Minnesota Valley: [specimens] 5224-5239. No. 20 1884-07

U. S. GEOLOGICAL SURVEY

FIELD NOTE BOOK

No. 20.

July, 1884

Minnesota Valley

5224 - 5239

R. D. Irving

Survey of the Pre-Cambrian Rocks of the N. W. States.

INSTRUCTIONS.

1. Devote at least two pages of this note book 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 figure attached, showing the amount and inclination of the dip. Denote slaty or other very plainly bedded rocks by lines running in the direction of the strike, with figures and a dip arrow attached as before. 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 smaller spaces as 100 paces, each of the spaces between the red lines as 500 paces, and four of these large spaces as one mile, or 2,000 paces. Usually the southeast corner will be placed at the first red 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 down one space, or the map may be turned around and the north placed at the left hand side of the page.

2. On the right hand page place the notes descriptive of the exposures. Begin in each case with the number of the specimen, after which give in order 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 exposure as possible. Very often the notes for one section will cover more than one page in which case pass to the next right hand page, *repeating the map on each left hand page* as long as the notes, with regard to one section, continue.

3. Collect a specimen from each separate ledge of rock, or whenever there is a change of rock on any one ledge. In case of trips made on foot or in canoes, for long distances, neighboring ledges, unquestionably of one kind of rock, need not be sampled, the position and extent of the ledge being marked on the map, with the note that it is of a rock identical with specimen so-and-so. Under the same conditions small sized samples will be allowed, but in all other cases *large sized trimmed specimens*, with chips for slicing, must be selected in accordance with § 3, chapter IV, p. 44, Regulations of the U. S. Geological Survey. All specimens are to have numbers painted on them, in white on a black background, in camp.

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, etc., etc.

5. Forward this note book, as soon as filled, as registered mail matter, to R. D. IRVING, U. S. Geologist, Madison, Wisconsin.

#20

Minnesota Valley.

R. D. Irving.

July 1884

July 15th - 1884

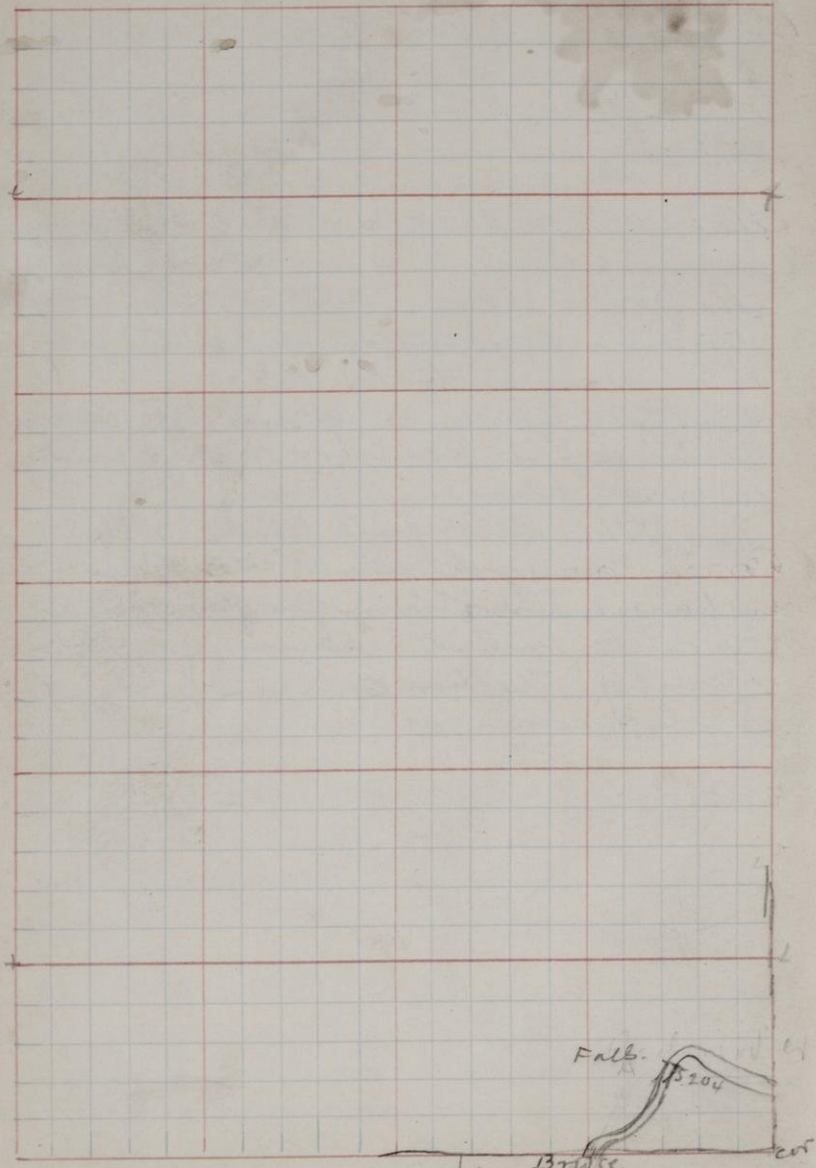
Drive from Redwood Falls to Morton, Minn. & thence Eastward along west side of Minnesota River to Birch Coulee - & up the latter to head.

