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## **Vicinity of Amasa, Michigan: [specimens] 23428-23445. No. 170 1894**

Culver, G. E.

[s.l.]: [s.n.], 1894

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U. S. GEOLOGICAL SURVEY  
FIELD SECTION BOOK

8-891



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

No. 23428-23445

#170

V r 8/95 - C - 16.

A. E. Culver

No. 2.

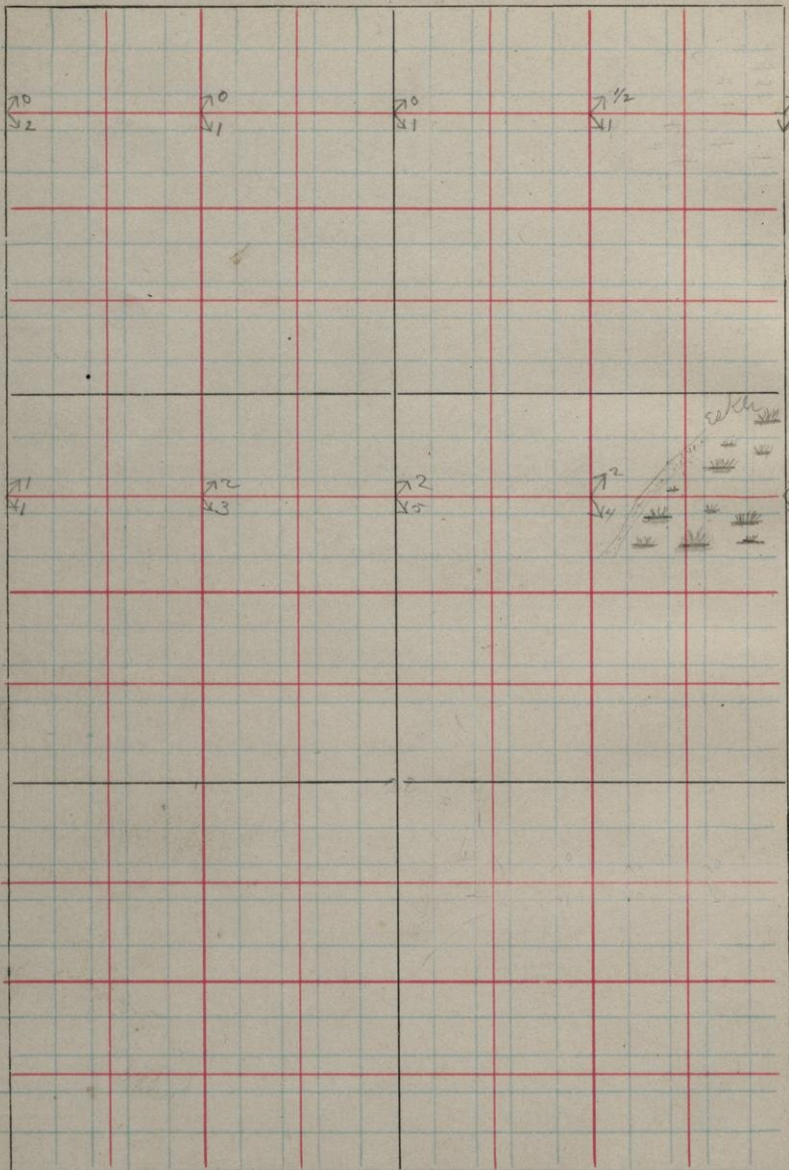


N.W. S. 21  
Cor

T. 45

R. 32

N.E.  
Cor



S.W.  
Cor

S.E. Cor

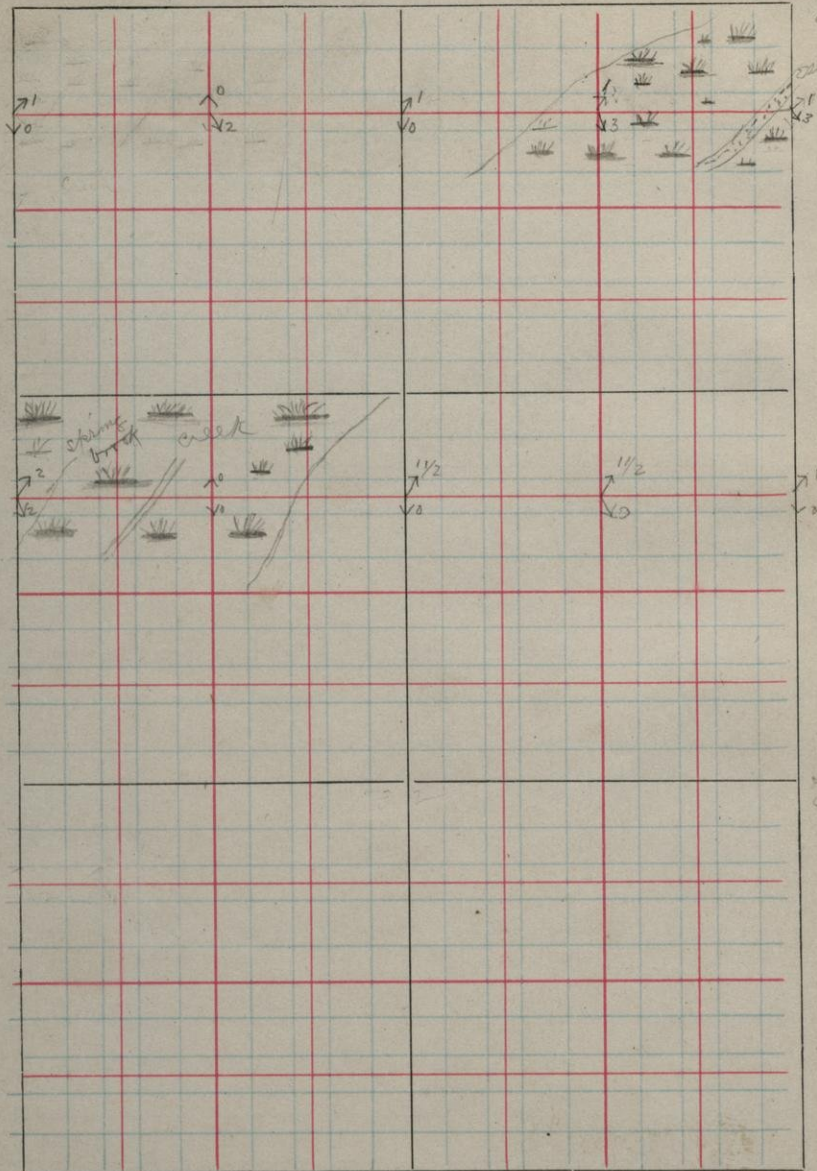




S. 22

T. 45

R. 32

NW  
corNE  
cor





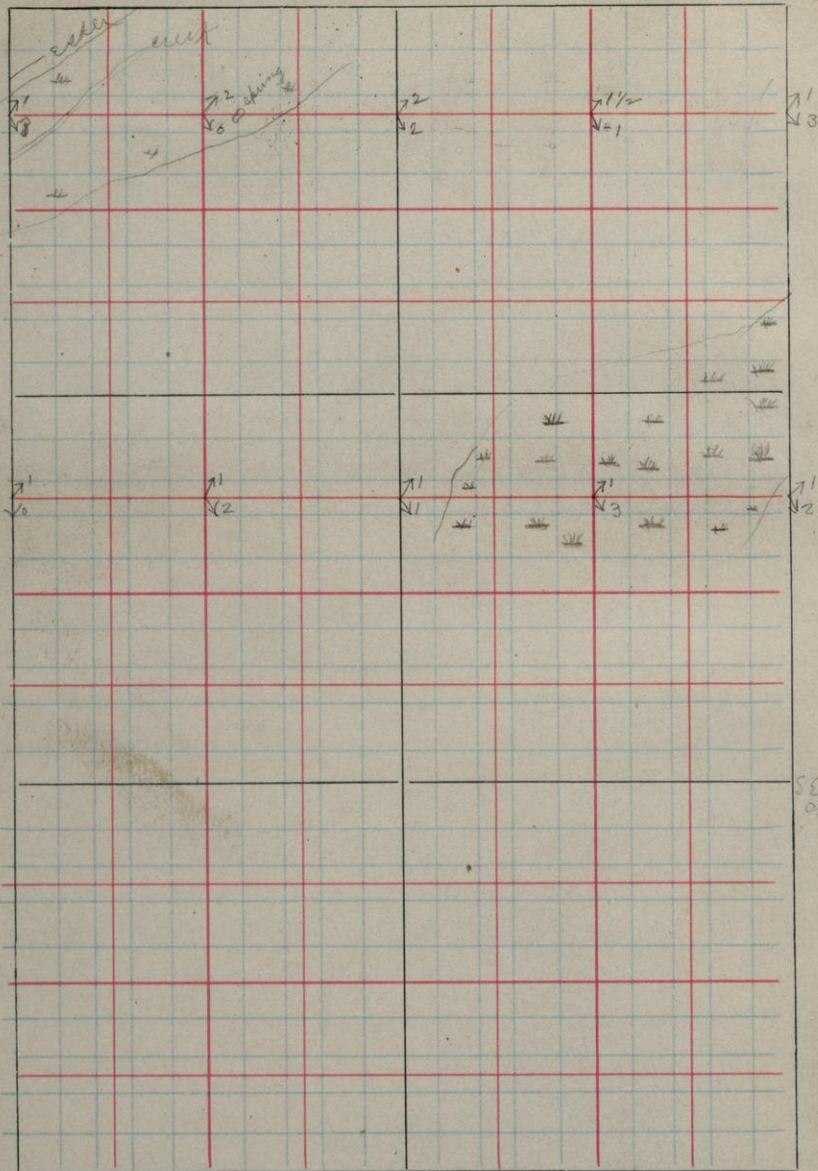
E

S. 23

T. 43

R. 32

NE Co

NW  
corSW  
corSE  
cor







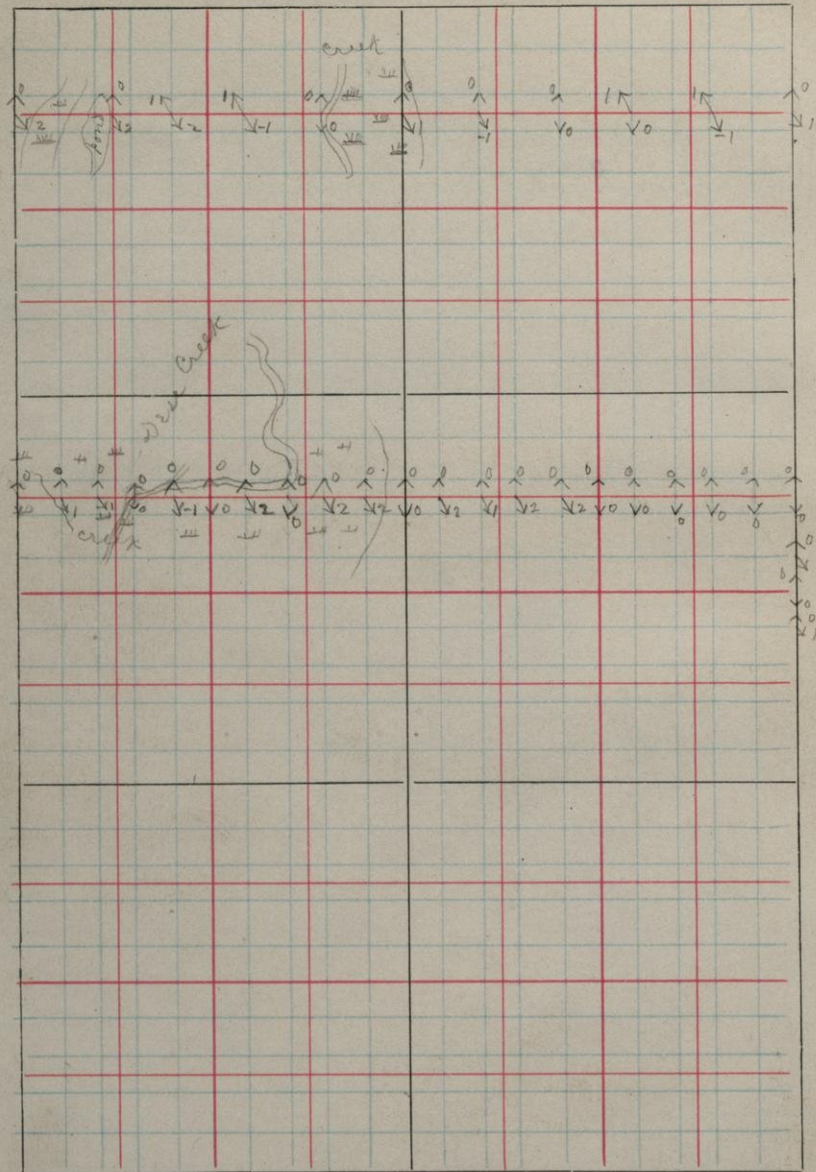
Like 23422 1720 w 1750 yr. Greenstone like  
No. 23422



new S.5  
cr

T. 44

R. 32



SW  
Co

S.E.



