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Observations on the
Geology of
Southern New York and
Nathum Pennsylvania

made in the year 1873

by
Andrew & Clark Sherwood

1
in a better shape.

Observations on the Geology
of Southern New York and
Northern Pennsylvania,
made in the year 1873, by
Andrew and Clark Sherwood.

Prof. James Hall,

Dear Sir:

We take
these notes from our record
of observations during the past
year, & hope they will prove of
interest. Want of time & the lack of a good
map has prevented us from putting them

in a better shape.

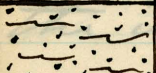
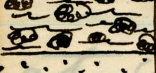
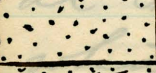
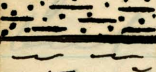
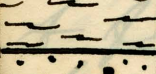
Tioga Co., Pa.

In Charleston township, Chemung & Catskill rocks are scratched & polished, the scratches being very distinct, & running northeast & southwest.

The following is a section on a little brook on lands of Thomas Knapp, two miles west of Lawrenceville. It begins in a cut of the Cowanesque Railroad & extends 208 ft. up the hill to the north. Two or three miles farther north, at a place to be described hereafter under the head of Steuben Co., there are sandstone boulders, possibly the Chemung Conglomerate. The dip of the strata in this section is to the northwest, & the locality is the best we have found for Purinea.

Specimens representing the fossils & the physical characters of each bed were collected & numbered, the numbers corresponding with those in the section.

No.	36 ft. gray sandstone & calcareous rock alternating, the latter containing <i>Spirifers</i> , <i>Strophas</i> , etc.
21	5 ft. gray flaky sandstone, with <i>Strophas</i> .
20	7 ft. concealed.
19	8 ft. gray sandstone, one layer containing a peculiar fossil, something like a <i>Dictyophyton</i> .
18	2 ft. calcareous rock with <i>Spirifers</i> , etc.
17	18 ft. concealed.
16	15 ft. gray shaly sandstone & flagging stone.
15	5 1/2 ft. concealed.
14	8 ft. soft light-gray shale.
13	30 ft. concealed.
12	5 ft. bluish sandstone.
11	4 ft. thin-bedded gray sandstone.
10	6 ft. gray sandy shale.

	9	7 ft. concealed,
	8	8 ft. bluish-gray shale & shaly sandstone,
	7	1 to 2 ft. calcareous rock, with <u>Spinifer</u> , <u>Hannistella</u> , etc.,
	6	9 ft. gray sandy shale, with concretions,
	5	8 ft. gray sandstone,
	4	5 1/2 ft. gray sandy shale,
	3	5 ft. gray flaky sandstone, with <u>Pterinea</u> ,
	2	7 ft. gray shale,
	1	12 ft. bluish-gray sandstone, with <u>Pterinea</u> ,

A little below Nelson we found a large loose stone by the roadside, belonging to the Chemung Group, & containing some large fish bones. It will be found in box No. 70.

It is 25 feet from the bed of iron ore which is worked three miles west ~~of~~ of Mansfield

Barre, in Jackson township,
there are large quantities of
white sandstone boulders, mostly
a coarse gritty rock. They cover
the ground in many places,
& some of them are very large,
but contain no fossils. We could
not find the solid protruding, but
the place for it appears to be
about two thirds of the way up
the hill. The rock looks exactly
like that on Bentley Creek, in
Ridgebury township, Bradford
Co., Pa. At the same place, back
of the Methodist Church, we found
two stones with Dictyophyton, lying
on the surface. They are like those
at Bath, N. Y., & the place is
somewhat similar. No others
could be found. The only solid
at this place is a bed of peculiar
shale or slate, looking rusty

on the surface. It is in a hole dug by Mr. Mitchell for iron or coal, & probably lies not far under the bed from which the boulders were derived.

From the above locality to the State line, in the direction of Elmira, no rocks are exposed, but boulders similar to the above are common, & M. K. Retan, of Hammond's Creek, says they are abundant back on the hills.

Sturben Co., N. Y.