Points particularly to be noted are the wide valley of the Minn; the prairie upland, often extending into the river bottom - the wooded bottom - and at Morton & below the mass of grey-weathering granite, standing up like islands in the river bottom - Evidently if the river was once as supposed the main Mississippi, they were rocky islands in the broad stream -

The decomposed granitic rock of Birch Coulee should also be noted - both as showing a continuation of the granite N. of the valley - and because of this interesting decomposition!

(9—891.)

Sec. 136 T. 113 R. 36 W Minn



(Photo I) double

Point A – photograph looking E of south.–

The gneissoid rock at Redwood – making large exposures – shows a general tendency to a jointage running N.S. Sone 40°–50°– and sometimes the banding is parallel to it – but the latter is obscure or wavy – becomes now indistinguishable – now takes an entirely different direction – but the whole thing is vague & unsatisfactory reminding me of much of the gn. on the north shore of L. Huron –

<u>5224</u> is the gneiss at Redwood Falls. It is coarse highly feldspathic – carries a greenish hblendic or chloritic ingredient – weathers a light gray – decidedly <u>non-schistose</u> 245 N. 260 W.

On the sides of the gorge below the rock is thoroughly rotted.–

Photograph taken looking upstream West, from Bridge. (Photo II – double)

At Morin the granite or gneiss
ledges are large.

(III)

Photo taken here in cut - of M & St
L. RR. to show contortion of the
gneiss -

Note here (1) the black stringers
& nests of ahornblendic (?) material
embedded in the gneiss.

There are not foreign inclusions however - they show such
relations as to be merely of
the same genesis as the rest
of the rock.

The contorted gneiss at the
cut is 5210
The black nests are 5213

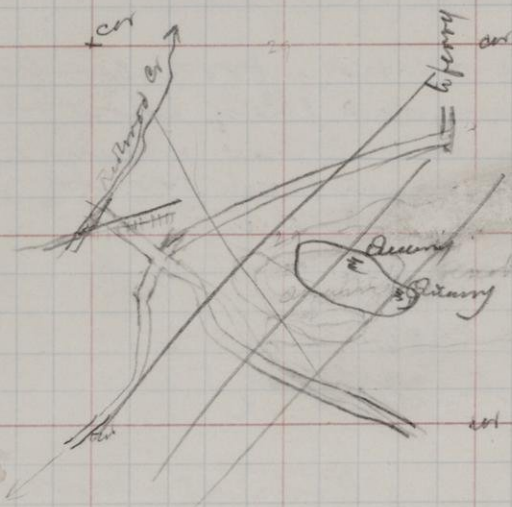
Trend of gneiss knobs at Morin
nearly E. & W. - thence diagonal to
valley.

(also other photos - see neg.)

