DOTL
Nb.15 - E. O. Ulrich.

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U. S. GEOLOGICAL SURVEY
TRAVERSE BOOK

9-904

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Holston
Along
p. 15.

100

Lenny's Notes

100

100

100

Holston River - east of Abingdon, Va.
 June 8th / 27.

Copied

Holston River, East of
 Abingdon, Va. N.B. 16
 p. 15.

Athens shale

Cotters with

Corals

200'

Longview

200' exposed

Blank pages 17-22

Blank pages 17 to 38

✓ Section in quarry 3 m. w. of Newsom, Tenn.
at end of spur from N.E. - St. L. R.R.
July 9, 1907.

Later this section was revised, as follows.

July 10-12, 1907.

Spent in the Lower Helderberg localities of Benton Co., Tenn. About 4 m. N.E. of Holladay's on the road to Camden, there glassy like exposures are found within a mile's distance. One is of great extent and shows a thickness of strata of 145 feet. Here the lower layers are less fossiliferous but contain numerous fossils. The upper beds are crowded with bryozoa as at Perryville and any amount of washing for good bryozoa and ostracoda can be had. The other exposures in this region are smaller but more fossiliferous. The top of the Linden trace contains numerous unusually large crinoid stems which on account of their association with fragments of Cameromurina and the absence of other crinoids may belong to the former. Associated with these crinoid stems and immediately below are the bryozoa beds in which *Eridictyon costicosa* is the prevailing fossil. Under this comes the main brachiopod fauna.

Along Sycamore creek 1/2 m. S.E. of Holladay's are numerous exposures of the upper half of the Linden extending at intervals for a distance of 2 miles or more. Fossils are not so well preserved as at the locality 4 m. N.E. of Holladay's but still numerous specimens may be had. The Camden chert is the prevailing surface rock from Holladay's to Camden except where covered by Tertiary deposits. Immediately above the Camden chert is a black sandy shale which gives a bloom like a coal bed. This is presumably Tertiary and not Devonian. Above this comes sand and gravel with a layer of fine iron ore usually at the base. This iron ore yields Tertiary plants.

Going north from Camden to Big Sandy, no exposures but the Camden chert and obolizing deposits are seen. Likewise as far north as the Iron Bridge across Big Sandy river at Lashlee's store no older rocks than Camden are seen. Under this ridge is a good large Linden exposure. (14 miles north of Big Sandy station or 5 m. up from mouth

of Big Sandy river. The section there is as below.

About 1/2 mile up the river on the same side as the above exposure is the celebrated Swaynes Old mill locality (published by Safford as the Williams mill). Here the section is essentially as the one above except that the shale has a better chance to weather and hence the fossils are better and more numerous. The top contains the bryozoa beds but poorly developed but the yellow clay layers beneath hold the abundant fossils. The lower shales here are comparatively unfossiliferous, the most abundant form being the small *Wilsonia* or *rupestris*.

Strimmar satari at Clifton, Tenn

C/1.4th

43
N3

Anna

Section at head of bank about 300 yards east of junction of Perryville and Parsons road and at northern outskirts of Decaturville, Tenn.

Rock much faulted in this area but normal sequence is as below.

W/pe end of creek.

May 25th 1908

Jonesboro, Tenn.

50

Section east To west through town
A to B along R.R. B to C west from depot

Total thickness of Buchanan from top of Nolichucky at C to middle of syncline at B = 1900 ft. Top of Buch. not preserved in syncline, hence total thickness of formation in this area cannot be given. Probably does not exceed 2500 ft.

B - 800'
 K 13 mi. f 14 mi. f 14 mi.
 map

At west end about 50° E - The angle increases toward east to 90° or more.

The gastropods seen in eastern part of section undoubtedly occur in lower 400 feet of limestone overlying that much or less the Nolichucky. The types are unquestionably later than upper Cambrian. The specimens though poor, are yet good enough to make me reasonably satisfied that they are also ^{later} than Ozarkian. They remind most of Fort Carnie species like *Terrapina* *stabilis* and *Sulcyia*. The beds are separated by gullies and as nearly as I can make out the total thickness of the Buchanan is something like 1000 ft. It may be less, hardly more.

51

At Dr. Brabner's spring, about 3 mi.
above Limestone, one of several instances
of underlying limestone brought up in fold,
through the Athens shale and a part of which
was examined. The shale is strongly
folded and cleaved. The limestone
a dark bluish gray slightly granular rock with scant
evidence of fossils, among them *Modiolaria magna*. The
limestone has numerous thin undulating laminae of
clayey material that may locally cause it to break
up into nodular pieces. At the spring and in other
outcrops noted it holds well together, outcrops
in bold, round-surfaced masses.

Farther up the creek near Leisburg the Lower
limestone occurs on both sides of the Adams shale
syncline. ~~It is~~ Its thickness was not observed
but judged ^{to be} ~~to be~~ under rather than over
120 ft. The top of the Beekmantown is more
magnesian than the lower part, which in
all this region contains considerable chert and large
fragments of ^{or striae} ~~mineralization~~ in the 200 to 400 feet that follows
the first 300-400 ft. of the formation.

At road to church $2\frac{1}{2}$ mi. above Limestone

To be marked
with contents

W

3. *Chama*

[illegible]

about 600' ft. 1 shaly ~~bedrock~~
no crop - ~~bedrock~~
very red - no chert.

$\frac{1}{2}$ m. farther down from it.

That must be provided by
 all of 3000 ft. thick.
 Reservoirs on upper or middle
 Co. and then Indians of south
 part of Kansas - Comanche
 tribe on Wichita by -
 the old Kansas

Notes made at dinner table, 1929 with
Arthur, David, Randolph,
Barbara, and Randolph.