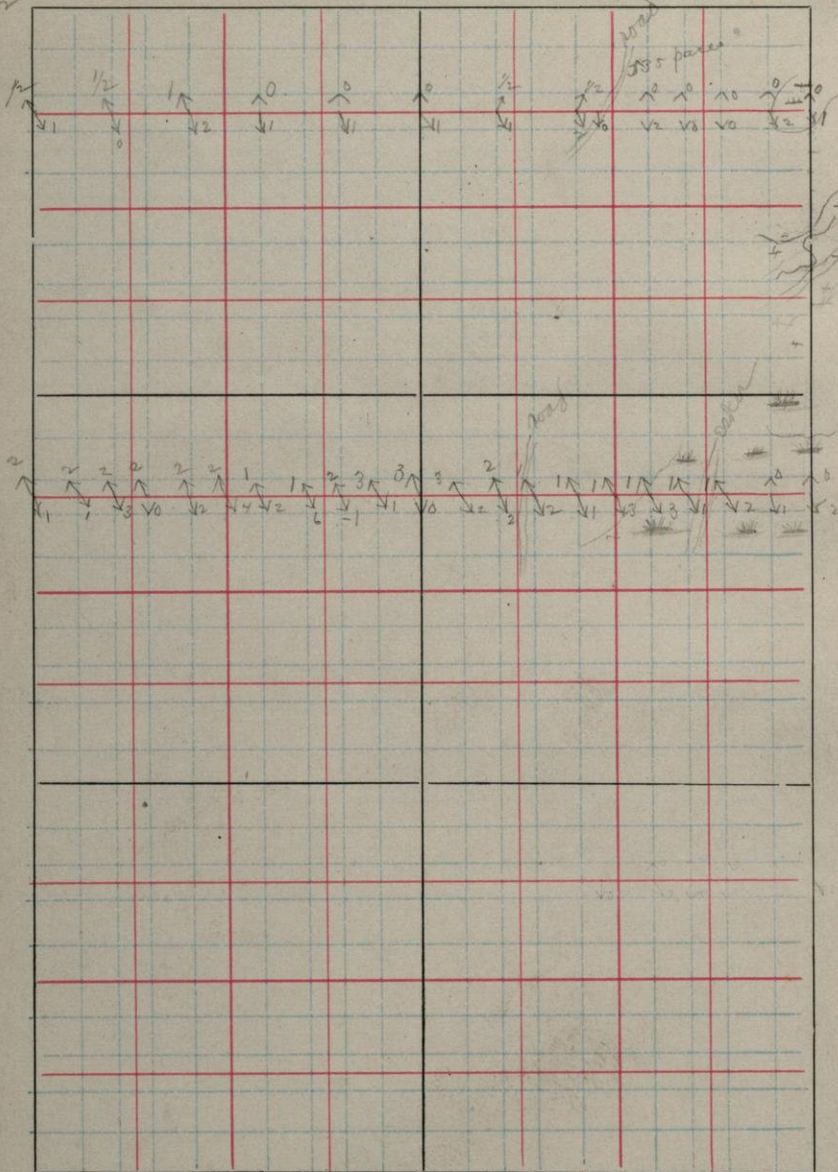


Dr S. 6

T. 44

R. 32

и ε  
ср







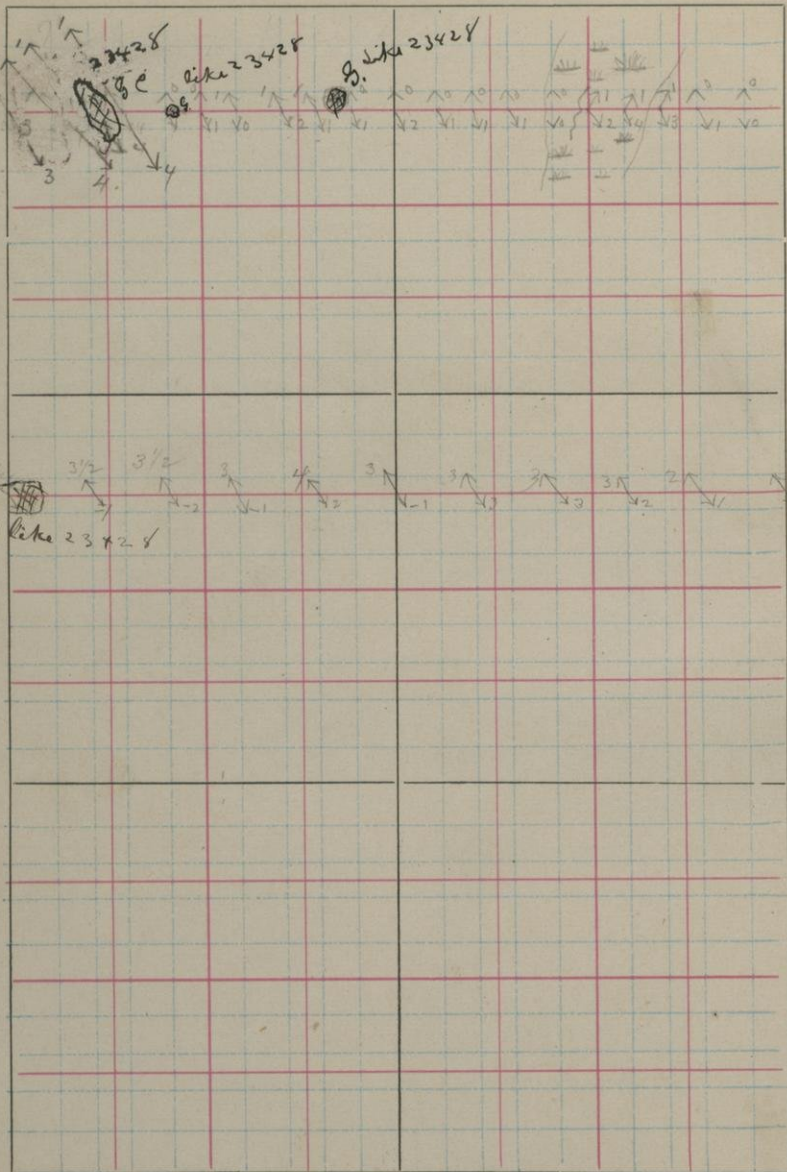
7th  
cor

S. 30

T. 45

R. 32

NE  
cor



SW  
cor

SE  
cor

- like 23428 1100 W 1785 N Greendone, small ledge  
 " 23428 1600 " 1750 " " breccia (small)  
 — 1740 W 1710 N " " big outcrop  
 Part brecciated part compact schistose  
 Glacial striae NE-SW  
 23428 Visicular character marked throughout  
 From this large exposure a weathered  
 specimen showing brecciated or  
 ash-bed structure  
 23429 Chert included in greenstone Mass  
 two feet long 6 to 8 in wide.  
 like 23428 2000 W 750 N same rock



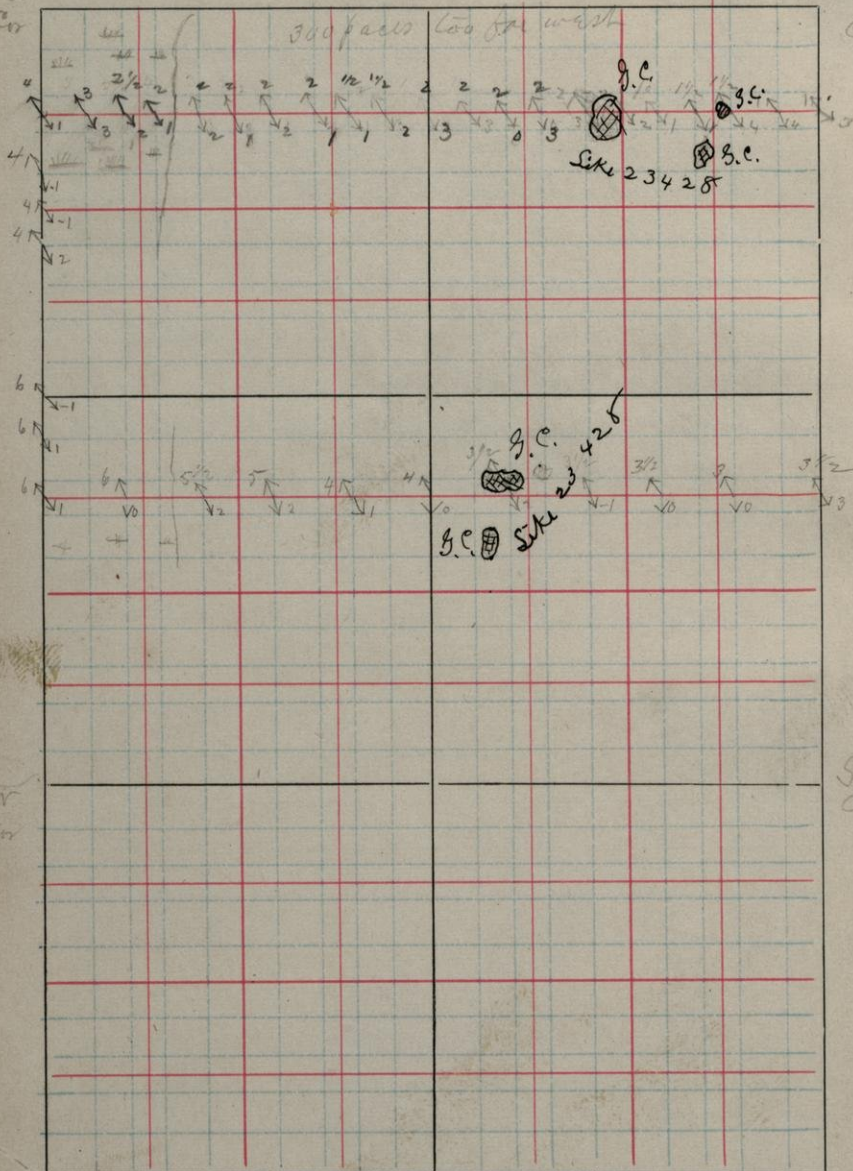
S. 25

T. 45

R. 33

NW  
CorNE  
Cor

300 paces too far west





like 23428	230 w	1750 x	greenstone
" 23428	275 "	1665 "	"
" 23428	300 "	1750 "	"
" 23428	820 "	800 "	"
" 23428	850 "	654 "	"

The above outcrops are all similar  
to the exposures in sec 30. (23428)