(9—891.)

Sec. 29 T. 113 R. 35W Minn

See next page



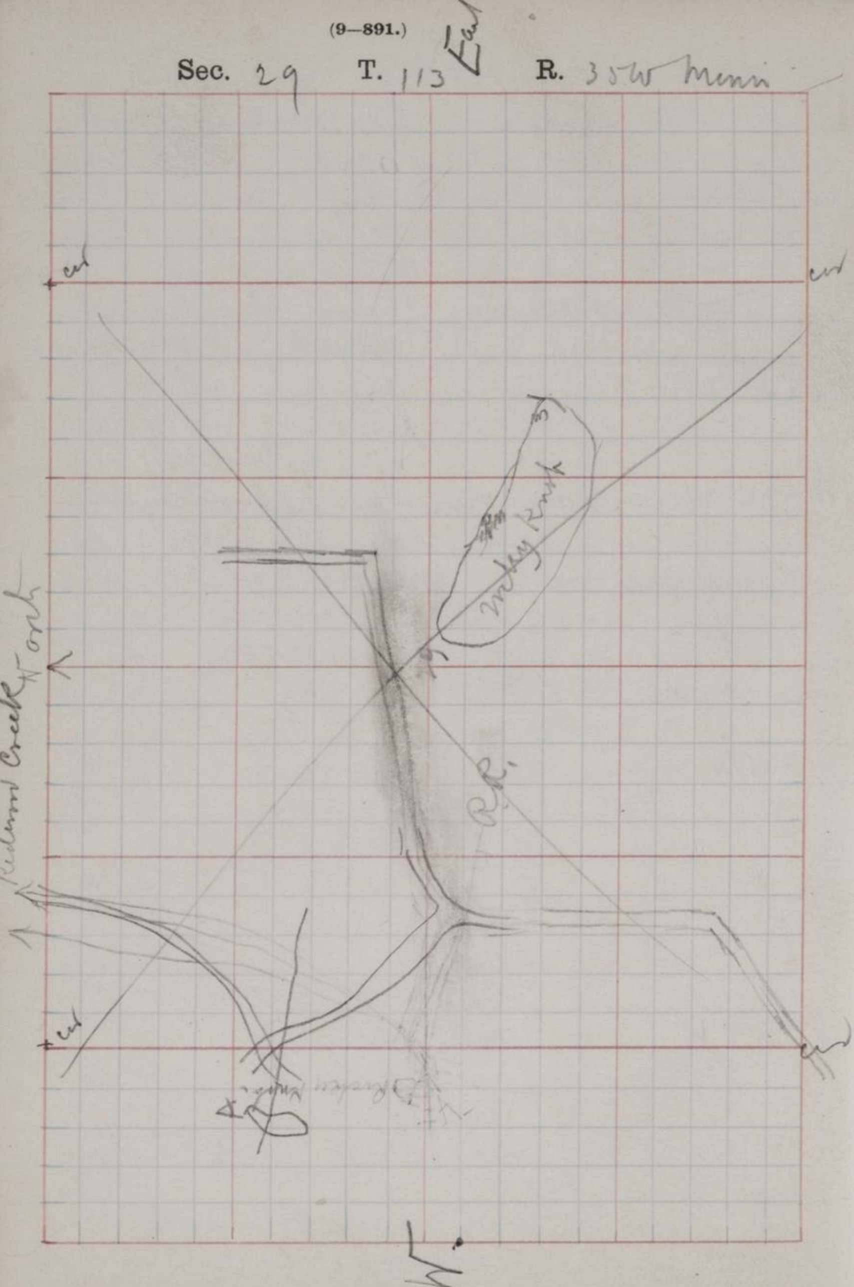
These quarries on sec. 29 - are on the north side of one of the ~~rocky~~ knobs of the valley - showing elsewhere however no ~~expos~~ considerable exp. mostly grass covered. The rock is contorted gneiss but is very much weathered indeed and seems to be different from the western gneisses. Hall has weathered & unweathered specimens -

There are ~~grea~~ numerous pentachable veins of kaolinized feldspar or granite some ten feet wide - traversing the gneiss. wh. is greenish - and dark colored - The veins are deeply kaolinized. these are Hals 5232 -

At the crossing of Redwood river

(9—891.)