This strip of Ordov. ls. not shown in
3 - 1000 ft.

to town of
1 mi. from Linnestown, Va.

2nd St. Rm.
151st.

Stylidium
Cameroceras
Westons Limestone m.
March 1890

about 30 yds creek

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[illegible]

35

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62

1908
May 26 - Jonestown to Limestone Town
Dinner Limestone creek

At Dr. Bratton's spring, about 3 miles above Limestone, one of several instances of underlying limestone brought up in folds through the Athens shale area to west of and near examined. The shale is clearly folded and cleaved. The limestone is a dark bluish gray slightly granular rock with scant evidence of fossils, among them *Modiolaria magna*. The limestone has numerous thin undulating laminae of clayey material that may locally cause it to break up into nodular pieces. At the spring and in other outcrops noted it holds well together, outcropping in bold, rounded-surfaced masses.

Farther up the creek near Limestone the Limestone occurs on both sides of the Athens shale exposure. Its thickness was not observed but judged to be under rather than over 120 ft. The top of the Limestone is more magnesian than the lower part, which in all this region contains considerable chert and large *Cyprina* ^{or other} *modiolariids* in the 200 to 400 feet that follows the first 300-400 ft of the formation.

From Limestone to Jonestown
the Limestone is
about 100 ft thick
in places and
is highly magnesian
with many
fossils.

Partly copied

At Jonestown - church 2-3 m. above it

W

To be
well

1 m. from Limestone Town

Low St. R.
15 ft.

Distance $1\frac{1}{2}$ miles

1908

May 27 - ~ Jourdons by buggy through Johnson
to Austin Springs and thence to Henderson

North boundary of the Austin Springs ⁷⁰⁷³⁴ Tellico ss. area.

Tellus ss. ann.

North of Johnsons City, Tenn.

= greenish blue dingy
rust and brown.

Shirley

[Faint handwritten notes at the bottom of the page]

115

Division beneath. Also, beautifully exposed
Chaff. The arch is gentle. The north side
was over 150 ft. of ls., showing one main bed, at W.
The middle to upper 60 ft or more are especially so
in a large quarry. Could not see the lower layers as
the entry being covered by water. The wall ascending
practically vertically of sedimentation. All I saw below
to ^{see under top} was
the same type in red clay, indicated.

ST
ST

May 27 1908 contd.

Bluff City - to Calybrate Springs, Tenn.

56

About 1 m. S. of Bl. City contact with shale

Calybrate Springs about 4 m. S. of Bluff City

Lenoir, lower Stone River and Barbours shown in vicinity of and southeast of Bluff City essentially as in Lenoir Creek belt. The most striking and important difference is the presence of the crystalline and fossiliferous limestone bed intercalated in the carbonaceous shale. This bed is located about 1 m. S. of Bluff City between the lower Stone River and the Lenoir. The bed contains numerous fossils. Only a few of them are well exposed on either side of track.

Spence Perry Belmont

See N.C. 8, p. 94.

June 1, 1911. Sunday. Blackwater Valley and Muddy Creek of Smadville Co. E

The Smadville land of Smadville Co. essentially as in Blackwater Valley - main difference being a coral bed at base

Cobbly beds with *Khondaniella*

Sandy ls. 6" - 18"

3-4" shaly ls. with lenses of corals - mixed with sand

Sandy ls. or loamy ss. 2-3 ft

0-3 inches ls. congl. with pebbles of sandstone

Section from Chickamauga road along main road from
Sunderland to Rogersville, Tenn. See map. (See V. 100)

Mistral

25

5

40 = Sowerbyella

20

25

20

60 = 195

55

58

51

20

50

29 = 163

358

Thompson Vol.

Spence Farm
Thompson Valley

Top of Spence, 2.5' compacted
 5
 40
 20
 20
 60
 15
 18
 31
 25
 50
 329

Becky Blaine Henry

Spence Farm

Standing 2,
 10 Cherry
 22 Range 100 on top of hill
 85 Barbed about 1000 - numerous big; Trees.
 40 Sumac, Maple,
 31 Dogwood, + Solanum,
 45 Redstart, white about 1000 with 1000,
 30 - Norway Spruce, grey with black bark
 18 - Platanus, black bark
 75 - Norway Spruce, bark of Spruce, juicy about
 35-6

Michigan

Section from Chick River eastward along main road from
Sandy to Lynchville Tenn. See map. 1887.

Summit to Reynolds farm. The map shows a

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[illegible][illegible]

Copper Ridge ^{probably} *Cynodactylus*

732

100 yds. - smooth. No fossils.
 75 yds. - thin, shaly.
 50 yds. - shaly, blue.
 25 yds. - shaly, blue.
 10 yds. - shaly, blue.
 5 yds. - shaly, blue.
 2 yds. - shaly, blue.
 1 yd. - shaly, blue.
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Mammals
 member: lower half.

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Season of 1911

64

East Radford, Va. July 25, 1911

1 mi. up River from depot - along RR

N

5

✓ July 26th 1911 At Bristol, Va. in small quarry on western edge of city.

Copied

65

Greenville, Tenn., July 28, 1911

On Knoxville Pike 1 1/4 m. SW of Greenville, Tenn.

1 mi. or less west of station - See revised 1924 section in N.B. 33, p. 67.

Lepid. & P. ...
Cn. ...

See 1908 section
at same place
p. 54.
See also section relative
to ...
in 1924 (N.B. 33, p. 67)

mouth of River, 2 or 3 miles

may be *Sphaerocorys*
Echinoplax
Chelonicus - *Comacina*
Calappa - *Tridacna*
Stomatopoda - *Stomatopoda*
Stomatopoda - *Stomatopoda*

Calcareous bluish shale with
occasional thin slabs of sandstone ls.
There may be more of this, but there is
at least 10 ft. Beyond that, the section
is unexampled.

