31
Country sand covered.

River

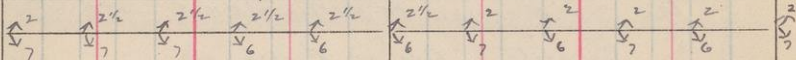
3
50/6

SE $\frac{1}{4}$ T. 42

R. 31

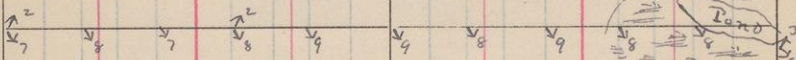
Run in var 2° and struck
W $\frac{1}{4}$ post.

Sand Plain



Sand Plain

Sand Plain



Sand Plain



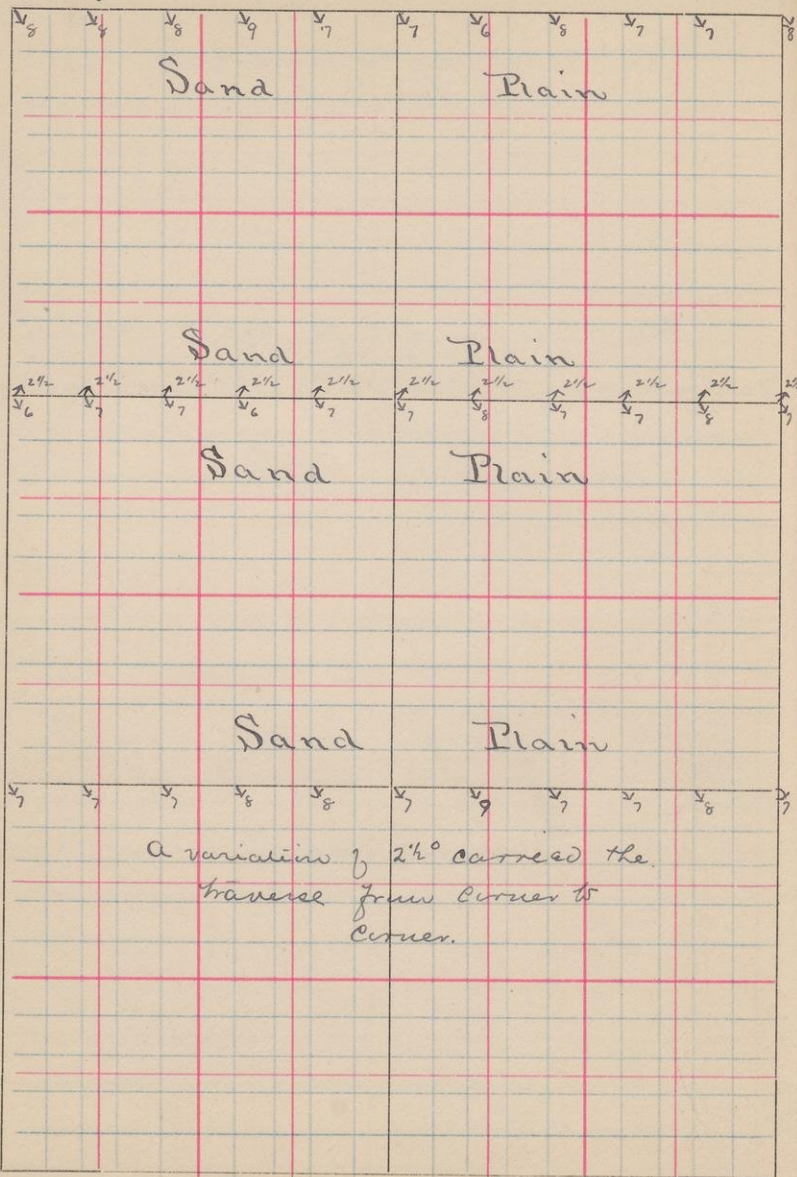
No rocks in S.E. 1/4 Sec 4 - 42 - 31.

S N $\frac{1}{4}$

7

T. 42

R. 31



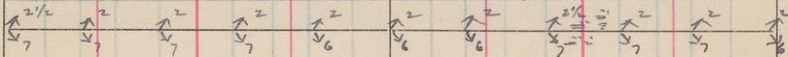
No rocks in S.W. $\frac{1}{4}$ Sec 7-42-31