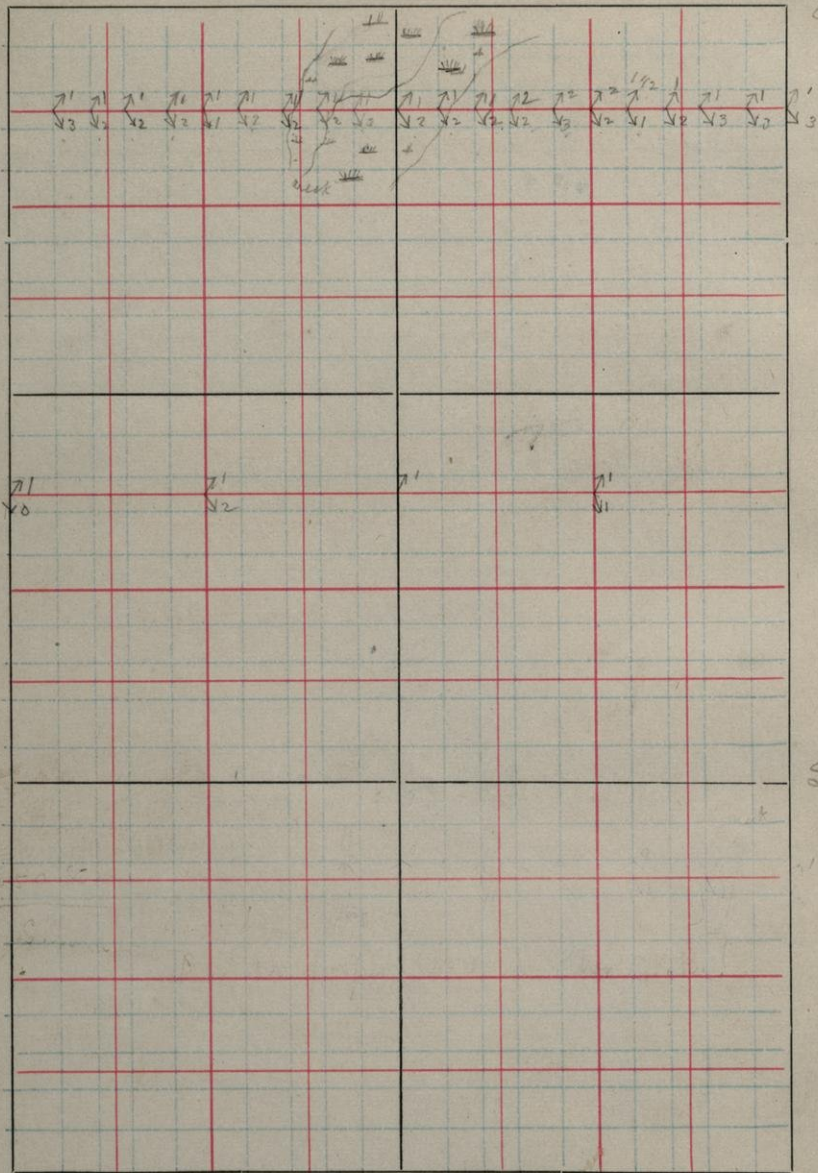
S. 28

T. 45-

R. 32

H. W.  
Cox

NE,  
CUT



S. E.  
Cov

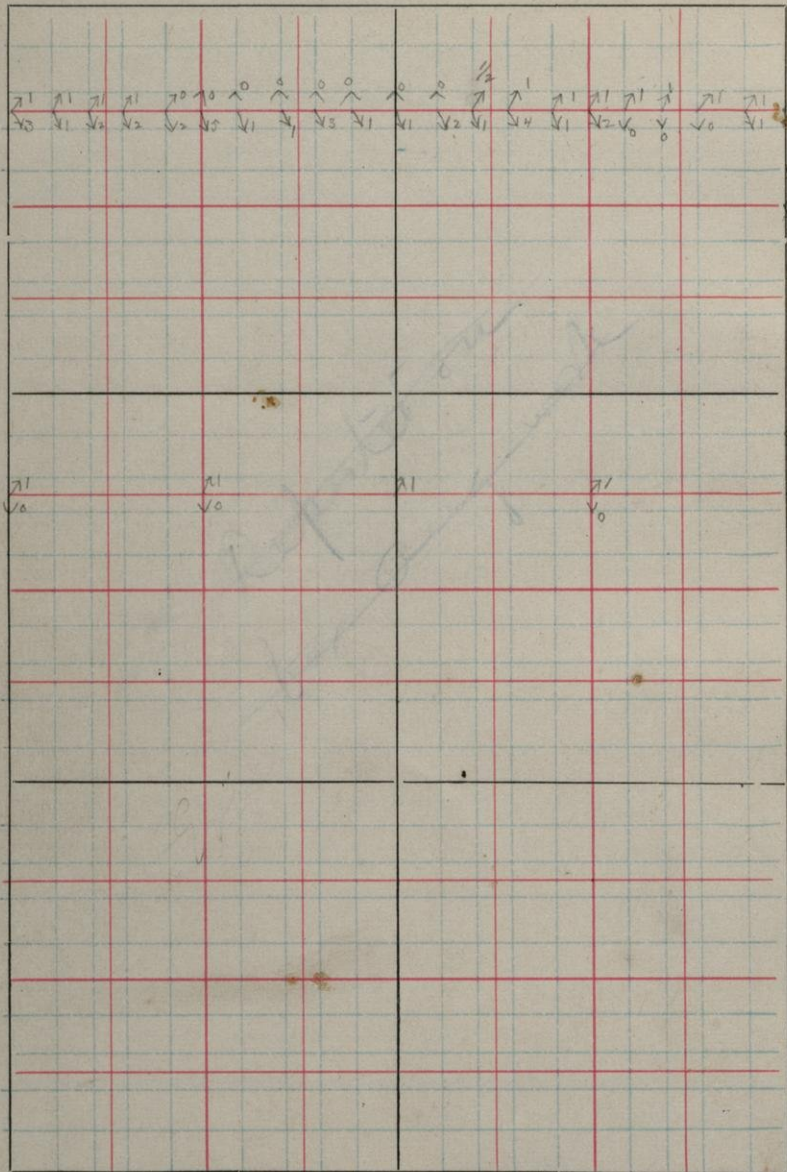




S. 27

T. 45-

R. 82

NW  
corNE  
cor

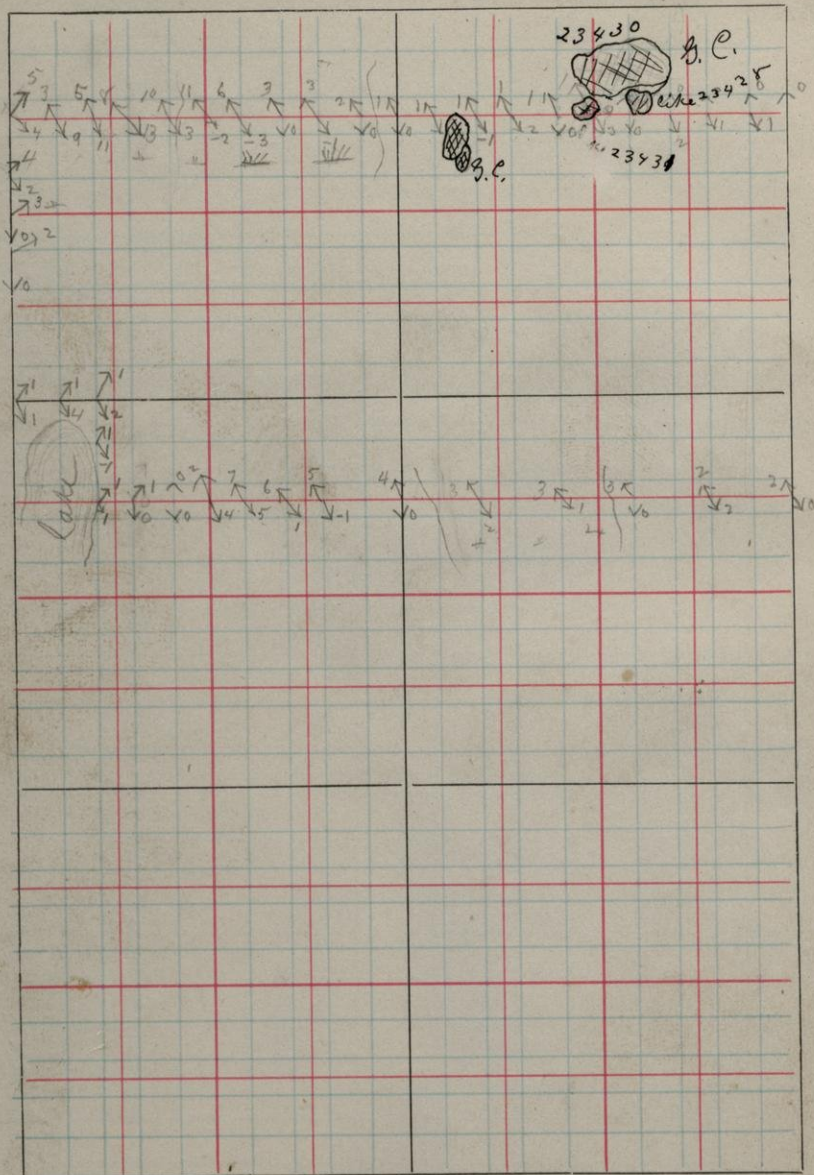




S. 36

T. 45

R. 37





like 23428 360 W 1750 N greenstone (compact)

" 23430 500 W 1750 " " ashbed type

23430 510 W 1810 N from large bed of breccia with layers of finer fragments. Huge blocks have