B 2.00' +

C { 60'
600' +

To, Mr. [illegible]
and his family, [illegible]
New York, N.Y. [illegible]

~~Forest~~ River shale

2. $15^{\circ} 40' \text{ NW}$.

More shells in west at
and NW of station. They are
uniform, and many repeated beds to south.
I

54

id. English

Birds III to the red
birds in nest are muffed
by Kallio's Sonnet.
The top of Kallio is drawn
just across (N) of the
vireo. Fringe of
Bird. VIII however
indicates Kallio's nest
is older.

1.1. Motivation

This is the type of
Bays 55. If I were
much mistaken
reference to the
and not to the other
The way to the west.

10 ft. greenish gray to yellow shale.
25 ft. subgranular to. ripple.
60 ft. usual type of shale.

[illegible]

3.4

$$\begin{array}{r} 80 \\ 44 \\ \hline 28 \\ 283 \end{array}$$

5

75

Rogersville in WNW direction across
Stone and Clinch Mts.

Captain

Knoxville, Tenn.
Aug. 1, 1881.
Se. Tenn. Iron
Smelter 10 ft. stage
Southward from
Orebody mine.

Captain
Knox
Aug. 1, 1881

5 ft
10 ft
15 ft
20 ft
25 ft
30 ft
35 ft
40 ft
45 ft
50 ft
55 ft
60 ft
65 ft
70 ft
75 ft
80 ft
85 ft
90 ft
95 ft
100 ft

Hotel Hamilton

1876

NEW ANNEX 1902

ALL MODERN CONVENIENCES

J. HAMILTON, PROPRIETOR

Bristol, Va.,

190

Copied

*Knownville, Tenn
Aug. 1900
Society here
Sunder 10 W. 1899
Society 1899
Indians*

*Office
T. W. 1900*

*5 E
Aug 1900*

*... could have up. Had ...
... in ...
... to ...*

March 11. ✓ Section from base of Shallow Pan (see p. 22)
Aug. 10, 1911

Barren station, Tenn.

July 10, 1907
 Sycamore creek, $\frac{1}{2}$ m. S.E. of Hildings.
 3 $\frac{1}{4}$ m. N.E. of Hildings. 48'

Aug. 17 (Thurs) R.R. from Nashville to Dover.
Stops from to Decaturville.
July 18 (Thurs) R.R. from S. to Decaturville.
July 19 (Thurs) R.R. from S. to Decaturville.
July 20 (Frid) R.R. from S. to Decaturville.
July 21 (Sat) R.R. from S. to Decaturville.
July 22 (Sun) R.R. from S. to Decaturville.
July 23 (Mon) R.R. from S. to Decaturville.
July 24 (Tues) R.R. from S. to Decaturville.
July 25 (Wed) R.R. from S. to Decaturville.
July 26 (Thurs) R.R. from S. to Decaturville.
July 27 (Frid) R.R. from S. to Decaturville.
July 28 (Sat) R.R. from S. to Decaturville.
July 29 (Sun) R.R. from S. to Decaturville.
July 30 (Mon) R.R. from S. to Decaturville.
Aug. 1 (Tues) R.R. from S. to Decaturville.
Aug. 2 (Wed) R.R. from S. to Decaturville.
Aug. 3 (Thurs) R.R. from S. to Decaturville.
Aug. 4 (Frid) R.R. from S. to Decaturville.
Aug. 5 (Sat) R.R. from S. to Decaturville.
Aug. 6 (Sun) R.R. from S. to Decaturville.
Aug. 7 (Mon) R.R. from S. to Decaturville.
Aug. 8 (Tues) R.R. from S. to Decaturville.
Aug. 9 (Wed) R.R. from S. to Decaturville.
Aug. 10 (Thurs) R.R. from S. to Decaturville.
Aug. 11 (Frid) R.R. from S. to Decaturville.
Aug. 12 (Sat) R.R. from S. to Decaturville.

Aug. 13 (Sun) R.R. from S. to Decaturville.
Aug. 14 (Mon) R.R. from S. to Decaturville.
Aug. 15 (Tues) R.R. from S. to Decaturville.
Aug. 16 (Wed) R.R. from S. to Decaturville.
Aug. 17 (Thurs) R.R. from S. to Decaturville.
Aug. 18 (Frid) R.R. from S. to Decaturville.
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97

97

97

Notes Storer Camp region.

The shale at the bottom of the Gallatin - South Teton section is more massive and highly in the Storer Creek creek section. It is here also underlain by at least six feet (probably considerably more) of dense pink indicating the lower fifth foot of the group at Conventville. At the hill near the 8 mile post n.s. of Goodlettsville the top of the Ordovician is shown. Instead of the heavy a series of limestone as at Hinsdale, we have a measure of about 40' (or 35 feet) with yellowish clayey layers of blue shales in abundance of *Platystrophia*, *O. subquadrata*, etc. above the rather massive limestone, among them a layer full of small *Strophomena* similar to the form but with more elongated and broader than the form but with more crystalline thin joining through it and remarkable for its very characteristic and numerous specimens of *Strophomena* large celled *Strophomena* which are abundant locally. The same is terminated above by a black rock is full of bryozoa (*Orthis*, *Strophomena*, etc.) and other fossils. *Strophomena*, still further along the same horizon as *Orthis* and. The *Strophomena* occurred in this series.

Notes for A.R.O.'s trip 1907 -

✓ Surveyed old mill 13 m. s. Big Sandy station, 2 hours
 on under bridge at bridge head near duckley's store
 and then at old mill site about a mile above.
 got train at Big Sandy station. See locality 1/2 way between
 Cauden & Big Sandy, Tenn. for good exposures. 7.5.
 (near) Hollings, Tenn. - got train at Cauden.
 near Chaswell, Wolf Creek, Denton Co., Tenn.
 m.s. 7 or 8 m. s. Big Sandy Sta., Tenn.