At the house of Jacob Zahr — a German — who lives in the south edge of Lindley Township, close to the State line, & a few rods from the 93rd mile stone, west from the Delaware River, there is one

thousand acres, on top of the
hills & clothed with forest,
which is covered with boulders.
These boulders are both large &
small, & in many places are
very numerous. They contain no
pebbles, but are a coarse sandstone,
weathering white, but generally
a light gray on a fresh fracture.
They contain no fossils. Their
horizon is in the Upper Chemung,
apparently below the base of
the Old Red, & probably below
the upper vein of iron ore. We
found no red rock below the
horizon of the boulders, & we
saw no signs of any iron ore.
Three miles northwest of Jacob
Gahns, on higher ground, the
hills are capped with the
Old Red,

At Gorton's quarry, Corning,

we obtained some very fine fossils. The characteristic species at this locality are Streptorhynchus pandora & Ambocelia umbonata, but they are not abundant considering the amount of material thrown out. The rocks have a considerable dip to the southeast.

In Woodhull township, one mile east of the house of Linus Toller, there is a high hill called Norway Ridge, which is on lands of Leander Clark & a Mr McCaslin, & lies between Golden Brook & Camp Brook, both of which streams flow into the Conowingo River at Oracola, in Pennsylvania. Norway Ridge is a mile or more in length, & lies wholly within the State of New York, but it is

100 feet lower than the hills
on the other side of Golden
Brook, to the southwest, & in
the State of Pennsylvania, which
Rogers says are capped with
the Coal Conglomerate; but
Norway Ridge is higher than
the hills farther east. The
Catskill appears to extend to
within one or two hundred feet
of the top, while the remaining
distance to the summit is
covered with whitish, gray, &
greenish sandstone, obliquely
laminated, & containing no fossils
that we could discover. We found
but very little red rock towards
the top of the mountain, nineteen
out of twenty of the surface stones
being of a gray color, & looking
like the Vespertine. We found
the solid in but one or two

places, which was a gray & greenish sandstone. We collected a large number of specimens representing the physical characters of the rocks on this mountain. They are mostly from surface stones, or detached rocks. Norway Ridge is in the center of the synclinal which crosses the Tioga River at Lindley & runs along the north side of the lowaesque into Potter Co., Pa., where it contains the Coal measures. It is the last, to the northeast, of the high barren hills in this synclinal which bear Carboniferous & Subcarboniferous rocks on their summits.

In the southeast corner of Baton Township, on lands of M. K. Retan, the middle vein of Mansfield Iron Ore makes its appearance.

Chemung Co., N. Y.

In the hillside above the road, about four miles below Elmira, on the east side of the river, near Chemung dam, there is a quarry opened into thirty feet of gray shales & sandstones, dipping quite rapidly to the southeast. No fossils to be obtained.

At the Chemung Narrows, near Chemung village, a heavy mass of rocks dip quite rapidly to the northwest. Gray sandstones & shales, with some fossils. Near this place, on the gravel bars in the bed of the river, & apparently washed out of some alluvial deposit, several Mammoth teeth, tusks & bones, have been found at intervals by different individuals. The exact source from which they were derived is not known.

Lisga Co., N. Y.

One mile above Waverly there is a heavy bed of gray sandstone, with some shale, dipping northwest. No fossils.

A quarter of a mile below Smithboro the hillside above the road is covered with loose stones, some of which contain fossils.

One mile above Lisga Centre thirty feet or more of gray sandstone & shaly rock are exposed by the roadside, dipping northwest. No fossils.

A little out of Owego, on the road to Newark Valley, a considerable gray & bluish shaly rock is exposed, containing a few fossils. Dip unknown.

Chenango Co., N. Y.

Two miles above Chenango

Forks, on the road to Norwich, six or seven feet of gray shaly rock crops out in the road, containing some fossils. Dip unknown.

Three miles above Green, on the road to Norwich, & near a grist mill, there is a quarry opened in red & gray sandstones, which appear to dip to the northwest. No fossils. This is the first red rock we meet with going in this direction.