SW $\frac{1}{4}$
8

T. 42

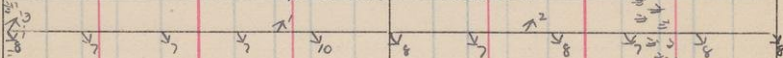
R. 31

Sand Plain



Sand Plain

Sand Plain



Sand Plain

W rocks in SW $\frac{1}{4}$ Sec 8-42-31

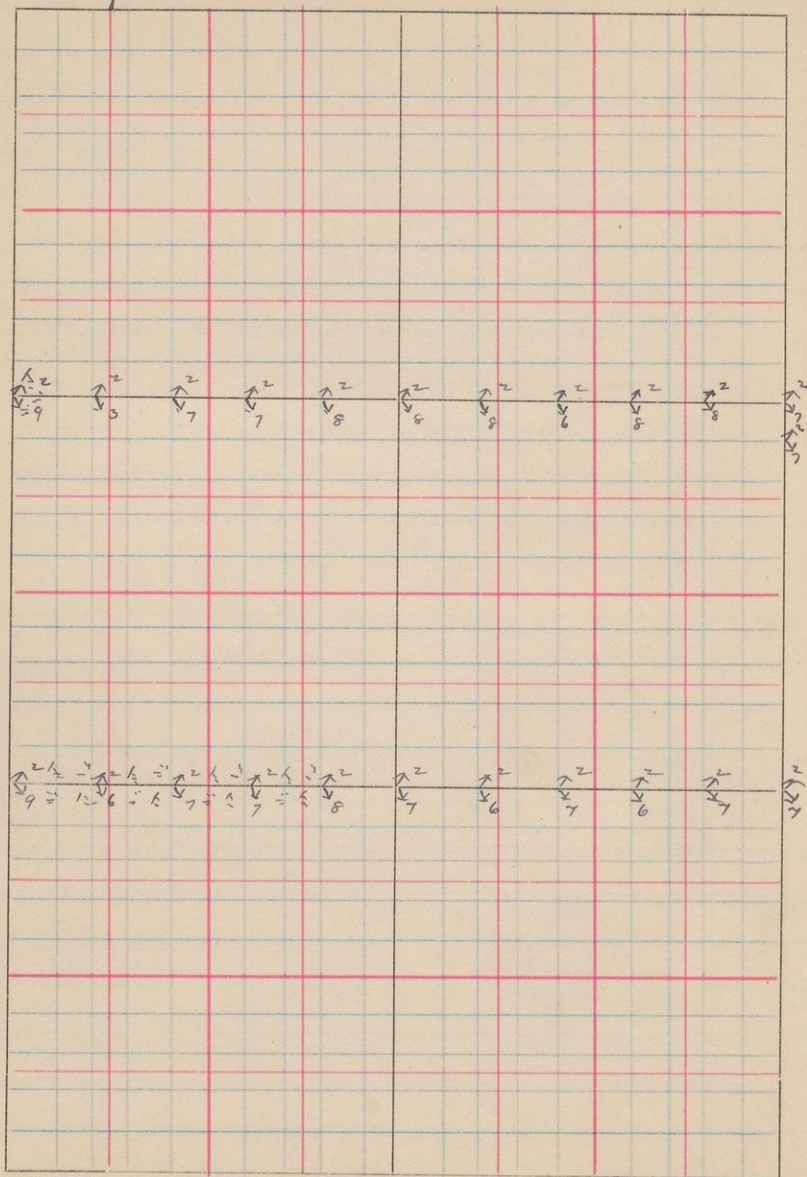
SE 1/4 T. 42
8

R. 3/

No rocks in S.E. $\frac{1}{4}$ Sec 8 - 42 - 31.

