April
1900

"He scrutinized the whole arsenal of his scientific convictions, and found no answer to his questions. He was in the position of a man who seeks to find food in a toy-store or a gun-shop."
Tolstoi.

April

Genus DISCOSPIRA, Tate, M.S.P.L.E.

Shell composed of discoidal whorls, the latter another, and gradually increasing in size; outer edge rounded, giving a suitable form and; internally gibbous in axis."

Discospira conoidea, Tate.

"Shell conical, composed of a series of whorls which are flattened above and below, each succeeding whorl increasing in size from the apex to the base, upper edges of the whorls rounded; giving the shell and smooth, without appearance of striation of any kind; slightly hollow in the centre, number of the discs lines radiating towards the outer margin."

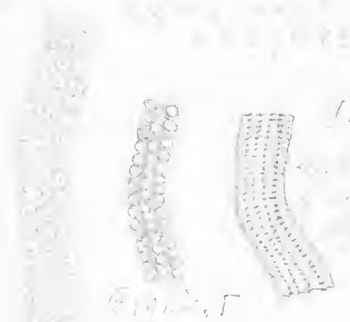
--: Ontario County; Lockport, Niagara County, New York."

Lamellaria niagarensis, Tate.

"Broad, pyramidal, tapering abruptly; angles with deep abrupt channels: centre of each side with a shallow scarcely defined depression which produces a more abrupt bending of the striae: transverse striae fine and close arranged, directed from the angles obliquely to the centre, where they are more abruptly bent in crossing the slight depression; striae papillo-granulate, intermediate spaces marked by longitudinal striae, minute which alternate with the granules upon the transverse striae."

"In the Niagara specimen the transverse ridges are undulate or serpentine, with sharp deep grooves between, which are partially crossed on the upper side of the ridge by an elevated line upon the prominent point of the ridge. The transverse ridges, as well as the points upon them are comparatively

April



closer together than in the preceding species", (Leptaena quadrisulcata, Hall, Sect. Rep. (4th Dist. p. 110, fig. 2.) "in which the interspace is more distinctly grooved longitudinally; while in the Pingua species the ridges are ornamented with prominent distinct points, which are likewise shown in the cast, and the interspaces are narrower and very distinctly grooved. The arrangement of the transverse striae is not equal and uniform, being sometimes much more crowded for a short distance than the preceding character.

"In the shale at Lockport, Rochester, Wolcott, and other places, and in the lower part of the limestone at Rochester."

Leptropora frondosa Hall

Pl. 40B, Fig. 5 a. b.

Fig. 2 d

Fig. 2 c.

Pl. 65, Fig. 2 c.

Conularia longa, Hall.

"Elongated, gradually tapering; angles strongly but not deeply grooved; transverse striae or ridges strong, numerous; intermediate spaces three or four times as wide as the striae, distinctly grooved."

"This species differs from the preceding in being less expanded towards the aperture, and much elongated; the interspaces between the transverse striae are proportionately much wider than in C. niagarensis."

"In the shale at Lockport."

Leptropora frondosa, Hall.

"Frond reticulate, expanded, flabellate, or fan-shaped; the two surfaces regularly and equally celluliferous; cells with numerous oblong quadrangular apertures opening obliquely upward; tubular cells reaching to the centre, and gradually enlarging towards the aperture."

"This species consists of a thin expanded frond, surrounded by the amplitude of a broad flattened branches." "The form of the apertures of the cells is more quadrangular than in any species of Retepora I have seen."

"In the shale, Lockport, very rarely, in lower part of limestone."

April

Genus Rhinopora, Hall.

"Corallum consisting of an expanded calcareous crust, either subcylindrical and hollow or explanate, periferous on the two sides; cells arranged somewhat in quincunx order, roundish or oval, and strongly raised in little papillae or pustules above the surface."

Rhinopora verrucosa, Hall

"A somewhat thin expanded calcareous crust of irregular form; surface covered with roundish elevated cells, a little more than their own diameter distant from each other; openings round or roundish oval, directed upwards; surface between the cells granular."
"Cellules 64 in the length of an inch."
"Many specimens are marked by a narrow elevated ridge upon the surface, which, however, scarcely disturbs the regular arrangement of the cellules."