Near the top of the hill, a mile east of Oxford, along the road to Mt. Upton, & near the Midland Depot, there are large quantities of boulders, ^{some} of which are full of small pebbles, but mostly a coarse white sandstone. They look like those found in Jackson township, Tiog

Co., Pa. We could not find the bed from which they were derived, but it is near the top of the hill.

In the southeast corner of Pitcher township there is a large amount of white sandstone in the stone walls, a good deal of which contains pebbles. It is like that at Oxford.

Two to four miles south & southeast of Oxford there is a range of hills running along northeast & southwest, which look like synclinal hills.

A mile west of Emiford, along The Midland Railroad, & near a pond, a considerable gray sandstone & shale is exposed, some of which is concretionary. There are a few fossils.

At & above Rockdale,

on the Unadilla, the road is very red, & there seems to be many detached rocks of the same color scattered about.

The bottom of a synclinal — probably the one coming up from Wellsburg & Owego — appears to cross the Unadilla in the southeast corner of Guilford township.

Owego Co., N. Y.

A mile above Gilbertville, in a little creek on the north side of the road, there is considerable gray sandstone, with some shaly rock, perhaps forty feet in all, containing some fossils.

Five or six miles southwest of Hartwick, on the road to Noble'sville, & on top of a hill, gray sandstones in the stone

quartz contain a peculiar
fucoid, Probably Hamilton.

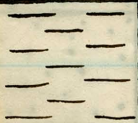
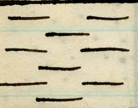
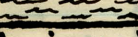
Two miles from
Hartwick, on the road to Cooperstown,
bluish shaly rock is exposed. There
are a few fossils, Probably Hamilton.

Schoharie Co., N. Y.

Mr. John Gibbard, of Schoharie,
says the rocks there dip south
at the rate of one-hundred feet to
the mile. We should judge that
they dip faster than that, &
that the direction of the dip is
west of south. We should place
the inclination at from five to
six hundred feet in four miles.

The following is a
section of the rocks along
Schoharie Creek, between Middleburg
& Gilboa. Duplicate specimens
representing the physical characters

of each bed were collected & numbered, the numbers with the specimens corresponding to those of the section. Fossils were also collected & numbered,
 No.

	94	12 ft. red shaly rock — top of Manorskill cataracts, at a saw mill.
	93	15 ft. bluish-gray sandstone.
	92	10 ft. gray shaly rock.
	91	14 ft. gray sandstone.
	90	2 ft. gray shale.
	89	15 ft. gray shaly sandstone.
	88	12 ft. red shaly rock, with some bands of green.
	87	17 ft. thick-bedded gray sandstone

86 20 ft. thin-bedded gray sandstone.

85 9 ft. gray sandstone with plants.

8 ft. gray sandstone, with stumps, leaves, stems, etc. — Silboa.

84 20 ft. hard gray sandstone, some of which is diagonally laminated.

10 ft. gray sandstone.

86 14 ft. gray & bluish shale & phaly rock.

85 4 ft. mottled shale — red & green.

84 2 ft. hard sandstone, with a reddish part.

83 54 ft. gray sandstones.

40 ft. gray sandstone, the top making falls in the Schoharie at Silboa.

82 30 ft. concealed, to foot of Manorkill Cataracts.

40 ft. gray sandstone.

81 25 ft. gray sandstone.

80 2 ft. dark colored sandy shale,
79 8 ft. gray sandstone, with stumps, leaves,
stems, etc. — Gilboa.

78 6 ft. dark colored shale.

77 10 ft. gray sandstone.

76 14 ft. gray & bluish shale & phaly rock.

75 4 ft. mottled shale — red & green.

74 2 ft. hard sandstone, with a reddish part.

73 40 ft. gray sandstone, the top making
falls in the Schoharie at Gilboa.

69 25 ft. concealed.

72 40 ft. gray sandstone.

68 20 ft. gray sandstone.

71 30 ft. concealed.