SW $\frac{1}{4}$ T. 42

R. 31

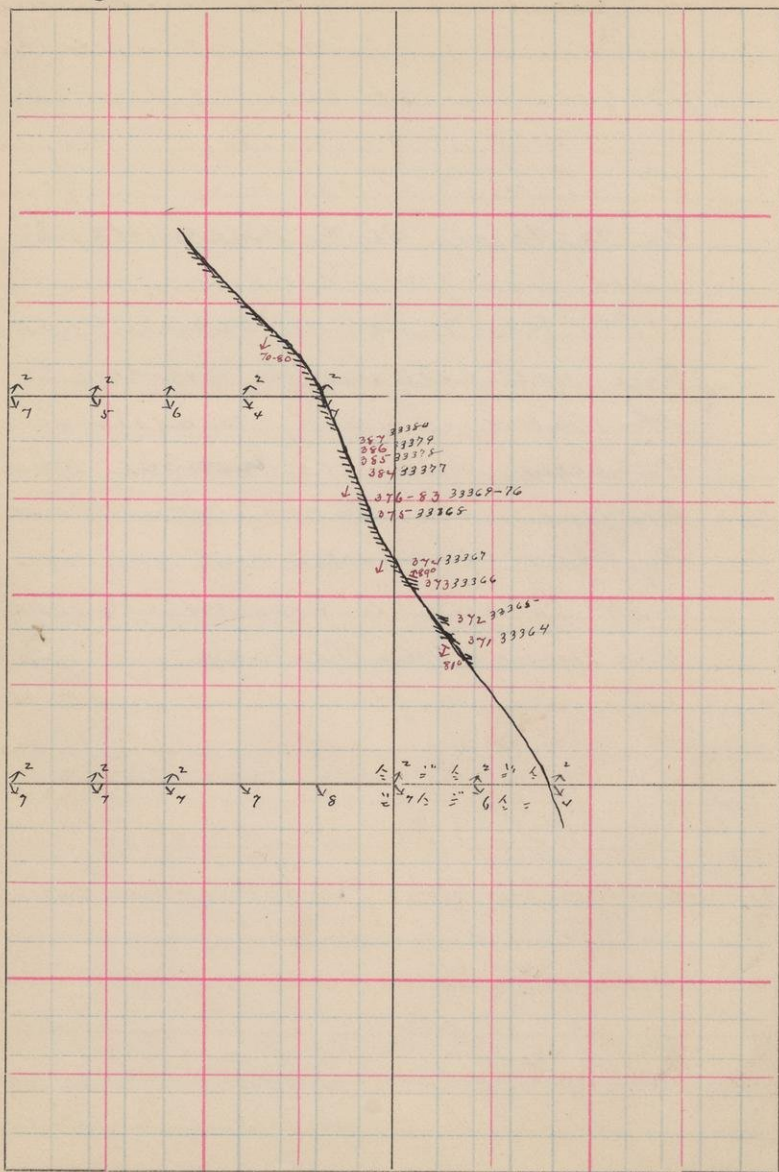


No rocks in SW 1/4 Sec 9-42-31

The dips given on opposite page
are valuable only as serving to
show absence of any magnetic
attraction save the normal. The
differences in dip indicate merely
that the needle was not in
working order, as was afterwards
discovered when the case.

SE $\frac{1}{4}$ T. 42

R. 31



371
33364
chlo

372
33365
C

The west bank of the Michigamee river from about 200 to 400 ft. of the south line of Sec 9-42-31 is formed of a series of conformably bedded slates and conglomerates, that are exposed to the south in the bed of the stream, and further north on the side and at the bottom of a high bank that rises abruptly from the water's edge. The upper portion of this bank is clay and sand, the lower part only being rock. All the rocks dip high to the S.W. and strike a little N. of W.

371

33364

Chlo 52

is a very soft chloritic slate from the southernmost exposure (at about 200 N. 420 W. of S.E. Cor Sec 9) It strikes 18° N. of W. and dips about 81° to the S.W.

372

33365

About 10 paces north of 371 is another small ledge. In this are hard ridges standing above the general level of the surface. Between the hard ridges the material is like 371. The substance of the hard

layers breaks like quartzite, and was rather for this rock at first, but further study in Exposures to the north indicate that the ledge is a conglomerate - the soft layers being the matrix and the hard ones lenticularly squeezed felsite pebbles.

The specimen, which is from a hard layer, is thus probably a pebble.

Strike 60° N of W.

373
93366

The southernmost bed in the cliff (290 N of S. line sec 9) appears to be a soft Lomblendic schist. Looking rock striking 200° N of W and dipping high to the north.

374
93367

At 320 N is a soft, light colored schist that looks remarkably like some of the Penokee-Union schists. It strikes 50° N of W and dips 80° N S.

Beyond this, as far north as 360 N. the beds are like 371 but

375
33368

at this point (360 ft.) they contain a large quantity of red feldspathic material, as though much of the detritus of which the rocks were formed were granitic in origin.

Just below these layers (at 375 ft.) the conglomeratic character of all these beds is well shown on joint plane surfaces the pebbles show to great advantage. The dip and strike are as in the higher beds.

The matrix of the conglomerate is a schistose greenstone, naturally of fragmental origin, and all the pebbles seen are of a fine grained dense felsite.

376
33369
377
33370

represents the conglomerate
Small pink pebbles from same

378
33371
379
33372
380
33373
381
33374

Fragment of large pebble
Felsite or granite pebbles
Pebble in matrix.
Fragment of large pebble

382-
33373

is a very large boulder in its surface measures 16×8 in. On its weathered surface it closely resembles a true archaean granite. On a fresh fracture it is of a bright red color and contains small nodules of white chert or quartz scattered through it.

383
33376

From same boulder, where the granite is cut by quartz veins and is filled with eyes of quartz like a quartz porphyry.

The pebbles in this conglomerate are all quite different in character from anything seen by us in the Michigan region, unless they are altered forms of the greenstone flints.

The rocks in cliff above this point are all conglomerates, though not as much so as the bed just described. They moreover possess in the whole a less steeply inclined dip, which however is not less than 70° .

At the north end of cliff (400-450 ft)
are again good conglomerates, which
differ from the bed south in the
character of some of their pebbles.
Some are felsitic, and like the
very fine grained greenstones oc-
curring in flows. Others are un-
doubtedly amygdaloids.

384
33377

From bed immediately above this
conglomerate.

385
33378

Felsitic pebble in conglomerate.

386
33379

From large pebble of amygdaloid
in conglomerate.

Other amygdaloid have larger
amygdules in them, but some look
exactly like the amygdules of the
flow series, so common near the
Michigan mine dam.