Work from Cauden north and south.
 Cauden to Perryville by railroad.
 Perryville to Clifton by boat.
 Clifton to Decatur by boat.
 Decatur to Nashville by rail.
 Nashville to Knoxville.

Aug. 2 - Knoxville 2.
 Murfreesboro 3.
 Decaturville 2.
 Bull Gap 1.
 Big Port - Spout 2.
 Murfreesboro 1.
 Clarksville Mo. 3.
 Hannington, Ill. 1.
 Burlington, Iowa 1.
 Cape Girardeau 2.

See *Coniferus* *Oriskany* (fossil) for marks
by *McPherson* *Supply* Co. for a paper
presented by *Smith* and *Smith* of *Yonkers*
attended a meeting at the point.

Notebook 14 of E.O. Ulrich.

Middle and Northern Appalachian sections
(Pa.; N.Y.; Hyde Manor, Vt.; Ont.)
1907, 1908.

Albion and Niagaran series - sketch of.

Alms house - section from - east of Hawthorn, Pa.

Ami's Rideau sandstone - note on.

Antrim Grove, forks of church 1 mile west of - in
section vicinity of Greencastle, Pa.

Appalachian, middle and northern sections - thicknesses
of rock of.

Barber Point - in description of section at Cole
Bay and 1 mile south along Lake Champlain.

Barriefield Hill, east of Kingston, Ont. - section at.

Beekmantown:

in section at Chambersburg.

" " Alms house east to Hawthorn, Pa.

" " NW. from Scotland, Pa., to railroad.

" " vicinity of Greencastle, Pa.

" " S. and W. of Mercersburg, near Licking
Creek Cove, Pa.

" " at tollgate 1 mile W. of McCommellsbu
burg, Pa.

" " NE. of McCommellsburg.

" " 2 miles SE. of Fort Loudon, ford of
Conococheague Creek.

" " at Harrisburg, Pa.

" " at Cole Bay and 1 mile S. along shore
of Lake Champlain.

in contact just south of Valcour, N.Y.

A of Brainard and Seely - in section at Theresa,
N.Y.

Beekmantown cont'd.:

comment on - in section at Crown Point Peninsula,
N.Y.

Div.E. of - in sections at golf links E. of
Hyde Manor, Sudbury, and $2\frac{1}{2}$ miles E. of
Orwell, Vt.

of Champlain region - description.

outcrop of Ozarkian Beekmantown (Bed A) - in
section north of Saratoga, N.Y.

section of E. of Chambersburg, Pa.

section at Chambersburg.

A of Seely = Upper Cambrian - in section vicinity
of Ticonderoga, N.Y.

Upper, of Chambersburg region - in section vicinity
of Ticonderoga.

Birdseye limestone - in section in quarry and rail-
road cut north of Tribes Hill, N.Y.

"Black River" beds in valley of West Canada Creek -
beds in section in quarry to Mill Creek at Low-
ville, N.Y., correspond to.

Black River ls.:

in section at falls opposite Watertown, N.Y. -
mapped by Cushing and Ruedemann.

in section at lower end of Diamond Island, N.Y.

in section at Pinnacle Hill Park, Watertown.

in section in long cut south of Sanford, N.Y.

in section at Roaring Creek S. of Martinsburg and
Lowville, N.Y. - by Cushing.

Black River-Trenton - in section at golf links
east of Hyde Manor, Vt.

"Black River" beds in valley of West Canada Creek -
beds in section in quarry to Mill Creek at
Lowville, N.Y., correspond to.

Raymond's Black River in section at Crown Point
Peninsula, N.Y.

top of - in section in creek $\frac{3}{4}$ mile W. of Three-
mile Bay, N.Y.

Blue Spring and Huesters - south of Mercersburg, Pa. -
explanation of fault-like overlapping shales in
belts between.

Brainard and Seely's section of Beekmantown at
Shoreham, Vt.

Brainard and Seely, and Raymond - comment on their
views of basal Chazy in section at Crown Point
Peninsula, N.Y.

Brick clay pits - vicinity of Carlisle, Pa. - in
section.

Cabot Head shale - in sketch of Albion and Niagaran
series;

in diagram of Cataract formation made by M.Y.
Williams.

Cambrian - lower - or Levis slate - in section at
gold links east of Hyde Manor, near Sudbury,
Vt. - with Keith and Dale.

pre - in sketch just north of Port Henry, N.Y.,
along D. & H.R.R.

Upper - Seely's A. of Beekmantown =; in section
vicinity of Ticonderoga.

Canada, West, Creek - reef in - forms Prosser's
A5 of Trenton Falls section.

Carlisle, Pa.:

Cave Hill section near.
section in vicinity of.

Cataract formation: copy of M.Y. Williams's diagram
of.

in sketch of Niagaran and Albion series.

Cave Hill section near Carlisle, Pa.

Chambersburg, Pa.:

Beekmantown section at.

note on Knox and Beekmantown sections east of.

section along road east from.

Chambersburg-Greencastle pike - section.

Chambersburg ls.:

- in section at Rocky Spring, Pa.
- " " Chambersburg-Greencastle pike.
- " " vicinity of Greencastle pike.
- " " Mercersburg-Greencastle pike, from
Upton to west branch of Conococheague Creek.
- " sections south and west of Mercersburg,
near Licking Creek Cove, Pa.
- " section at Div. F 13, tollgate NE. of
McConnellsburg (top of).
- " " 2 miles SE. of Fort Loudon, at ford
of Conococheague Creek.
- " " at Cave Hill near Carlisle, Pa.