66 10 ft. coarse gray flaky sandstone.

70 40 ft. hard gray sandstone, with quite a sharp southwesterly dip.

68 36 ft. concealed.

69 25 ft. concealed.

69 22 ft. gray sandstone.

68 20 ft. gray sandstone.

63 27 ft. gray shaly rock, with
fossils in the upper part.

67 50 ft. concealed,
17 ft. gray shaly sandstone, the upper
part filled with pebbles
it contains some fossils.

66 10 ft. coarse gray flaky sandstone,
top of falls of the Little Manokill.

65 36 ft. concealed.

64 22 ft. gray sandstone,
16 ft. gray flaky sandstone, with
fossil plants.



63

27 ft. gray shaly rock, with
fossils in the upper part.

62

17 ft. gray shaly sandstone, the upper
part of which is filled with pebbles
& contains some fossils.

61

60 ft. concealed.

60

16 ft. gray flaky sandstone, with
fossil plants.

59 24 ft. gray shale & sandstone.

58 9 ft. gray sandstone.

57 10 ft. concealed.

56 4 ft. hard gray sandstone.

55 33 ft. gray & bluish shale, with
a few fossils.

54 8 ft. gray sandstone.

53 9 ft. dark-colored shale.

52 15 ft. greenish shale.

51 34 ft. concealed, some of which
is diagonally laminated.

50 20 ft. gray sandstone & shaly rock.

51 8 ft. gray sandstone.

54 ft. greenish rubble rock.

15 ft. gray sandstone diagonally laminated, passing under the Schistose it makes rapids.

50 36 ft. concealed.

12 14 ft. concealed.

37 ft. concealed.

49 30 ft. gray & greenish shale & shaly rock, with a few fossils.

49

48 13 ft. gray sandstone.

21 ft. dark-colored shaly rock.

47 15 ft. greenish shale.

14 ft. gray thin-bedded sandstone.

46 14 ft. gray sandstone, some of which is diagonally laminated.

20 ft. concealed.

45 20 ft. gray sandstone & shaly rock.

44 4 ft. greenish rubble rock.

43 15 ft. gray sandstone diagonally laminated, passing under the Schoharie at Patchin Hollow, where it makes rapids.

42 14 ft. concealed.

40 34 ft. concealed.

41 35 ft. thick-bedded gray sandstone — a marked horizon.
8 ft. gray sandstone, passing which is concretionary.

40 21 ft. dark-colored shaly rock.

39 8 ft. gray thin-bedded sandstone.

38 20 ft. concealed.

37 28 ft. coarse gray sandstone.

36 34 ft. concealed.

35 8 ft. gray sandstone, part of which
is concretionary.

34 42 ft. concealed.

33 72 ft. gray sandstone, with some
dark-colored shale in the
upper part — top of the
Marshall's.

33

36 ft. dark-colored & gray shaly rock with fossils — spirals in the upper part.

30

23 ft. dark-colored shaly rock with some fossils.

32

50 ft. concealed,

29

84 ft. gray sandstone,

31

72 ft. gray sandstone, with some dark-colored shale in the upper part — top of the Warhalla.

29 8 ft. gray sandstone.

4 ft. dark-colored shale.

28 6 ft. light gray sandstone.

30 23 ft. dark-colored shaly rock,
with some fossils.

29 41 ft. gray & dark sandy shaly
rock,

48 ft. gray sandy shaly rock.

29 87 ft. gray sandstone,

28 47 ft. concealed.

27 77 ft. gray sandstone.

26 55 ft. gray sandstone.

28 8 ft. dark shaly sandstone, with a few
fossils.

- 27 8 ft. gray sandstone.
26 4 ft. dark-colored shale.
25 6 ft. bluish-gray sandstone.

24 41 ft. gray & dark sandy shaly rock,

21 48 ft. gray sandy shaly rock.

23 47 ft. concealed.

20 27 ft. gray thin-bedded sandstone.

18 4 ft. gray concretionary rock.