387
33380

From north end of cliff (450 ft)

micaceous matrix of conglomerate.

No rocks in SE $\frac{1}{4}$ Sec 2. 42-32.

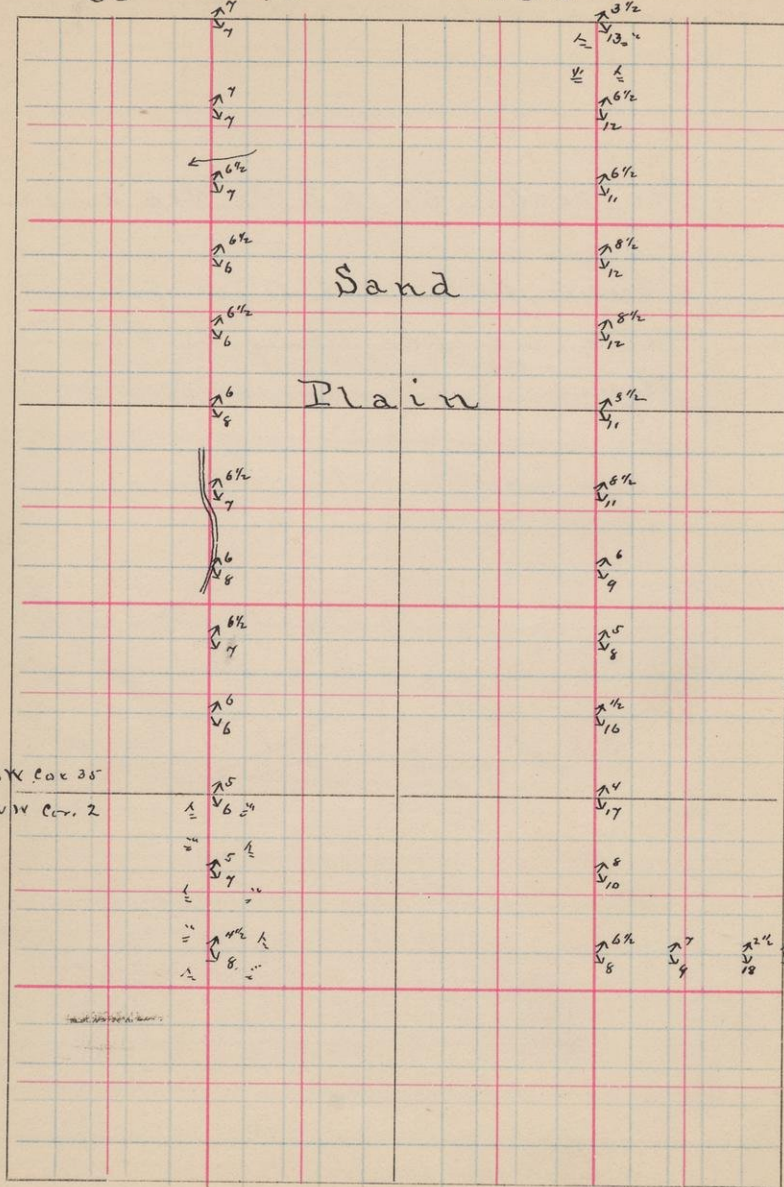
Sand plains extend from E.
line all the way to Paint
River.