Sec. 29 T. 113 R. 35W Menn



At the crossing of Redwood Creek there has been done a good deal of blasting for the railroad bridge abutments. The rock is a rotted gneiss with scattered red feldspathic or granitell veins like that in Knob in S.E. of Section 29.

All along Redwood creek to falls & above along railroad and roads in sides of bluffs in this vicinity there is much of the rotted rock - What has preserved it?

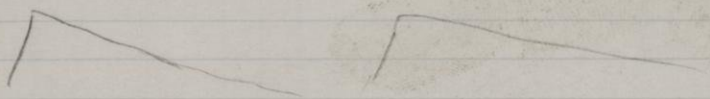
Rocky Knob A shows much of quartz impregnated (hematite?)

Above Redwood River crossing for several miles to the next ferry the ledges of granite rounded, both low and higher in bottom and occasionally high on the limiting bluffs of the valley.

The gneiss is contorted - & seamed with pink granitell veins.

near ferry on S. side of River below Brewer Falls of Hicksbury have large exp. of gneiss as above mentioned - Here gneiss lies low in the valley as also high. Photos taken here. (1) (2 negs) looking E. from high rocky bluff on S. side of valley - (2) (1 neg) looking W. from low knob in valley (3) looking NW from same knob - up valley - negatives (79)

Around here a very distinctly laminated gneiss - a mica-gneiss. differs somewhat from foregoing - rises in steep backed ledges thus:



which make long lines across the bottom - & certainly suggest a bedding - strike N. 75° E ~~mag~~ & dip 30° S. S. - but here direction the laminae correspond distinctly - 5234 Walls to from this ledge. It is quite finely laminated - sometimes contorted - Resembles strongly a

sand — A cross-lamination is suggested here and there as in Lake Huron — This is the only very plainly bedded gneiss I have seen yet.

5235 is a rock apparently directly overlying 5234 — ~~Is it a banded on weathered surface it seems~~ On a joint surface it seems wonderfully well banded — even cross-laminated! & suggestive of fragmental orig. but has large porph. feldsp. Can whether [illegible] have enlarged fragments? The large porph. feldsp. are sparse but [illegible] inch across sometimes — smaller ones more plenty.
Appearance of [illegible] very pronounced on the joint surface alluded to —

Photo. taken looking up Minn. Valley in bottom — at granite ledges in sec. 36 — 5½ — probably near middle 4,113

Sec. T. R.

Photo. taken from top of bluff on S. side Minn. valley - looking across & down the valley one negative only - this about