been split off by frost exposing smooth faces. The specimen is from the edge of one of these fresh blocks from one of the finer layers.

23431 570 W 1785 N breccia from the same exposure. The whole of this hill is a mass of breccia with ash bed layers.

like 23431 800 W 1730 to 1650 N brecciated greenstone a fine exposure. Elephant back runs east and west.

NW S. 1  
cor

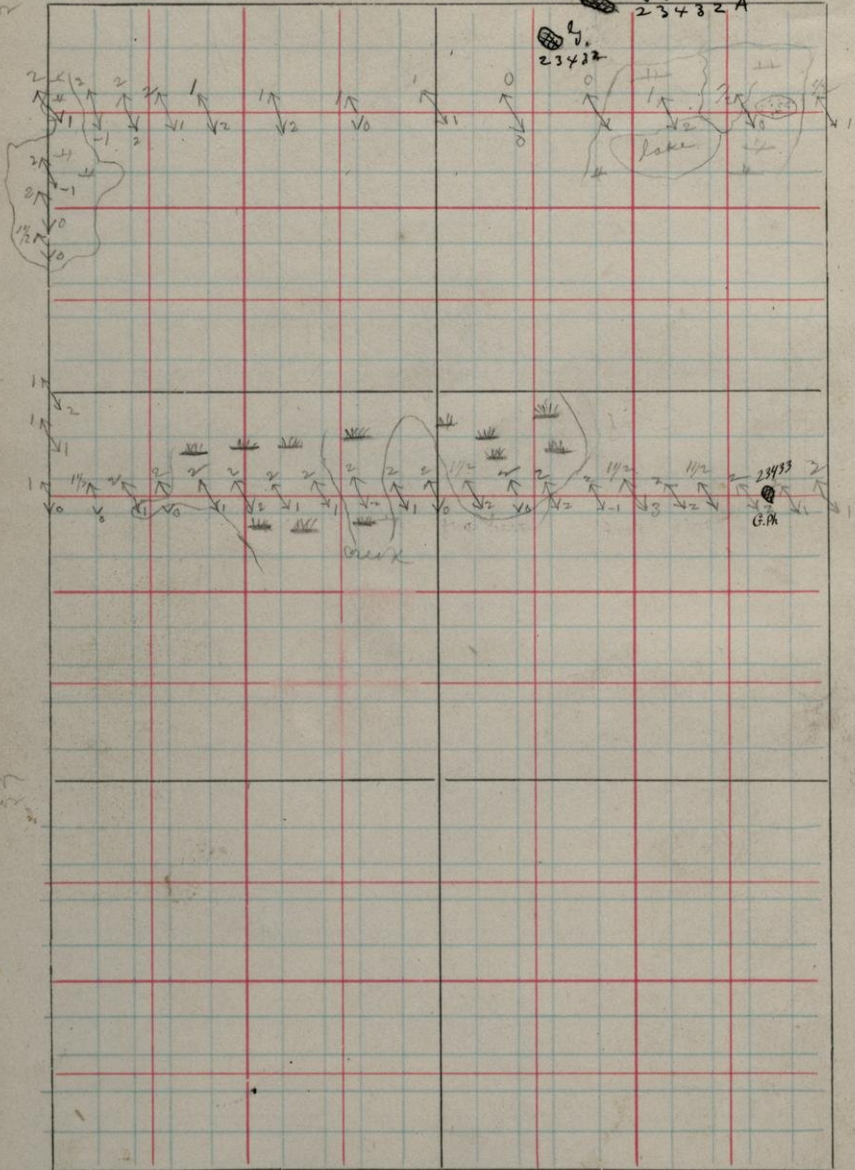
T. 44

R. 33

ly. C.