SW 1/4

35

T. 43

R. 32



SW cor 35

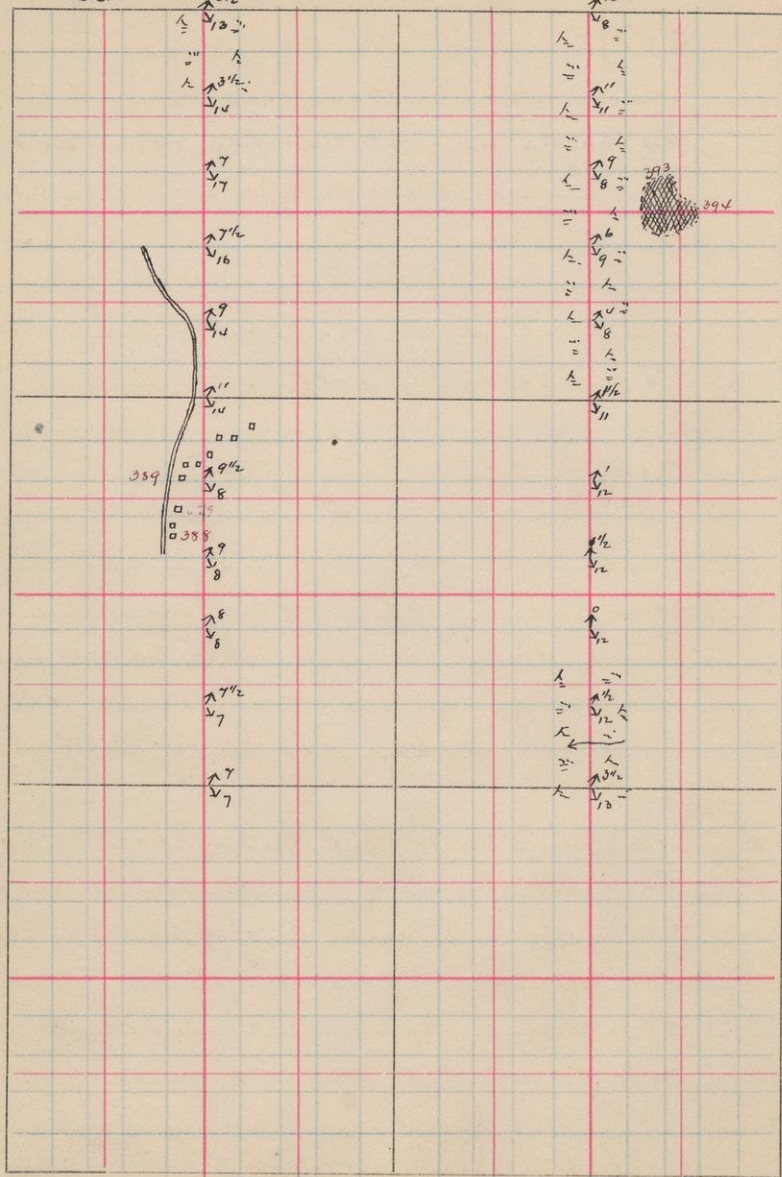
NW cor. 2

Two rocks in SW $\frac{1}{4}$ Sec 35-43-32.

NW 1/4
35

T. 43

R. 32



388
33381
ch

389
3338
Q-m

46

In the NW $\frac{1}{4}$ Sec 35-43-32 at about
1300 - 1500 N. 1700 - 1800 W of S.E. Cor
Sec 35 - is a nest of test pits
that were sunk some time ago
in a hardwood hill. No exposures
are in the vicinity, so the pits af-
ford valuable information as to
the underlying rock.

388

33381

Ch.

The pit at 1350 N. 1795 W of S.E. Cor
Sec 35-43-32 has in its dump
heap a large quantity of chert
that is seen in the form of a
band some 2 in. wide, between
layers of soft red material that
may be either red slate or Lema-
niti.

389

33382

Q. 100 ft

1400 N. 1770 W of S.E. Cor. Sec 35-43-32
This pit has in its dump a num-
ber of fragments of jasper banded
with ore.

The same jasper is abundantly pres-
ent about the pit at 1415 N. 1765 W.

Could not be sure that any of the
other pits struck ore. Their dumps

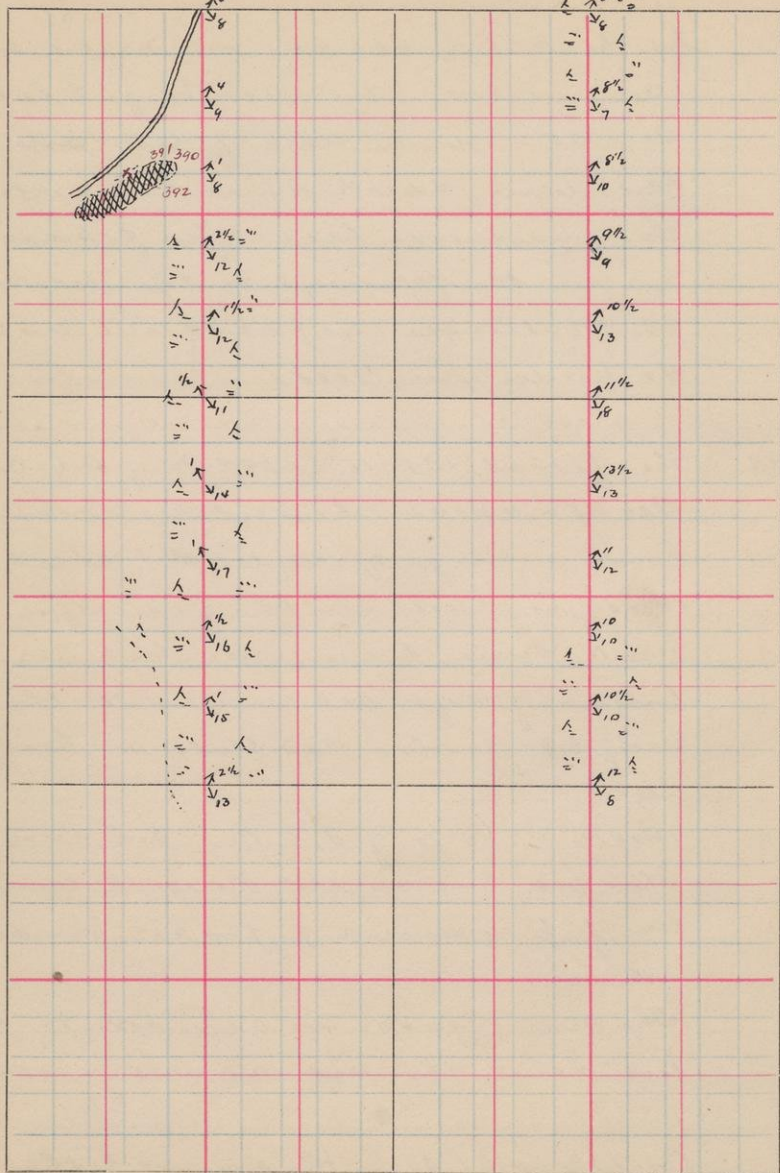
SN 1/4

26

T.