22 50 ft. gray thin bedded sandstone,
a little of which is diagonally
laminated, & some of which
is inclined to be concretionary.

21 48 ft. gray sandy shaly rock.

18 183 ft. gray shaly sandstone
— base of Wauhatchie Mountain.

20 27 ft. gray thin bedded sandstone.

19 4 ft. gray concretionary rock.

17 20 ft. bluish-gray sandstone.

18 183 ft. gray shaly sandstone
— base of Wanhalla Mountain,

16 70 ft. gray & dark bluish-black shales.
— 'Low Path' road.

25 ft. bluish-black & gray shaly rock.

16 ft. concealed.

17 20 ft. bluish-gray sandstone,
with fossils in the lower part.

29 ft. gray & dark blue shaly sandstone
— lower end of the 'Low Path' road.
This is probably a part of the bed
making top of 'Vroman's Nose'.

16 70 ft. gray & dark bluish-black shale.
— 'Low Path' road.

49 ft. gray shaly sandstone on top
of 'Vroman's Nose'. This bed passes
under the Schist at the
lower end of the 'Low Path' road.
Inclination, 580 feet in two miles,
making no allowance for the fall of the creek.

15 25 ft. bluish-black & gray shaly rock.

10 11 ft. blackish shale.

14 16 ft. concealed.

2 2 ft. gray shaly & shaly sandstone

13 23 ft. dark gray & blackish shaly rock,
with fossils in the lower part.

12 29 ft. gray & dark blue shaly sandstone
— lower end of the 'Low Path' road,
This is probably a part of the bed
making top of 'Roman's Nose'.

11 49 ft. gray shaly sandstone — top
of 'Roman's Nose'. This bed passes
under the Schokarie at the
lower end of the 'Low Path' road,
Inclination, 580 feet in two miles,
making no allowance for the fall of the creek.

10 11 ft. blackish shale.

9 28 ft. gray shale & shaly sandstone.

8 284 ft. dark gray shale.

Fossils most abundant in
the upper part.
- Vermian Zone.

8 284 ft. dark gray shale.

Fossils most abundant in
the upper part,
- 'Vromano Nosi'.

7 205 ft. concealed, up to ledge
on 'Vroman's Nose'.

The surface is covered with
dark gray shale.

By the road, half a mile
west of Vroman's Nose, 10 ft.
of black shale is exposed,
supposed to belong to this
division.

7 205 ft. concealed, up to ledge
on Vroman's Nose.

The surface is covered with
dark gray shale.

By the road, half a mile
west of Vroman's Nose, 10 ft.
of black shale is exposed,
supposed to belong to this
division.

5 2 ft. black shale.

4 21 ft. concealed. The surface
is covered with black shale.

3 2 ft. black slate.

2 15 ft. concealed.

Helderberg Limestones
half a mile below
Middleburg, at a grist
mill, making falls in
the Schoharie.

100 ft. concealed.
6 - Middleburg village.

Five miles from
Jefferson, on the road to Gilboa,
we found a large stone filled
with byrrhinidites, of the same
species as those at Mount
Upton. We procured a fine
lot of them.

5	2 ft. black shale.
4	21 ft. concealed. The surface is covered with black shale.
3	2 ft. black slate.
2	15 ft. concealed.
1	Helderberg Limestones half a mile below Middleburg, at a grist mill, making falls in the Schoharie,

Five miles from Jefferson, on the road to Gilboa, we found a large stone filled with Cypricardites, of the same species as those at Mount Upton. We procured a fine lot of them.

At Jefferson we obtained a quantity of fossils, both shells & fish remains. We found them in loose stones in the fields, some of which were lying less than twenty feet below the outcrop of red rock.

Delaware Co., N. H.

We procured a small number of fossils at Franklin — all from loose surface stones. We found no rock in place containing fossils other than Fusoids. The locality is probably on an anticlinal.

The foregoing are some of the principal facts which came under our notice during the year. Hoping they will prove of some value,

We remain, with high regards,
Yours very truly,
Andrew & Clark Sherwood,
Mansfield, Pa.