NE  
cor

2 3 4 3 2 A





(255) = 23432A  
(31319)

12

23432 Porphyritic breccia 600w 2000x  
Granulite with basalitic cleavage, Brittle and  
probably siliceous.

1910 x 700w

23433 porphyritic granulite 700x 180w.  
basaltic cleavage, but little  
breccia

Note: 23432A is a fragment of 23433A

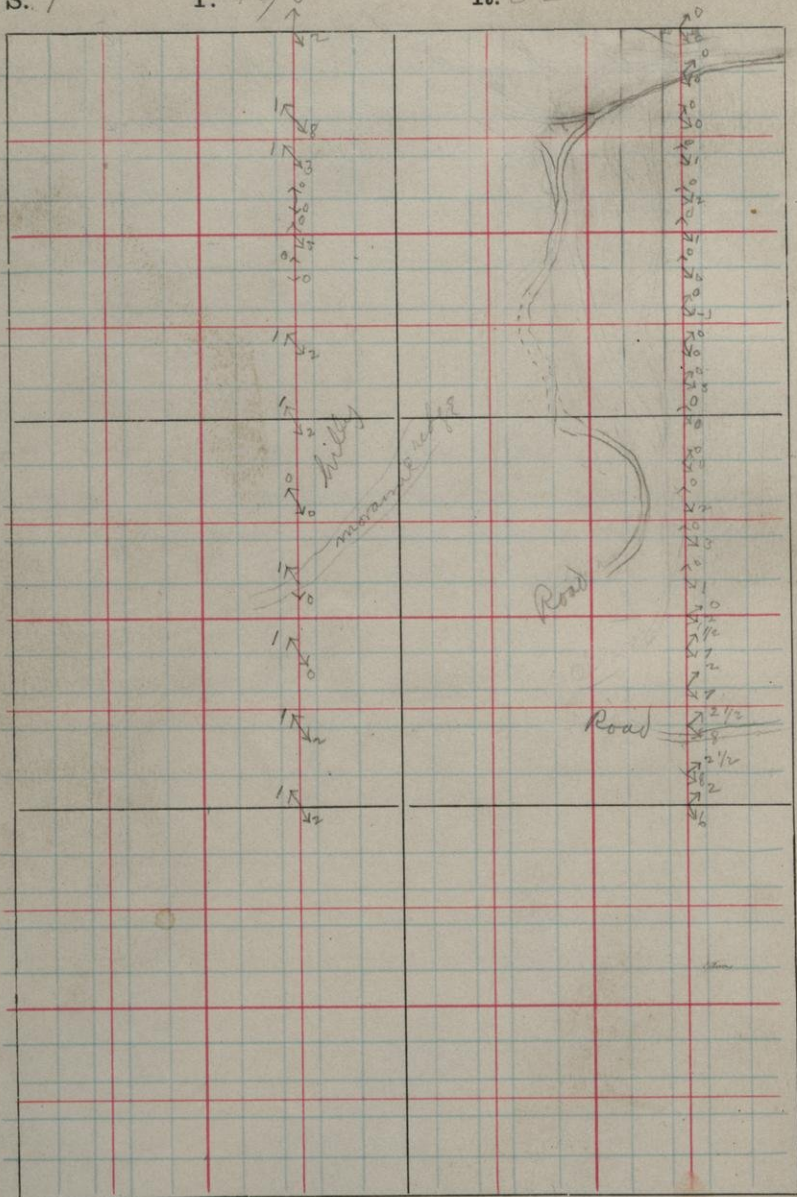


S. 7

T. 440

R. 32

move. 125 W



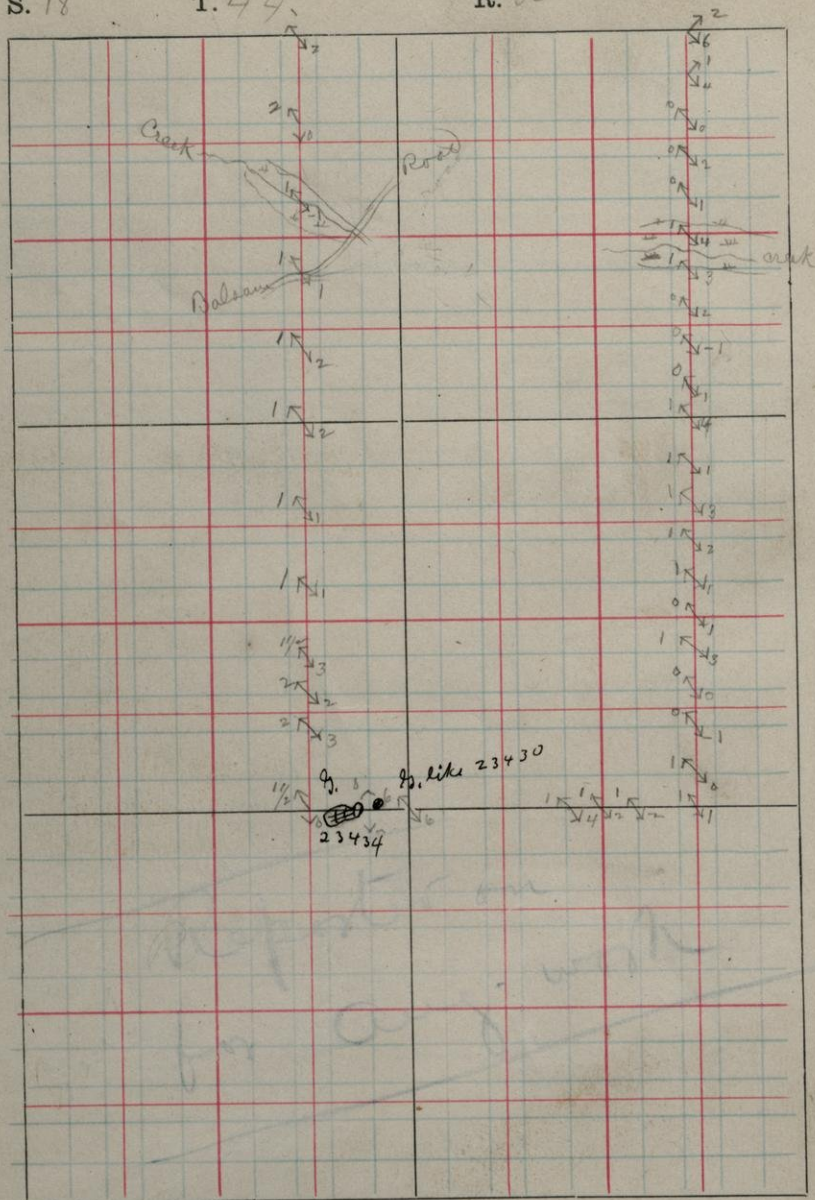




S. 18

T. 44

R. 32





23434 on 1200 W Porphyritic greenstone (gabbro)