Sec 31. 114 - 36

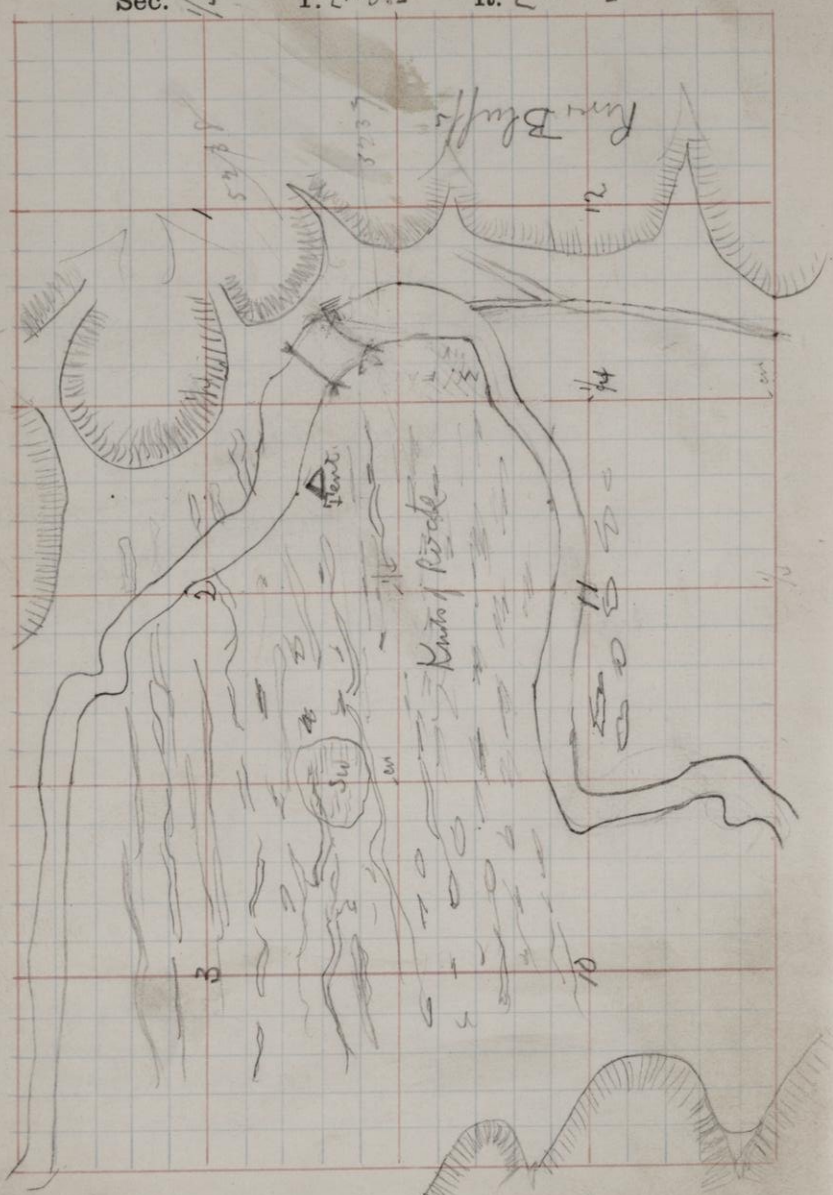
Photo taken from top of bluff ~~one~~ 1/4 mile N. W of last - looking across & upstream - 2 negs

July 19 Saturday
camped 6^30 P.M. at Gulick Ottos' N.W 1/4 35 - 115 - 38 W. Minn.

No rock visible in this immediate vicinity.

Rock struck up to two miles above Vicksburg - above that Upper - valley wide at bend as if once a lake - & possibly rocks covered by lake deposit

Sec. 14 T. [11S] R. [39 W]



At Minnesota Falls - the plainly banded gneissic rock dips distinctly S.W. Strike on two measurements on op side river varying from N. 60° W to N. 22° W - magnetic. The dip is indicated by the laminae, which are dense and unusually regular, and by the arrangement of the belts of rock.