Chambersburg region - upper Beekmantown of -
in section vicinity of Ticonderoga, N.Y.

Champlain region - Beekmantown of described.

Channel filling in basal Trenton limestone at
Tribes Hill, N.Y. - sketch of.

Chazy, N.Y. - section at Jones's quarry south of -
description of photos of.

Chemung - in section at tollgate 1 mile west of
McConnellsburg, Pa.

Church:

at Rocky Spring - section at old quarries.
forks at - 1 mile west of Antrim Cove - in
section vicinity of Greencastle, Pa.

Clayton, N.Y. - section west of.

Clinton, N.Y. - section at.

Clinton: in sketch of Niagaran and Albion series.

Cole Bay and 1 mile south along shore of Lake
Champlain - section.

Conococheague:

formation - in Licking Creek section - Beekmantown.
? - top of - in section NW. from Scotland, Pa.,
to railroad.

Conococheague Creek - west branch - Mercersburg-
Greencastle pike from Upton to - section west along
Ford of - section 2 miles SE. of Fort Loudon at.
At Div. E 5, in section Chambersburg-Greencastle
pike.

Copper Ridge:

at Div. E 26, Licking Creek section, vicinity
of Mercersburg, Pa.

chert of Copper Ridge type at Div. F 5 of section
NE. of tollgate at McConnellsburg, Pa.

Crown Point Peninsula, N.Y. - section at - lower
part same as at Threemile Day.

Curdsville horizon - Bed 7 in section at Finch and
Pruyn quarry, Glenn Falls, N.Y. =

Cushing, H.P.:

described and illustrated upper part of section
at quarry to Creek level, Inghams Mills, N.Y.
made section at Roaring Creek south of Martinsburg
and Lowville, N.Y.

published photo of section (Prosser published
section) at Inghams Mills, N.Y. (both wrong).

Cushing and Ruedemann - Black River of - in sections
opposite falls at Watertown and between Water-
town and Sanford, N.Y.

Dale and Keith - with Ulrich at Hyde Manor and Sud-
bury, Vt., and extremity of Taconic Mts.

Day Point ls. - probably represented in section at
Cole Bay and 1 mile south along Lake Champlain.

Decew ls. - in sketch of Niagaran and Albion series.

Deepkill section - Hoosic River at Schaghticoke, N.Y. -
comment on.

Diamond Island, N.Y. - section opposite dam at lower end of - add to section at Watertown, N.Y.

Divisions of sections:

- A1 to A8 - E. of Chambersburg, Pa.
- A8 to B10 - from Alms House E. to Hawthorn, Pa.
- B10 to B17 - NW. from Scotland to railroad.
- C1 to C5 - Rocky Spring and vicinity.
- D1 to D6 - Chambersburg-Greencastle pike.
- E1 to E7 - railroad cut at north end of Greencastle.
- E9 to E18 - along Mercersburg-Greencastle pike from Upton to west branch Conococheague Creek - E18 = Stose's No. 274.
- E18a to E28 - Licking Creek section, vicinity of Mercersburg.
- E29 to E37 - south and west of Mercersburg, near Licking Creek cove.
- F1 to F16 - west and northeast of tollgate at McConnellsburg.
- F16 to F18 - 2 miles SE. of Fort Loudon at ford of Conococheague Creek.
- F19 - at Dickey, Pa. = Stose's loc. 294 = bed of Fort Loudon.

Dolgeville, N.Y. - section just below dam near.

Dudley camp - Cole Bay at - sketch of.

Echinosphaerites, upper, or Sinuites zone - in section in vicinity of Greencastle, Pa.

Fault - in section NW. from Scotland, Pa., to railroad.

Fault-like overlapping shales in belts between Blue Spring and Huesters, S. of Mercersburg, Pa.

Finch and Pruyn quarry, Glenn Falls, N.Y. - section at.

Fort Cassin, N.Y. - note regarding fauna at.

Fort Cassin fauna - in reef - Brainard and Seely's section of Beekmantown at Shoreham, Vt.

- Fort Loudon, Pa. - section 2 miles SE. of at ford of
Conococheague Creek.
bed 6 of = Stose's loc. 294 = F 19 in section at
Dickey, Pa.
- Frankfort sh. and ss. - in section at Old Paint Mill,
south of Ilion, N.Y.
- Fulton, N.Y. - upper Oswego Falls - sketch of Oneida
conglomerate at.
- Gaylor's quarry, N. edge of Saratoga, N.Y. - section
at (picture and description published by Pros-
ser).
- Georgia or Levis slates - mentioned in section of
Stockbridge limestones around N. extremity of
Taconic Mts.
- Glenn Falls, N.Y. - Finch and Pruyn ^{quarry} - sections at
(should be correlated with Ingham's Mills section).
- Golf links east of Hyde Manor, near Sudbury, Vt. -
Lower Cambrian or Levis shale in section at.
- Gorge of Sandy Creek - section in.
- Government Hill - northern slope of - in sketch of
Sudbury, Vt.
- Grand Hollow, Rensselaer Co., N.Y. - Deepkill section
near.
- Greencastle, Pa.:
section vicinity of.
compare limestones in No. 34 in section south
of Mercersburg, across Licking Creek cove,
with section in vicinity of.
- Greencastle-Chambersburg pike - section at.
- Green Village - crossroad - in section NW. from
Scotland, Pa., to railroad.
- Grimsby formation - names in.
Thorold and Merriton sandstones - in sketch of.