Like 23430 on 1040 W brecciated " small outcrop

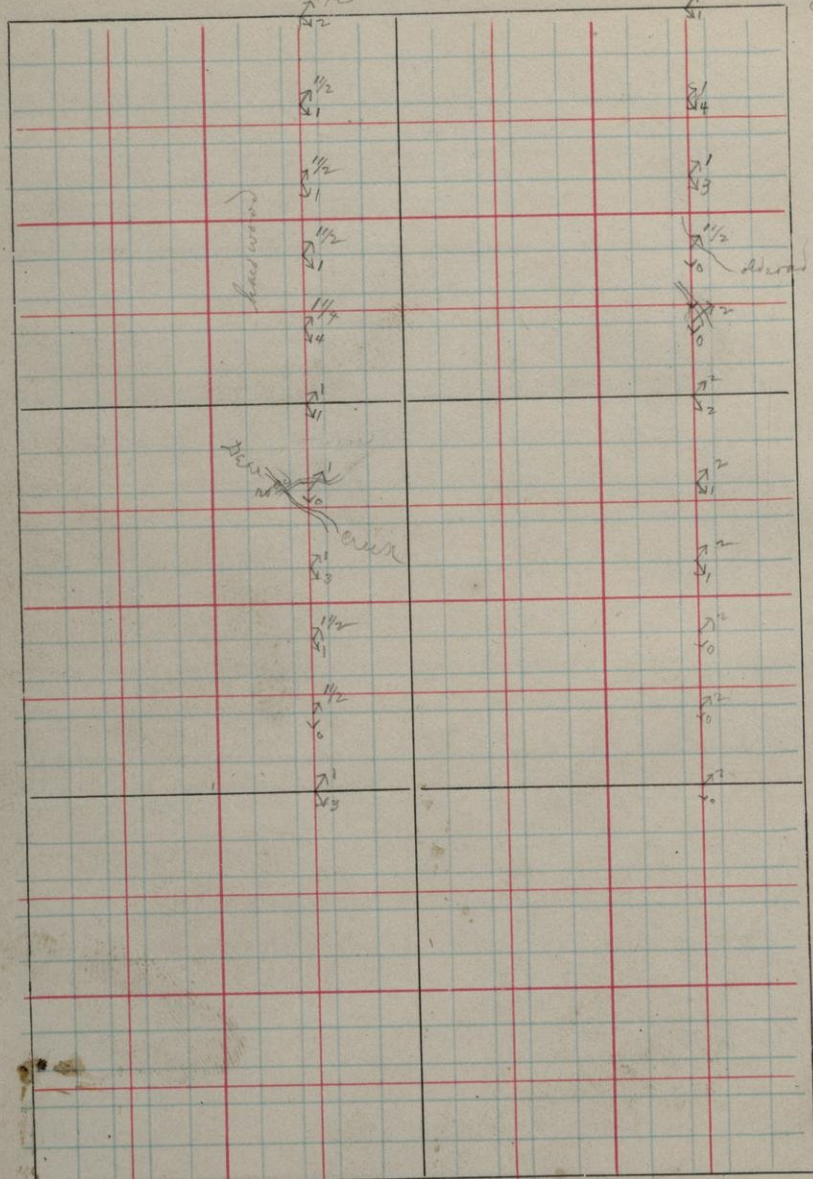
NW  
cor

S. 8

T. 44

R. 32

NE  
cor



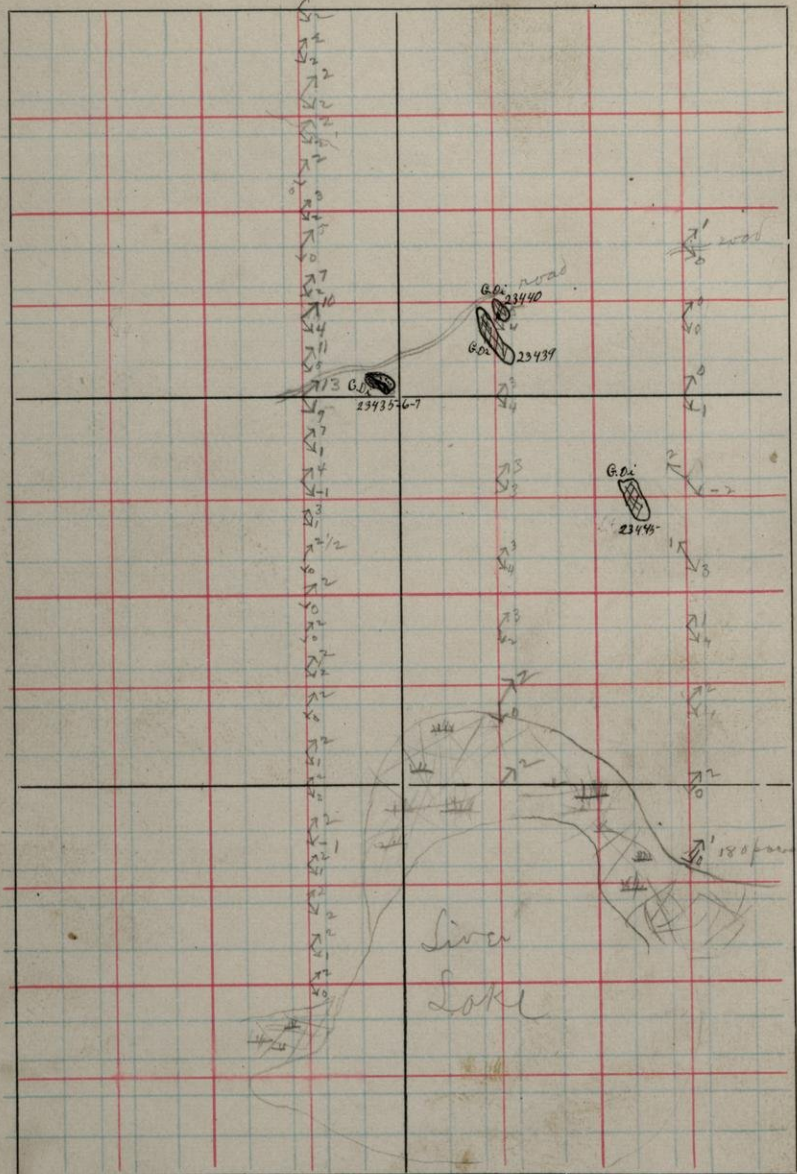




S. 9

T. 44

R. 32



- 23435 Gabbro - 1045N 1085W. 85 paces long  
 a rather coarse grained rock. Contains  
 very coarse grained portions which shade  
 off abruptly into the ordinary type  
 Lying around the gabbro on the  
 north and east is another basic  
 eruption somewhat decomposed  
 and veined with asbestos
- 23436 coarse grained phase of above
- 23437 From the decomposing bed  
 adjoining the gabbro
- 23439 1135N 750W Gabbro
- 23440 1220N 770W coarse gabbro
- 23445 400W 800N Gabbro ridge



S. 4

T. 44

R. 32

M. W.

M. E.

100 paces (5 fms) west of north end of 1250 line

 $\Delta_1$ 

4

 $\Delta_3$  $\frac{1}{2}$  $x^{1/2}$ 

17

3

2

15

7

Y

7

7

 $\gamma_0$ 

1	2	3	4	5	6	7	8	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
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

 $2^{1/2}$ 

g.S.

2

438

7



43

1

2

✓

1

SW

Σ 2

23438

400x 250 w 225 paces long 60 wide  
 altus volcanics of various types  
 some breccia beds, some porphyry  
 with inequifant schistosity.  
 300x 300 w another similar outcrop contains  
 a small gabbro intrusion

a series of these volcanics  
 lies along the face of the hill  
 Strike South  $30^{\circ}$  East  
 Dip  $60^{\circ}$  to  $90^{\circ}$  W  $30^{\circ}$  S