43

R. 32



contain fragments of jasper,
greenstone, granite, chert etc., so
that probably my drift was reached.
It seems certain, however, that in
the pit located in the text the rock
was undoubtedly met with in place.

390
33383
G.A.E.

At 800 N. 1790 W of S.E. Cr Dec 26
43-32 is the East end of a blast
of greenstone amygdaloid, which
about 20 paces further west shows
the characteristics of the Epidolite
amygdaloid. The Knob extends a
little S of W for about 150 steps
790 N and 1875 W of S.E. Cr Dec
26-43-32

Amygdaloidal phase from North
side of Knob.

392
33385
G.A.E.

1800 N. 1190 W of S.E. Cr Dec 35-43-
32.

From N. side of hill

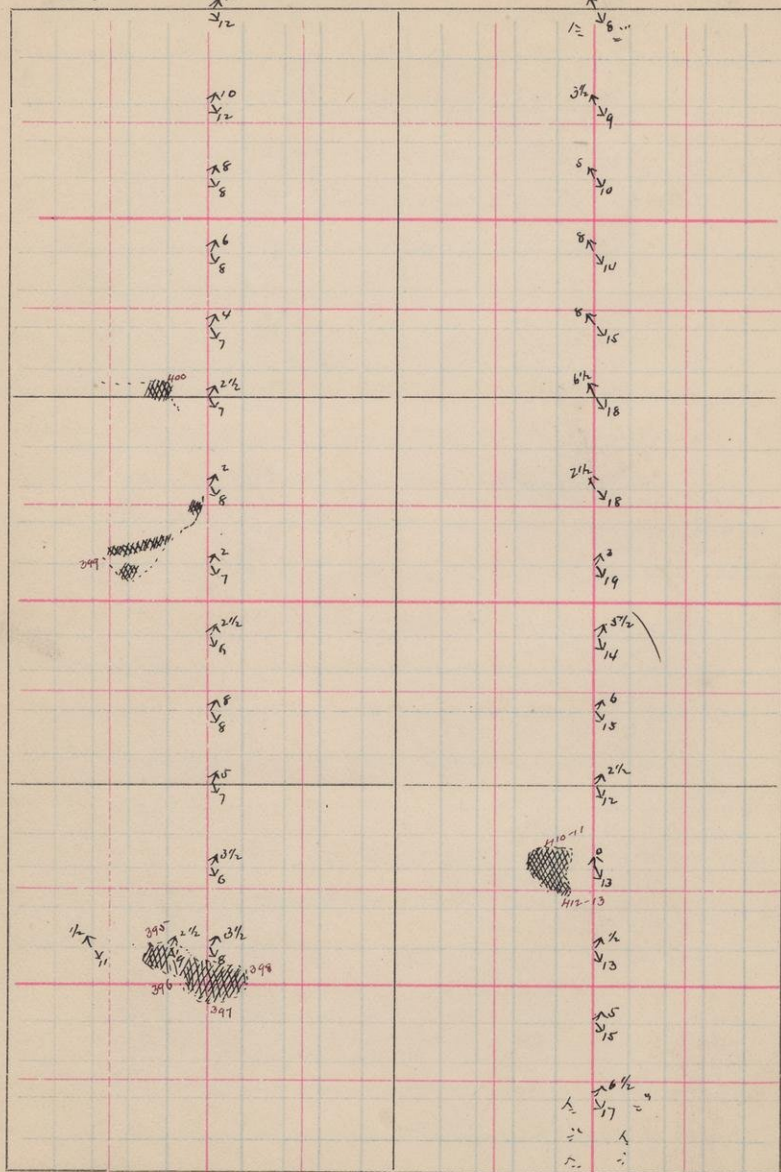
394
33387
G.A.E.

1750 N. 1110 W of S.E. Cr Dec 35-43-32
East side of same hill.

SE 1/4
35

T. 43

R. 32



395
33388

G.A.E.

1800 N. 830 W of D.C. Cr Sec 2. 42-32.
West end of hillcock of greenstone
amygdaloid, whose amygdolites
are elongated in a direction 32° N of
W.

395
33388

G.A.E.

The west end of the hill is the dense,
mass, gray greenstone, that breaks
with a platy fracture.

396
33389

G.A.E.