Harrisburg, Pa. (Lemoyne, Pa.) section.
 Hawthorn, Pa. - section from Alms house east to.
 Hermitage - in section in quarry - railroad cut
 north of Tribes Hill, N.Y.
 High Bridge fossils - in section in long cut south
 of Sanford, N.Y.
 Hoosic River at Schaghticoke, N.Y. - section along.
 Hospital - in section east from Chambersburg, Pa.
 Hudson shale - in section of Stockbridge limestones
 around N. extremity of Taconic Mts.
 or Martinsburg shale - in section at golf links
 east of Hyde Manor, near Sudbury, Vt.
 Huesters and Blue Spring, south of Mercersburg, Pa. -
 explanation of fault-like overlapping shales
 in belts between.
 Hyde Manor, Sudbury, Vt., section near,
 golf links near - Lower Cambrian or Lewis slate
 in section at.
 Ilion, N.Y. - section at Old Paint Mill, south of -
 in gulf of Steele Creek.
 Inghams Mills, N.Y.:
 section at.
 section, quarry to creek level.
 Glens Falls section should be correlated with
 Inghams Mills section.
 Irondequoit ls. - incorporated under Lockport.
 or Wolcott - in Kindle's section at Lockport, N.Y.
 Jones quarry - south of Chazy, N.Y. - section at -
 description of photos of.
 Keith and Dale - with Ulrich at Hyde Manor, near
 Sudbury, Vt., and at N. extremity of Taconic Mts.
 Kindle, E.M. - section 7, beds a-j of - Lockport, N.Y.
 Kings Station, north of Saratoga, N.Y. - section at.

Kingston, Ont.:

Barriefield Hill east of - section at.
Penitentiary quarry, near Portsmouth - section at.
Rideau Station - section at.
Tuttles Hill, 4 miles NE. of - section of Pamela
ls. at.

Knox:

lower - in section NW. from Scotland, Pa., to railroad
" " " vicinity of Greencastle, Pa.
in section at tollgate 1 mile W. of Mercersburg.
at E 28, Licking Creek section, vicinity of
Mercersburg.
and Beekmantown - section east of Chambersburg, Pa. -
note on.

Lake Champlain - 1 mile south along shore of -
and Cole Bay - section.

(Lemoyne, Pa.) Harrisburg, Pa., section.

Leray member of Lowville:

in section in long cut south of Sanford N.Y.
in section in large quarry to Mill Creek at
Lowville, N.Y.

Devis or Lower Cambrian slate - in section at golf
links east of Hyde Manor, near Sudbury Vt. -
with Keith and Dale.

Levis or Georgia slates - mentioned in section of
Stockbridge limestones around N. extremity of
Taconic Mts.

Licking Creek:

section, vicinity of Mercersburg, Pa.

Beekmantown section.

cove - section south and west of Mercersburg,
Pa., near.

Limerick, N.Y. - Perch River just south of - section.

Limestone at Div. E 34 - south of Mercersburg across
Licking Creek cove - compare with Ls. at Green-
castle, Pa.

List of names incorporated under Lockport, Grimsby formation, and Cataract formation.

Little Falls dolomite:

in section just below dam near Dolgeville, N.Y.
at Port Henry, N.Y. - for brief notes on see
description of photos, back of book.

Localities:

274b = 294a - 2 miles south of St. Thomas, Pa.
294 of Stose, at St. Thomas, Pa., revised by Ulrich.
427x, 427x¹, 427x² - in section at quarry $\frac{1}{2}$ mile
south of Plattsburg Normal School.

Lockport, N.Y. - section in vicinity of near head
of gulf - Kindle's section 7, beds a-j.

Lockport dol.:

in diagram of Cataract formation made by M.Y.
Williams.

in sketch of Niagaran and Albion series.

Lockport formation - names incorporated under,

Lockport ls. - in Kindle's section at Lockport, N.Y.

Lorraine gorge - in description of section at Pulaski,
N.Y.

Lowville, N.Y.:

section in large quarry to Mill Creek at.
and Martinsburg, N.Y. - section at Roaring Creek
south of - made by H.P. Cushing.

type of fossils - in section at lower end of Diamond
Diamond Island.

Lowville:

in section opposite falls at Watertown.

" " at Theresa, N.Y.

" " at Inghams Mills, N.Y.

" " west of Clayton, N.Y.

" " at Barriefield Hill, east of Kingston,
Ont.

" " at Penitentiary quarry, Portsmouth,
near Kingston, Ont.

Lowville cont'd.:

in section at Roaring Creek, south of Martinsburg and Lowville, N.Y. - made by Cushing.

" " in creek $\frac{1}{4}$ mile west of Threemile Bay, N.Y.

" " at Rideau Station, Kingston, Ont.

in sketch of channel filling in basal Trenton limestone at Tribes Hill, N.Y.

Leray member of - in section in long cut S. of Sanford, N.Y.

in section in large quarry to Mill Creek, Lowville.

section - in long cut S. of Sanford.

McConnellsburg, Pa.:

supposed reef at tollgate 1 mile west of - section at.

sections W. and NE. of tollgate at - described.

valley 1 mile north of - section across.

Manitoulin dolomite in diagram of Cataract formation made by M.Y. Williams.

Marble, pink - in section northwest from Scotland, Pa., to railroad.

Martinsburg, Pa. - cf. limestone in section (E3) in vicinity of Greencastle with Stones River at.

Martinsburg and Lowville, N.Y. - section at Roaring Creek south of - made by H.P. Cushing.

Martinsburg and Hudson shale - in section at golf links east of Hyde Manor, near Sudbury, Vt.

Mayville:

lower - in description of section at Pulaski, N.Y.

Medina:

upper - in Kindle's section at Lockport, N.Y.

in section at tollgate 1 mile west of McConnellsburg, Pa.

Mercersburg, Pa.:

Huesters and Blue Spring south of - explanation
of fault-like overlapping shales in belts between
Licking Creek section in vicinity of.
sections south and west of across Licking Creek
cove.