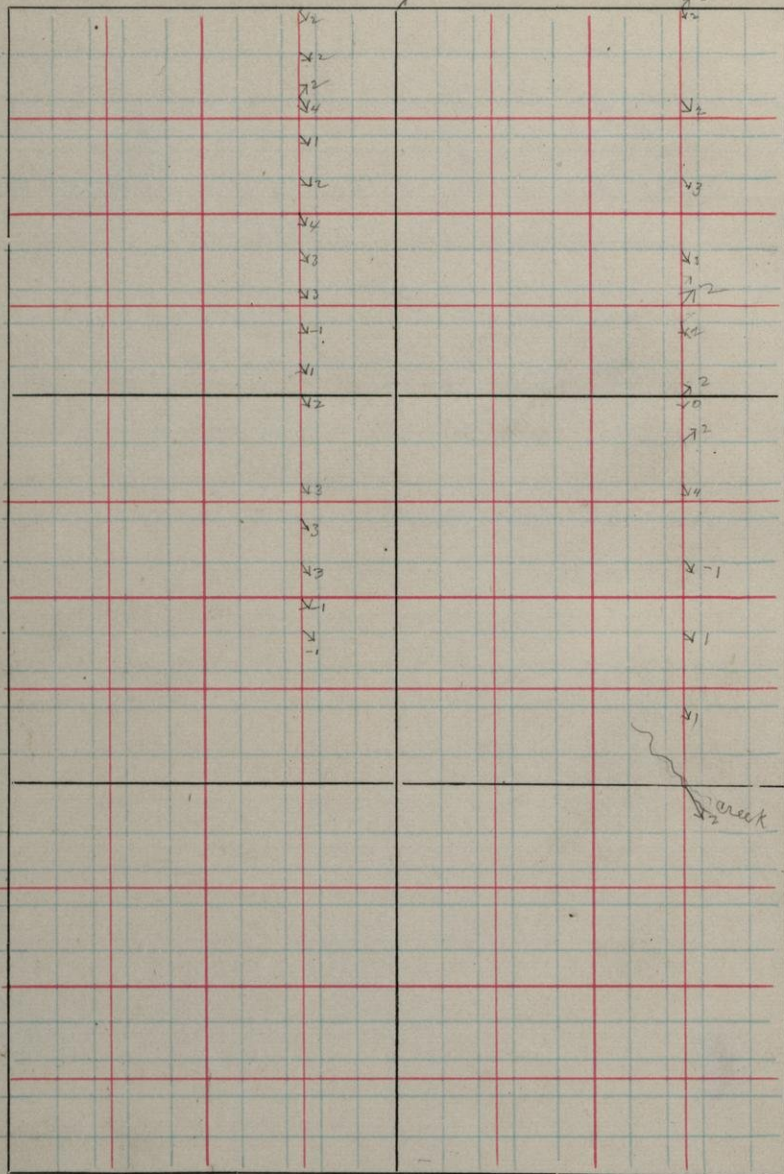
NW

S. 33

T. 45

R. 32

NE



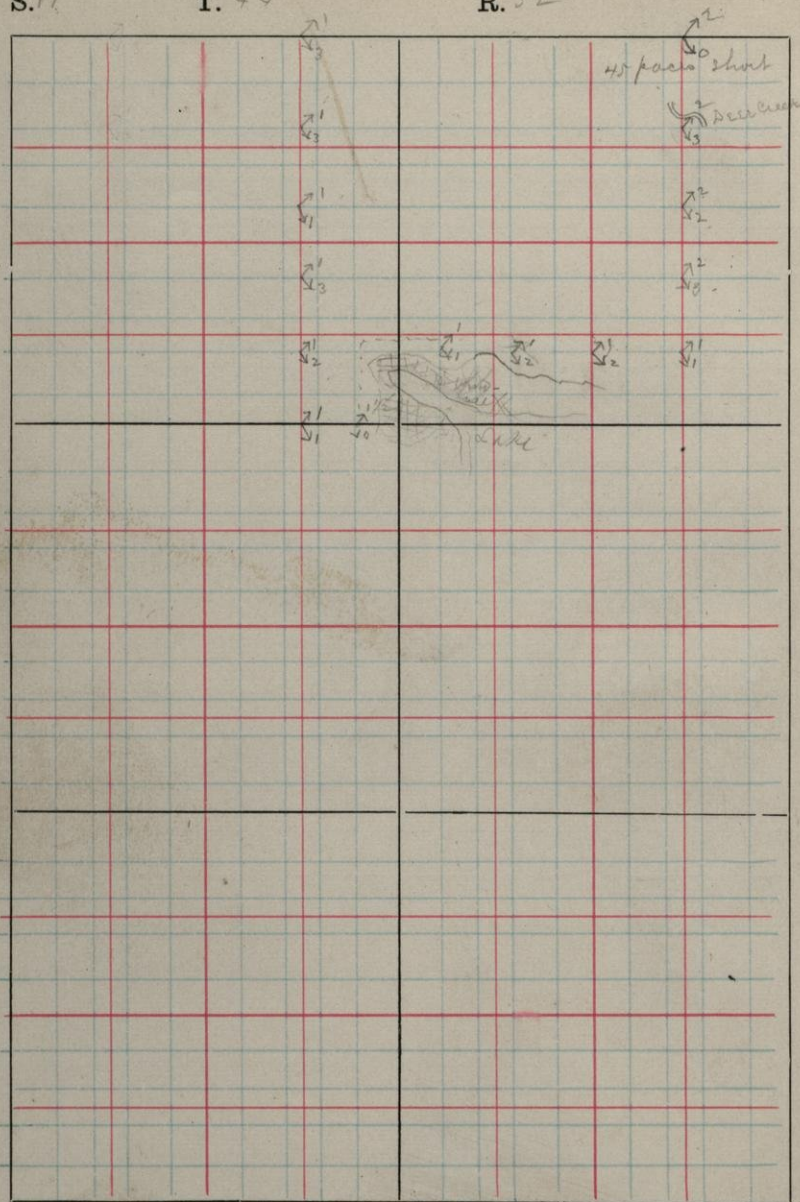




S. 17.

T. 44

R. 32







NW S. 3  
cor

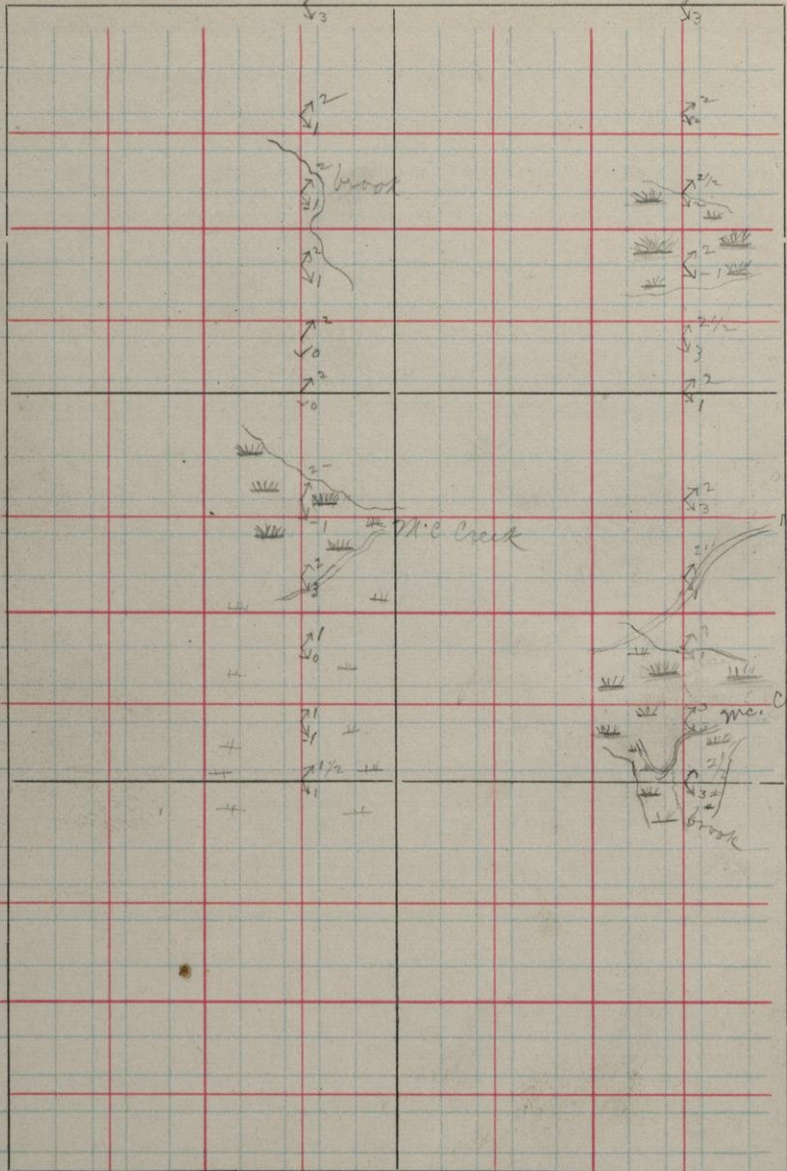
T. 44

R. 32

NE  
cor

SW  
cor

SE  
cor







NW S. 34  
Cor

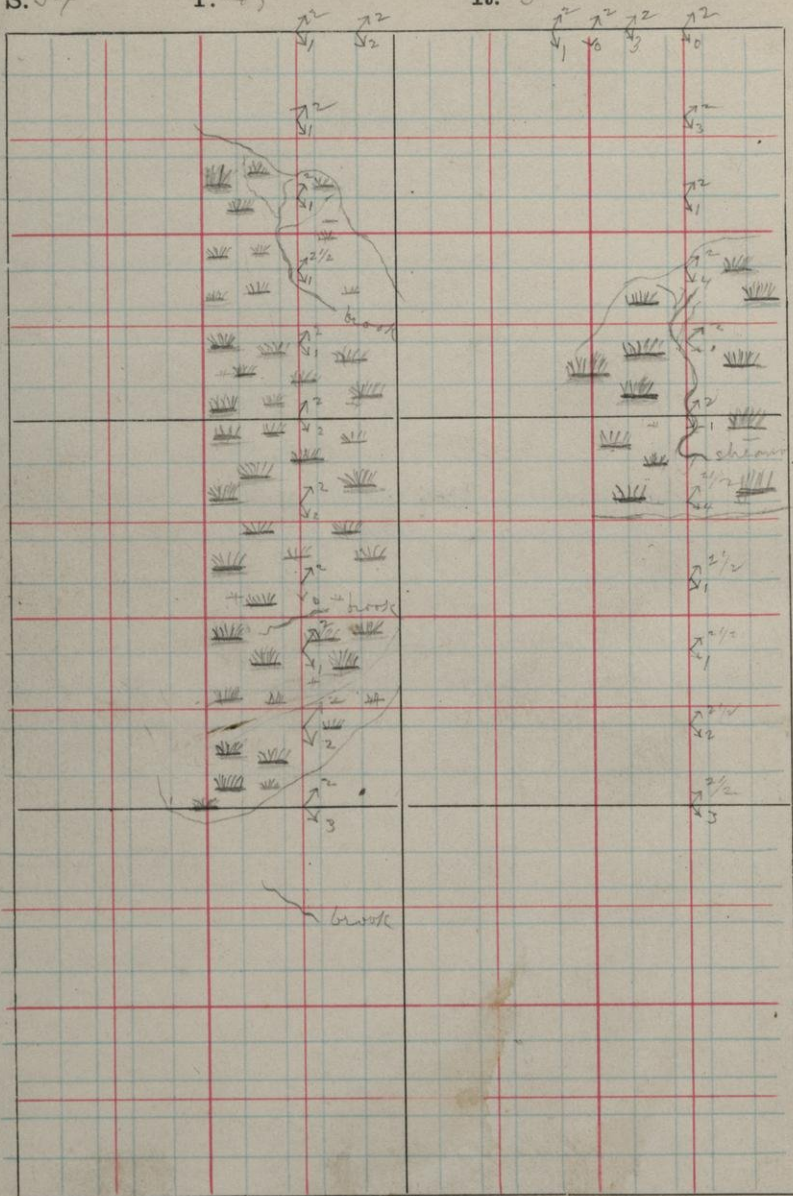
T. 45

R. 32

NE  
Cor

SW  
Cor

SE  
Cor



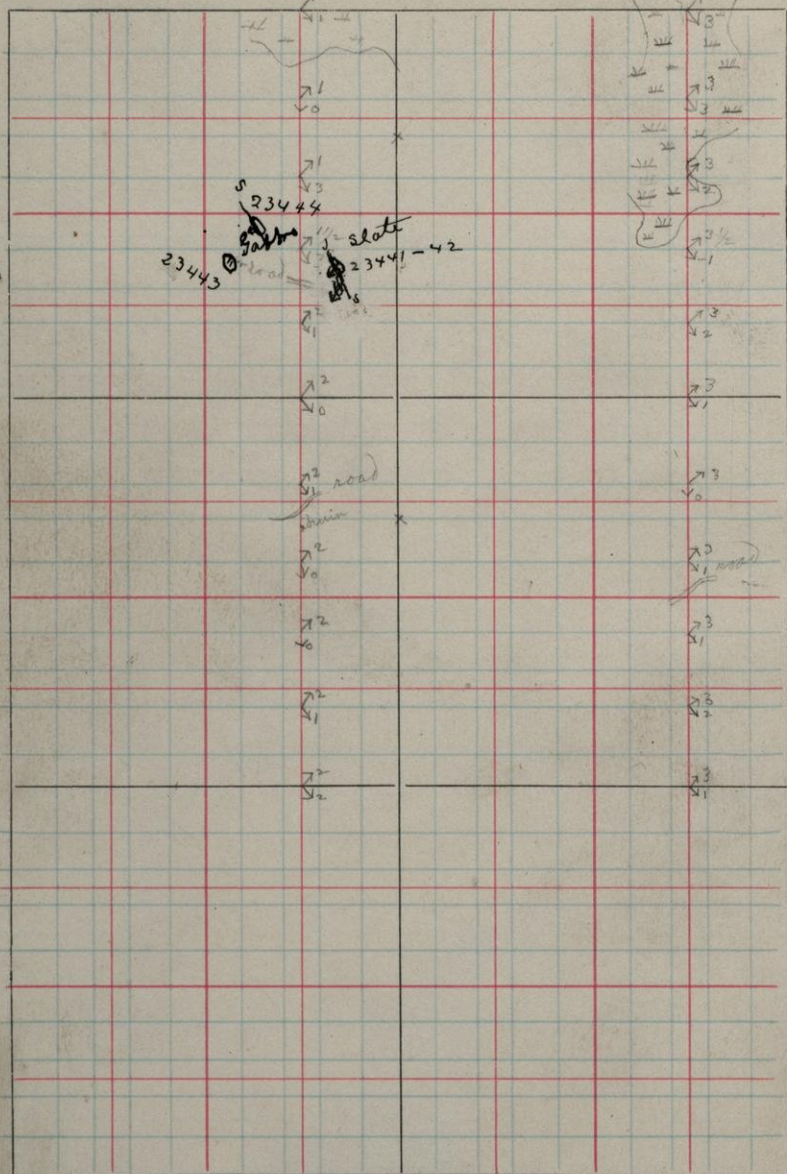


E.  
Cor.E.  
Cor.

S. 10

T. 44 1 1/2

R. 32





23441 1180 W 1310 N Slate, perhaps graywacke  
Strike of apparent beds S 30° E. Dip vertical  
Weathered specimens show squeezing in two  
directions