East of this is the schistose amygdaloid and at the south end of
the hill at

397
33390

G.A.E.

1710 N. 750 W of D.C. Cr Sec 2-42-32
a well defined amygdaloid
with white amygdolites.

SE. Cor
Sec 35
NE. Cor
Sec 2

398
33391

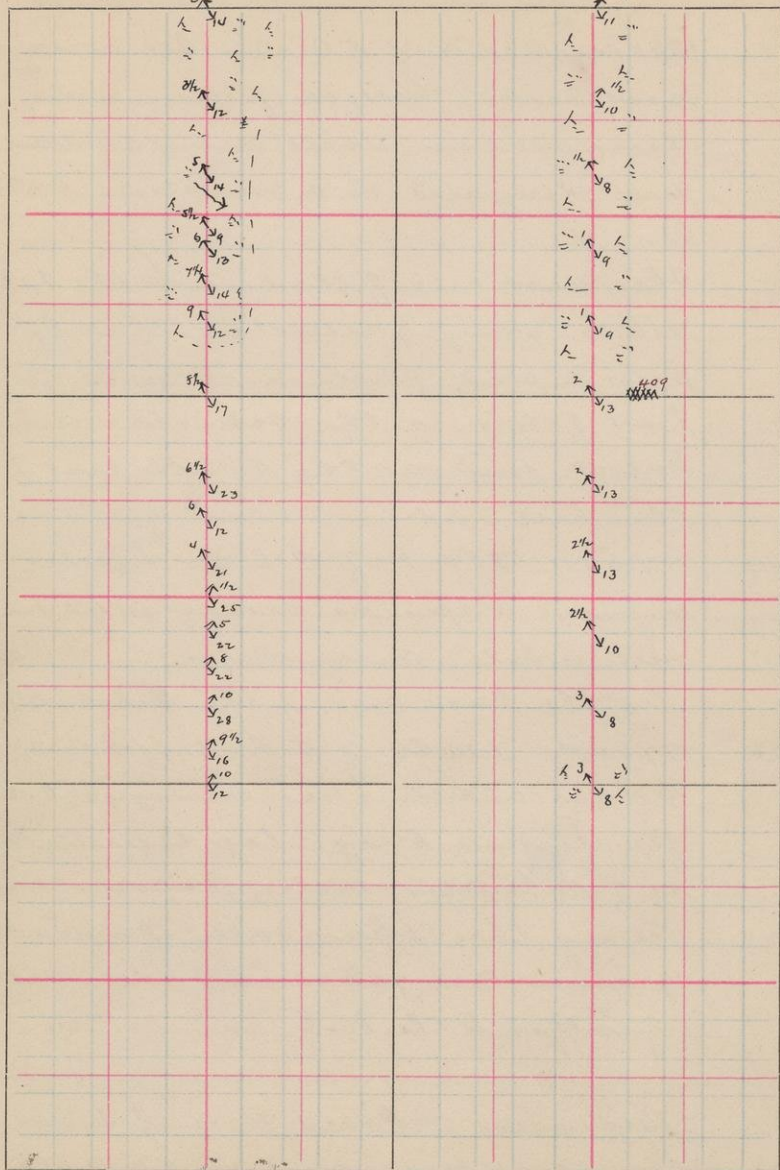
At the East end of the Knob at
1780 N. 730 W of D.C. Cr Sec 2-42-
32 is a schistose amygdaloid,
including large lenticular masses
of a lighter amygdaloid resembling
the spheroidally parted fine
grained amygdaloid so common
further to the N.E.

Between 300 and 500 N of S. line
Sec 35-43-32 and 750 W of S.
East line is a large knob of

NE 1/4
35

T. 43

R. 32



39
333

GA

40
333

GA

40
333

GA

40
333

GA

333

greenstone amygdaloid of which specimens were taken as follows:

399
33392
GAE

300 N 850 W of S.E. Cr. Sec 35-43-32.
The predominant rock on the south side of the hill. This rock stretches in a series of isolated ledges along the south side of the hill as far as 765 W of E line of section.

400
33393
GAE

500 N. 820 W of S.E. Cr Sec 35-43-32
Epidiolic amygdaloid from N.E. corner of hill.

401
33394
Rock

1115 N 765 W of S.E. Cr Sec 26-43-32
Lean banded ore and chert from small pit.

402
33395
403
33396

1200 N. 670 W of S.E. Cr. Sec 26-43-32.
At this place are two large boulders of greenstone conglomerate, so numerous that they cannot have been carried far from the parent ledge. When specimens were taken it was not known that the rock was exposed in the vicinity, but the miners at the Lee Peak shaft state that there are large exposures of same rock a short distance East.

At the Lee Peak Mine, located
1300 N 420 W of S.E. Cor Sec 26-43-32
is a shaft and west about
40 paces a test pit.