In fig 1. b. of plate 19. which represents this ridge it may be noticed that there are spurious ridges similar to those of Rh. frondosa. The larger more conspicuous ridge has no significance.
Lawrenceburgh, Ind. Canada West. Clinton Gr.

Rhinopora tubulosa, Hall.

"Corallum somewhat flattened, semi cylindrical, hollow, cellulifferous on the entire surface; pores small, round and elevated above the surface, distant from each other a little more than their diameter; openings round."
"Cellules 80 to 85 in the length of an inch."
"This species is readily distinguished from the preceding, by its smaller and more closely arranged pores. In fragments it occurs as a thin expanded crust, but the only specimen seen which approximates to a perfect form, is the one described, where the periferous faces are separated by a flattened semicylindrical hollow space, instead of

having the edges of the cells in contact and forming a thin explanate frond, as in the preceding and other known species. Fragments of this, and perhaps other species of similar character, may be frequently found having only one side cellulifferous."
"Lodi, Wayne County." "Reynolds Farm, Niagara County," Clinton Group.

Rhinopora tuberculosa, Hall.

"Coral lamellose, subpalmate; surface asperate and tuberculous; tubercles mostly destitute of cells at the summits; cells rising in pustules upon the surface, and opening by roundish oval or tripetalous apertures."
"This coral grows in lamellose or explanate fronds, which are cellulifferous on both sides. The outer edges are thickened and cellulifferous, and the entire surface on both sides is uniformly tuberculous. The tubercles are invariably smooth and entire at their summits, rarely cellulifferous. The cells rise to the surface in minute irregular pustules; and the aperture where entire, appears to be oval and surrounded by a thin calicle. Where worn down the form of the aperture changes, and is more or less tripetalous or irregular. Under an ordinary magnifier the cells appear like minute papillae points with an oval or roundish aperture, and the variety of form is scarcely perceptible."
"Niagara Group," at Lockport, New York.

Probably not a Rhinopora but some other very distinct genus. There is no elevated calycle as in Rhinopora, and I do not know of a species with non cellulifferous tubercles. It may be noticed however that the figures of the enlarged figures are scarcely non-cellu-

April
1887

Section at Todd's Fork, Wilmington, O.

April, 1887.

		cent.
Clinton Group, with iron ore at the top		52
Medina Group	heavy bedded stone	2.5
	shale (annelids???)	.5
	heavy stone — exposed	12.

Within 500 ft of this exposure there is exposed a little blue clay in the creek, the top of a thick layer perhaps 8 ft thick, which lies at or [illegible] the Lower Silurian division. The blue clay deposit farther down the creek however I did not visit and so these facts are given chiefly on the authority of local geologists (S. M. Austin.) Farther up the creek ~~near~~ at the bridge on the Xenia pike I saw exposed the beds equivalent to the Dayton limestone, perhaps 8 ft. thick, with one or two ft. of bluish shaly material perhaps representing the Niagara shale. Near Wilmington, about one mile east of town is a quarry in which the Guelph series with its characteristic fossils is exposed. (Moody's Quarry).

The Guelph bed and the upper part of the Clinton Group (the ore beds) I found quite fossiliferous. In the Guelph series the presence of Illaenus insignis and Pterinea brisa are especially worth mentioning.

The Clinton fossils were: Illaenus ambiguus, F, glabella, Illaenus Madisonianus, Wh. a small pygidium, Illaenus Daytonensis, H+Wh. a pygidium. Proetus determinatus, F, a fine glabella, Dalmanites Werthneri, F, a pygidium. Strophomena rhomboidalis [illegible], Favosites Niagarensis, 12 cells in a length of 20 mm. Orthoceras Jamesi, H+Wh. Orthoceras inceptum, F, a small species, Orthoceras ——, a form of moderate size with smooth surface. Rhaphistoma affinis F, Trochonema [illegible], F. the inner coil or spire of the [illegible], with the [illegible] the shell broken away. [illegible] [illegible] in [illegible] [illegible] from the specimens collected. [illegible]. Cyclonema? with [illegible] revolving striae, [illegible] ?? with a very [illegible] carina, like those from the Beaumont [illegible].