23442 Weathered specimen from above.

1180 W 1260 N Slate well defined, also  
some like preceding, of doubtful character  
strike S 30° E dip nearly vertical

23444 1440 N 1350 W slate, Strike S 40° E dip 58 to 90° to  
the S-W.

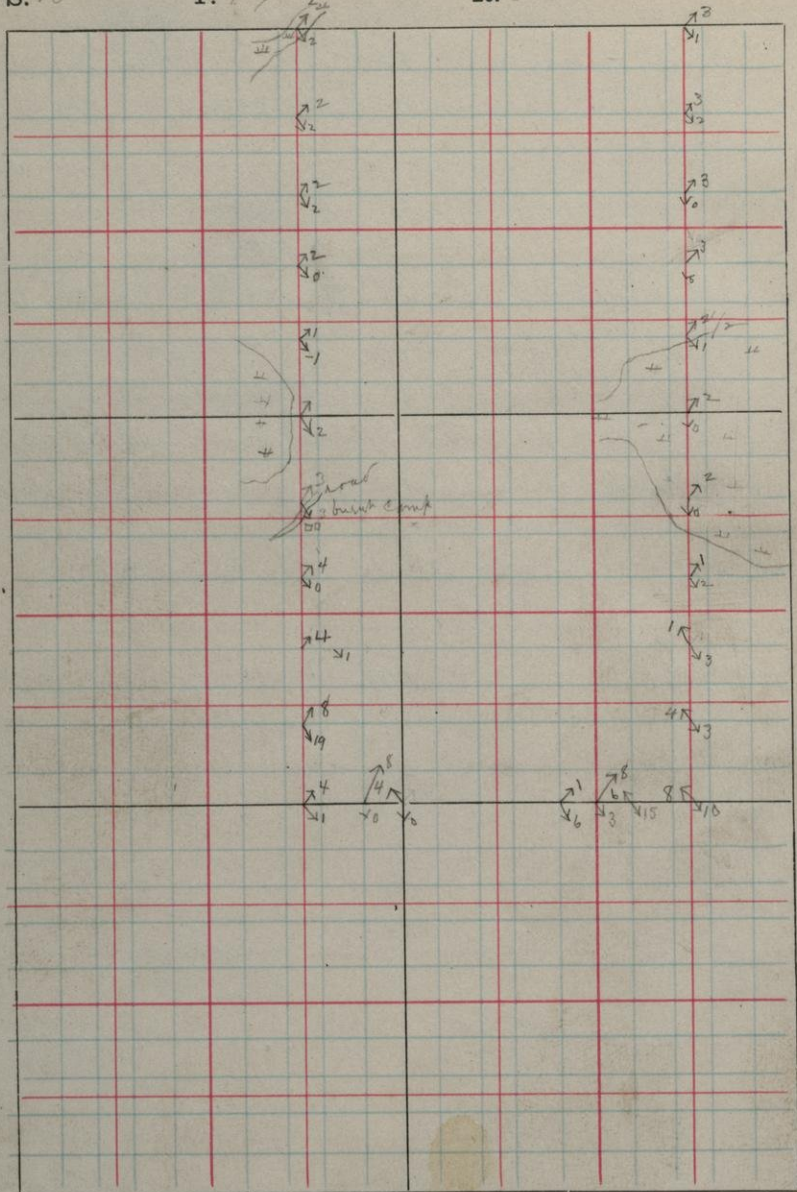
1375 W 1360 N slate Strike S 15° E  
dip 70° to 88° S-W.

23443 1430 W 1360 N Gabbro (?)

S. 15

T. 44

R. 32



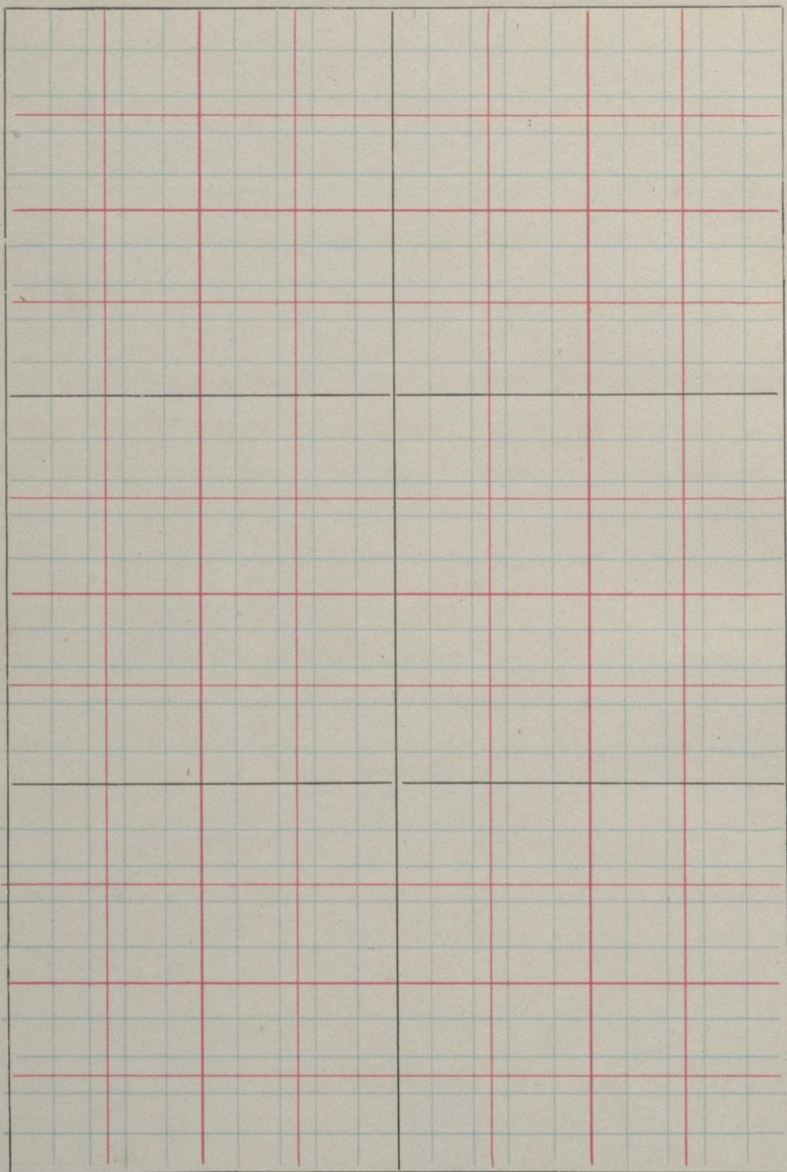




S. 22

T. 44

R. 32





23438

23433

33 435

23 440

22964

22957+9

22961

23432 A m GSS 31319

23432

~~23444~~

22943-4

23007

22993

22999

22982

327 13-14-15-16