5236 - banded pinkish rock at N.E. end Minnesota Falls Dam

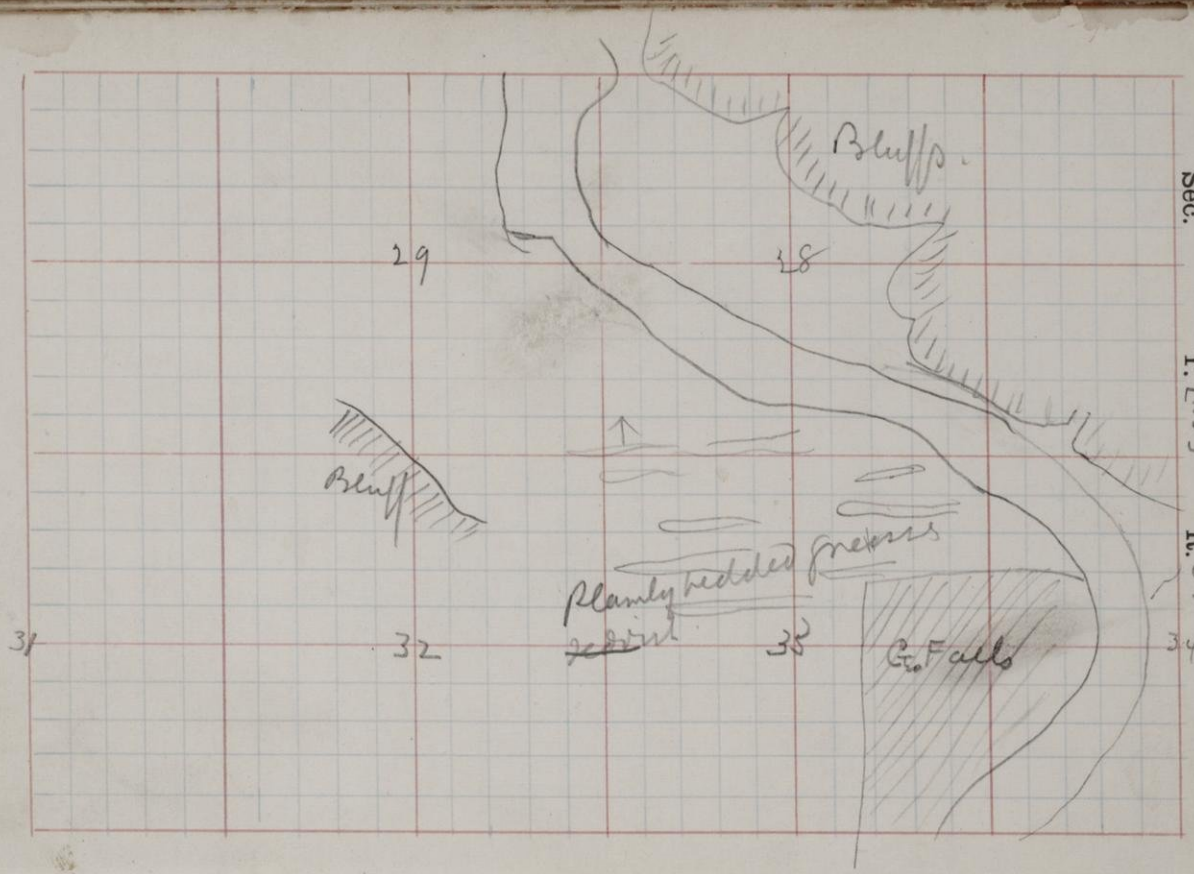
5237 Do on W. side river below dam.

5238 Dark colored rock overlying 5237

5239 - Coarse quartz & felspar vein in gneiss 2 ft wide in gn. near Minnesota Falls - course N.W-S.E. but varying in directn - quartz & felsp. rests occasionally 6 inches in greatest dimens.

In southern part sec. 2 and northern sec 11 numerous knobs of rock - ridge like steepest on N. side & dips S - from S.S.E. to W. of S - prevalent 5240.

Could find none of branched dikes


Bluff.
29
28
Bluff
Plainly bedded gneiss
31
32
33
G. Falls
Sec.
T. [116]
R. [39 W.]

Prevalent gneiss near granite is brown weathering thinly bedded - chiefly composed of felsp & qutz - Mica seems ingredient (or hblende & ngs) is subord.

A second phase seems to be a grandeur pink - qutz & felsd - makes more massive exp. but still plainly bedded

Still another - good deal more than above - is dark colored hblendic gn. or sch -

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Dip generally S - but on northern edge reached is N.

Strike from all these gns. near Minnesota Falls is N. of E - but varying to N of E locally - Dip ~~generally 10~~ direction generally 10° to 15° E. of South but rarely more - & occasionally several degrees W. of S. as much as one place as - see previous page.

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at granite - reverse dip comes in

Note billowy surface - see Winchell

Specimens marked A mostly are the dark rocks interbedded with granite Falls of Minn. Falls Gneisses –

B. is granite ledge in picture at car sheds – granite falls –

Bundy South & north
of Marshall road - Several
outcrops.
See Wingate for information
on Marshall road.
Halfway house -