Mercersburg-Greencastle pike - from Upton to west
branch Conococheague Creek - section west along.

Merriton and Thorrold sandstones - Grimsby formation -
in sketch.

Mill, Stauffertown - in section east from Chambers-
burg, Pa.

Millrace - new - in section of exposures along Hoosic
River at Schaghticoke, N.Y.

Mr. Shettler's fence - in section east of Cham-
bersburg, Pa.

Names, list of - incorporated under Lockport,
Grimsby formation, and Cataract formation.

New Millrace - in section of exposures along Hoosic
River at Schaghticoke, N.Y.

Niagaran and Albion series - sketch of.

Normanskill ? shale - in Deepkill section near
Grand Hollow, N.Y.

Old Paint Mill, south of Ilion, gulf of Steele Cr.,
N.Y.

Oneida conglomerate:

at upper Oswego Falls, Fulton, N.Y.

in section at Old Paint Mill, Ilion, N.Y.

Tuttles Hill, 4 miles NE. of Kingston - section of
Pamellia ls.

Ontario:

Tuttles Hill, 4 miles NE. of Kingston - section of
Pamelia ls.

section at Rideau Sta., Kingston.

Orwell, Vt. - section $\frac{1}{2}$ mile east of.

Oswego Falls, upper, at Fulton, N.Y. - sketch of
Oneida conglomerate at.

Oswego ss.:

equivalent to McMillan of Cincinnati section -
in description of section at Pulaski, N.Y.

Ozarkian Beekmantown - outcrop of (bed A) - in section
at Kings Station, north of Saratoga, N.Y.

Paint Mill, old - south of Ilion, N.Y. - in gulf of
Steele Creek - section.

Pamelia ls.:

in section at Theresa, N.Y.

" " Rideau Sta., Kingston, Ont.

" " in long cut south of Sanford, N.Y.

" " Barriefield Hill, east of Kingston, Ont.

" " Penitentiary quarry, Portsmouth, near
Kingston, Ont.

" " between Watertown and Sanford, N.Y.

" " in large quarry to Mill Creek at
Lowville, N.Y.

" " at Roaring Creek south of Martins-
burg and Lowville, N.Y. - made by
Cushing.

formation - in section west of Clayton, N.Y.

Paquettes Rapid type of fossils - in section at
lower end of Diamond Island, N.Y.

Penitentiary quarry, Portsmouth, near Kingston, Ont. -
section at.

Perch River, south of Limerick, N.Y. - section.
Photographs - of Jones quarry, south of Chazy, N.Y. -
described.
of New York-Canada trip - described.
of Sudbury Inn golf links, Sudbury, Vt. -
in envelope back of book.
Pinnacle Hill Park, Watertown, N.Y. - section.
Pits, brick clay - in section, vicinity of Carlisle, Pa.
Plattsburg Normal School, N.Y. section at quarry
 $\frac{1}{2}$ mile north of.
Port Henry, N.Y. - section just north of, along
D. & H.R.R.
Portsmouth, near Kingston, Ont. - section at Peniten-
tiary quarry.
Potsdam ss.:
in Brainard and Seely's section of Beekmantown
at Shoreham, Vt.
in note on Ami's Rideau sandstone - Kingston, Ont.
in section just north of Port Henry, N.Y., along
D. & H.R.R.
in section of Beekmantown in vicinity of Ticon-
deroga, N.Y.
in section at Theresa, N.Y.
Presbrey Point, N.Y. - sandstone in section at Crown
Point Peninsula is shown at.
Prosser, C.S.:
A5 of - reef in West Canada Creek forms top of -
Trenton Falls section.
published section, and Cushing published photo of
section at Inghams Mills, N.Y. (both wrong).
published picture and description of section at
Gaylor's quarry north of Saratoga, N.Y.
section of - at Finch and Pruyn quarry, Glenn
Falls, N.Y.

Pruyn and Finch quarry, Glenn Falls, N.Y. - section.
Pulaski, N.Y. - section.

Quarries:

Gaylor's, north edge of Saratoga, N.Y. - picture
and description of published by Prosser - section
 $\frac{1}{2}$ mile north of Plattsburg Normal School - section.
section at Rocky Spring church, from old quarries
down to spring.
Queenston shale - typical - in diagram of Cataract
formation made by M.Y. Williams.
Racetrack fauna = Stauffertown - in section vicinity
of Carlisle, Pa.
Raymond, and Brainard and Seely - comment on their
views of basal Chazy in section at Crown Point
Peninsula, N.Y.
Raymond's Black River - in section at Crown Point
Peninsula, N.Y.

Reefs:

at Reef Point on east shore of Valcour Island, N.Y. -
Sloop Island continuation of same reef.
supposed reef at tollgate 1 mile west of McCon-
nellsburg, Pa. - section at.
old reef, at Valcour Island, N.Y. - sketch of.
with Fort Cassin fauna - in Brainard and Seely's
section of Beekmantown at Shoreham, Vt.
Rensselaer County, N.Y., Grand Hollow in - Deepkill
section near.
Rideau sandstone of Ami - note on.
Rideau station, Kingston, Ont. - section at.
Roaring Creek, south of Martinsburg and Lowville, N.Y. -
section - made by H.P. Cushing.

Rochester shale:

in sketch of Niagaran and Albion series.
in Kindle's section at Lockport, N.Y.

Rocks - middle and northern Appalachian sections -
thicknesses of.

Rocky Spring, Pa., and vicinity - section.

Ruedemann, Rudolf:

with Ulrich - at Hoosic River, Schaghticoke, N.Y.
and Cushing - Black River of - in sections oppo-
site falls at Watertown, and between Water-
town and Sanford, N.Y.

and Whitfield - algae of in Bed 7 of section at
Finch and Pruyn quarry at Glenn, Falls, N.Y.