[illegible] (?) [illegible] Rhynchonella scobina, H+Wh. [illegible] elegantula, Dalm. [illegible] [illegible] [illegible] specimen Phaenopora expansa H+Wh. [illegible] [illegible] with [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]? [illegible] [illegible]? [illegible] [illegible], +.

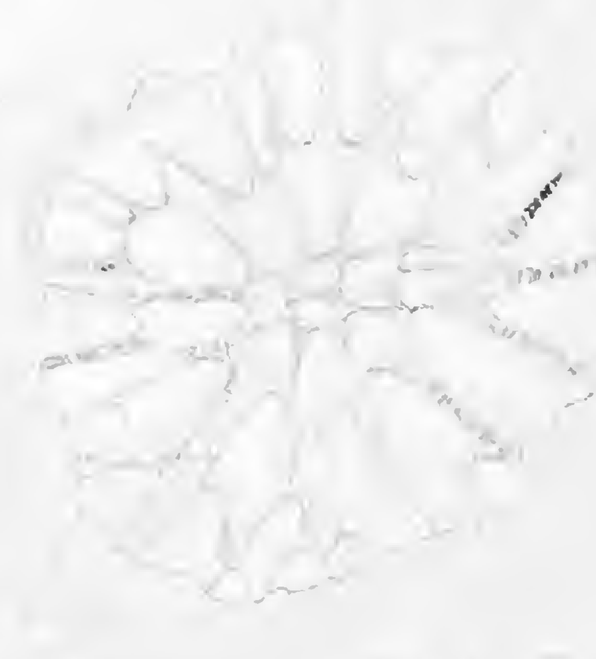
(Pal. Ill. III.)

Genus Pleurodictyum, Goldfuss.

Pleurodictyum problematicum Goldf.?

Corallum depressed, sub-hemispherical, or [illegible]; [illegible] convex, the under side [illegible] and provided with [illegible] epitheca, and the [illegible] convex. Corallites [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] distinctly radiating from the [illegible] upwards and outwards, that the lower series are nearly quite parallel to the [illegible] base, and [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] to the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] than the others, connecting pores as indicated by the casts rather numerous, and apparently [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] the [illegible] [illegible] [illegible] sides of the [illegible] between the corallites. Breadth of the largest specimen seen, 1.35 inches; height, 0.40 inch.

Locality and position: Illinois [illegible] [illegible], [illegible] to the horizon of the [illegible] period of the [illegible] series; [illegible] miles [illegible] Jonesboro, Union county, Ill. Our figures are defective in not showing [illegible] [illegible] points [illegible] of pores [illegible] [illegible] the [illegible] of the corallites as [illegible] those passing between them."



Section at Todd's Fork, Wilmington, O.
April, 1887.

		cent.
Clinton Group, with iron ore at the top		52
Medina Group	heavy bedded stone	2.5
	shale (annelids???)	.5
	heavy stone — exposed	12.

Within 500 ft of this exposure there is exposed a bitter blue clay in the creek, the top of a thick layer, perhaps 8 ft thick, which lies above the Lower Silurian division. The blue clay deposit farther down the creek however I did not visit and so these facts are given chiefly on the authority of local geologists (B. M. Austin.) Farther up the creek near the bridge on the Xenia pike I saw exposed the beds equivalent to the Dayton limestone, perhaps 8 ft. thick, with one or two ft. of bluish shaly material perhaps representing the Niagara shale. Near Wilmington, about one mile east of town is a quarry in which the Guelph series with its characteristic fossils is exposed. (Moody's Quarry.)

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The Clinton fossils were: Illaenus ambiguus, F, glaucine, Illaenus Medinianus, Wh. a small pygidium, Illaenus Daytonensis, H+Wh. a pygidium. Proetus determinatus, F, a fine glabella, Dalmanites Weathersi, F, a pygidium. Stropheomena rhomboidalis, Favosites niagarensis, 12 cells in a length of 20 m.m. Orthoceras Junesi, H+Wh. Orthoceras inceptum, F, a small species, Orthoceras ——, a form of moderate size with smooth surface. Rhaphistoma affinis F, Bellerophon nanus, F. the inner coil or spire of the last, with the rest of the shell broken away, a common species in many localities from the specimens collected here. Cyclonema? with [illegible] striae, Bucania?? with a very [illegible] carina, like those from the Beaverton marl.