H04
33397

ore

1300 N. 760 W of S.E. Cor Sec 26-43-32
From this pit banded ore and
jasper, with bands as even as some
of those of the Jackson Mine, were
taken. The beds dip 80° E and
strike N.W. according to Mining
Captain.

In the working shaft these beds
were struck at a depth of 185 ft.
Above these lies the ore of the
mine, and the associated chert.
Chert from dumpheap of shaft
one

H05
33398
H06
33399

chert

The ore is soft lamellar.

These two substances reach to
within a few feet of the surface
and up to the present working
(Sep 92) no hanging wall has
been reached.

H07
33400
G.A.E

1400 N. 138 W of S.E. Cor. Sec 26-43-32
Epivolic amygdaloid, with dense

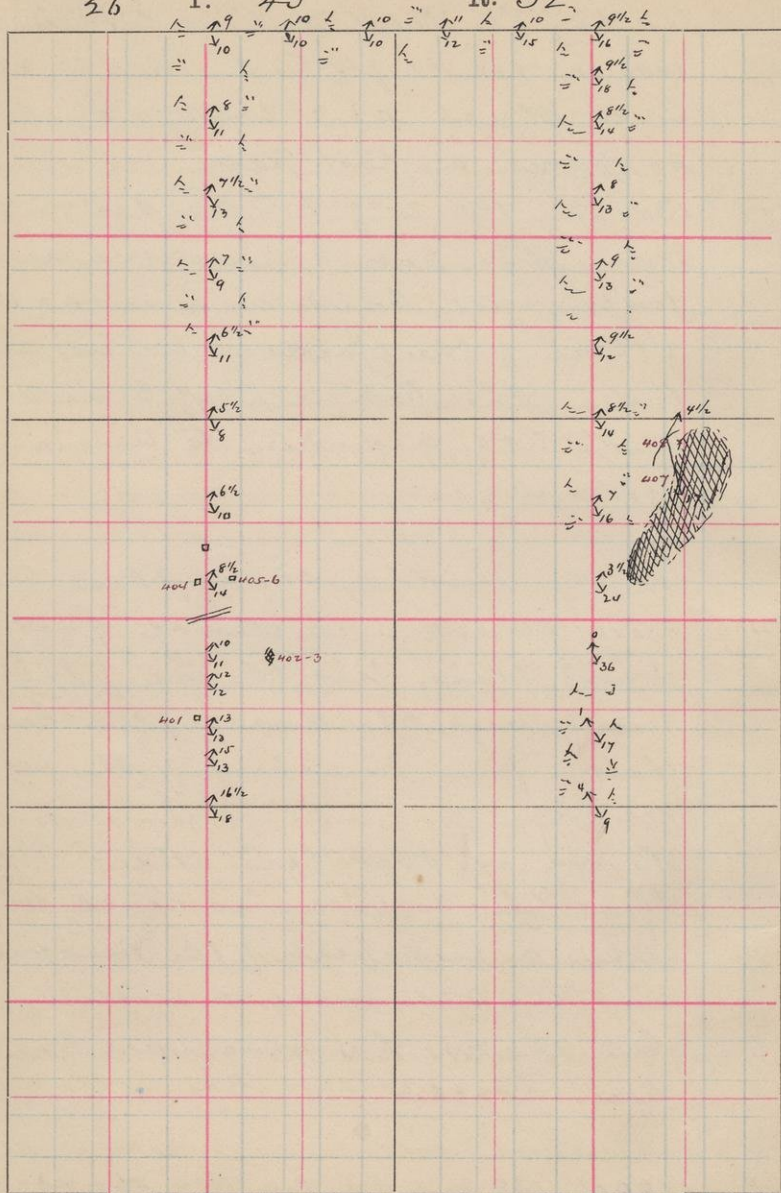
NE 1/4

26

T

43

R. 32



groundmass, from west side of hill.

H08
33401

1424 N. 138 W of S.E. Cr. Sec 26. 43-32
Schistose amygdaloid from N.W. Cr
same hill

R.A.E.

The dense portions of the rock have the characteristics of the groundmass of the epidolite amygdaloid. Quartz veins cut it in all directions, and large lenticular masses of quartz are often found enclosed with.

Several bands of amygdules were noted in the rock, indicating several flows, but all the material is same kind.

409
33402
G.C.

1500 N. 200 W of S.E. Cr. Sec 35-43-32
Greenstone conglomerate forming
small knoll in top of hill on which
are no other exposures.

H10
33403
G.C.S.

1925 N. 275 W of S.E. Cr Sec 2. 42-32
From north side of knoll of Schis-
tose Conglomerate, the strike of which
schistosity is 22° N of W.

410
33403

Specimen of the rock from 1925 N 300
W of S.E. Cr.

H11
33404

White weathering pebbles from same.
At the south end the rock is less
conglomeratic than it is on the north
side of the bluff.

H12
33405
H13
33406

Here the schistosity is almost flat
and the rock is very dark, with
large lenses of sugary quartz often
intercalated between the layers.