St. Thomas, Pa. - 2 miles south of - Stose's loc. 294,
revised by Ulrich.

Salina ss. - in section at Old Paint Mill south of
Ilion, N.Y.

Salmon River Falls - in section at Pulaski, N.Y.

Sandy Creek - section in gorge of.

Sanford, N.Y. - section of Lowville limestone in
long cut south of.

and Watertown - section between.

Saratoga, N.Y.:

Gaylor's quarry north edge of - picture and de-
scription of published by Prosser - section at.

Kings Station north of - section at.

Schaghticoke, N.Y. - Hoosic River at - section along.

Sections - see Divisions of sections.

Seely's A of Beekmantown = Upper Cambrian - in
section vicinity of Ticonderoga, N.Y.

Shettler, Mr. - fence of - in section east from
Chambersburg, Pa.

Shoreham, Vt. - Brainard and Seely's section of Beekmantown at.

Sinuities or upper Echinospaerites zone in section in vicinity of Greencastle, Pa.

Sloop Island reef, and reefs at Reef Point on east shore of Valcutt Island, N.Y. - sketch of.

Sodus shale - incorporated under Lockport.

Stauffertown = Racetrack fauna - in section vicinity of Carlisle, Pa.

Stauffertown mill - in section east from Chambersburg, Pa.

Steele Creek - section at Old Paint Mill south of Ilion, N.Y.

Stockbridge limestones - generalized section of around N. extremity of Taconic Mts.

Stonehenge member in axis of anticline - in section vicinity of Carlisle, Pa.

Stose:

"See Stose" - in parenthesis - section at Rocky Springs, Pa.

Localities of:

274 = E18 - in section Mercersburg-Greencastle pike, from Upton to west branch Conococheague Creek.

294 = F19, Dickey, Pa. - section = bed 6 of Fort Loudon section.

294, 2 miles south of St. Thomas, Pa. - revised by Ulrich.

Sudbury, Vt.:

east and west through - sketch.

Levis or Lower Cambrian slate in section at golf links east of Hyde Manor near (with Keith and Dale).

section near Hyde Manor.

Taconic Mts. - generalized section of limestones (Stockbridge) north extremity of (with Keith and Dale).

Theresa - formation - transition beds - in Brainard and Seely's section of Beekmantown at Shoreham, Vt.

Thorold and Merriton sandstones - Grinsby formation - in sketch.

Threemile Bay, N.Y. - creek $\frac{1}{2}$ mile west of - section at top of Black River and lower 60 feet of Trenton.

lower part of section at Crown Point Peninsula, N.Y. same as at Threemile Bay.

Ticonderoga, N.Y., vicinity of - section.

Tiger Point - in sketch of reefs at Reef Point on east shore of Valcour Island, N.Y.

Tollgate 1 mile west of McConnellsburg, Pa. - section at supposed reef at.

Transition beds = Theresa formation - in Brainard and Seely's section of Beekmantown at Shoreham.

Trenton ls.:

Bed 7 in section at Finch and Pruyn quarry, Glenn Falls, N.Y. = lower Trenton in Minnesota.

in section at lower end of Diamond Island, N.Y.

in section between Watertown and Sanford, N.Y.

in section at Crown Point Peninsula, N.Y.

lower 60 feet of - in section $\frac{1}{4}$ mile west of Threemile Bay.

lower - in section $\frac{1}{2}$ mile east of Orwell, Vt.

typical - in section just below dam near Dolgeville, N.Y.

upper outcrops - in section at Pinnacle Hill Park, Watertown, N.Y.

Trenton-Black River - in section at golf links east of Hyde Manor, near Sudbury, Vt.

Trenton Falls, N.Y. - sketch of unconformity at.

Tribes Hill, N.Y. - section in quarry and railroad cut just west of.

Tuttles Hill, 4 miles NE. of Kingston, Ont. - section of Pamelia limestone at.

Unconformity at Trenton Falls, N.Y. - sketch of.
Utica:

in section just below dam at Dolgeville, N.Y.
in section in gorge of Sandy Creek, N.Y.
top of - in description of section at Pulaski, N.Y.
slate - at F13 in section at tollgate NE, of
McConnellsburg, Pa.

Valcour, N.Y. - contact just south of.

Valcour Island, N.Y. - reefs at Reef Point on east
shore of - Sloop Island continuation of same.

Vermont - Brainard and Seely's section of Beekmantown
at Shoreham.

Vernon red shales - compare red shale in section at
Old Paint Mill, south of Ilion, N.Y., with.

Watertown, N.Y.:
section at falls opposite filtration plant.
add section at lower end of Diamond Island to
section at.

Pinnacle Hill Park at - section.

Watertown and Sanford - section between.

Watertown ls. - base of - in section in long cut south
of Sanford.

West Canada Creek:

Black River beds in valley of - beds in section in
quarry to Mill Creek at Lowville correspond to.
reef in - forms Prosser's A5 of Trenton Falls
section.

Whirlpool ss., with Manitoulin dolomite, Cabot Head
shale, and Cataract formation - in sketch.

Whitfield and Ruedemann - algae of in bed 7 of section
at Finch and Fruyn quarry, Glenn Falls, N.Y.

Williams, N.Y. - copy of diagram of Cataract formation
by.

Williamson shale - incorporated under Lockport.

Wolcott or Irondequoit - in Kindle's section at
Lockport, N.Y.

Photos in East Tennessee

Roll I

1

2

3

4, see p. 58.

5

May 28th 6 View of Spence's Ferry, showing in distance Russell's Mountain on
Pransburg ls.

7 After a satisfactory lunch & drink.

8 Bassler getting his fill - I am well at Spence's Ferry.