[illegible] (14 m.m.) Rhynchonella [illegible] H+Wh. Atrypa elegantula Dalman, [illegible] specimen. Phaenopora [illegible] H+Wh. specimen with [illegible] Clathropora [illegible], H.

(Niagara III.)

Genus Pleurodictyum Goldfuss, ?

Pleurodictyum [illegible] Lond.?

[illegible] expressed, [illegible] cavity, the [illegible] and provided with [illegible] and the upper surface. [illegible] from the middle upwards and inwards, that the lower sides are nearly quite parallel to the [illegible], and so [illegible] as the [illegible] from [illegible] the middle [illegible] than the [illegible] as indicated by their [illegible] and apparently [illegible] together [illegible] the sides of the [illegible] the [illegible]. Breadth of the largest specimen seen, 1.5 in. height, 0.40 inch.

Locality and position: [illegible] Niagara [illegible] Wilmington, Clinton County, Ohio.

Our figures are deficient in not showing sufficiently the perforation, points most of [illegible] the [illegible] the [illegible] as [illegible] those [illegible] being between them."

Aug.

Pleurodictyum ?—

In the [illegible] [illegible] at [illegible] there is a singular fossil [illegible] slightly [illegible] from [illegible] [illegible]. The [illegible] appear [illegible]; [illegible] show distinct longitudinal [illegible] which [illegible] [illegible] in [illegible] [illegible] [illegible] as [illegible] [illegible] of the [illegible] specimens.

Dr. Rominger suggests that species of this sort [illegible] [illegible] of Favosites, to which Milne [illegible] object that the [illegible] at the base of the columns extending between the [illegible] and the epitheca, [illegible] the [illegible] perforating the epitheca, [illegible] structure in Favosites.

Lindström in his [illegible] calls them "[illegible] of Favosites [illegible]."

Plate 6. Vol. [illegible] California

Gryphaea—.

4a Jurassic form.

4 lower valve from below.
4a upper valve from above.
To be compared with Martha's Vineyard forms.

[illegible] 47.4.

117. Plate 22. Vol. I. Pal. California.

Solen parallelus. Cretaceous form.

Fig. 166. Plate 24. I Vol. Pal.
California.
Modiola ornata
Cretaceous form.

Plate 26. I Vol. Pal. California.

Exogyra parasitica.
Cretaceous, forms.

Plate 29. I Vol. Pal.
California.
Crypta (Spirocrypta) pileum.
Cretaceous forms.

Plate 32. I Vol. Pal.
California.
Solen Diegoensis.
Cretaceous form.

Plate 27. II Vol. Pal. California.
Terebra Californica.
Cretaceous.

Plate 29. II Vol. Pal. California
Solen (Hypogella) cuneatus.
Cretaceous.

3 

Plate IV. Contr. to Canad. Pal. Vol. I.
J. F. Whiteaves.
Modiola (Brachydontes) dichotoma.
Laramie Cretaceous.

2 

Plate V. Contr. to Canad. Pal. Vol I.
J. F. Whiteaves.
Yoldia scitula. Laramie Cretaceous.

Colum. Ohio. C.
Octb 27. 1886

Prof. Edwin Orton. Columbus. O.

Very dear sir

Evidently a Sepidodendron - Knorria, that is Sepidodendron decorticated? passing to Knorria. but not the Glyptodendron of Claypole, which has the bolstrs rounded at apex Q not pointed O like yours which is of the type of S. Veltheimianum, and perhaps the species. Specimen too obscure for specific determination but valuable and interesting to a high degree. Glyptodendron is a Sepidodendron of the S. Tuberculatum type of the Chis-

ter Group. I have past week received fine specimens of a Asterophyllites from the Trenton limestone, base of the formation at St. Paul, Minnesota. Thanks for the communication.

You have been long time out of town I suppose. I wrote you, went to your home with p. Love, left cards at your door but had no answer and could not find you.

Truly Yours
Leo Lesquereux.

Centreville.

Section Joseph Manuel's Quarry.

Magnesian	18 in.	in three layers
	2¼	in.
	6 to 4½	in.
Niagara	18 to 16	in.
Dayton	4	in.
	12 to 10	in.
Clinton	extent unknown although found.	

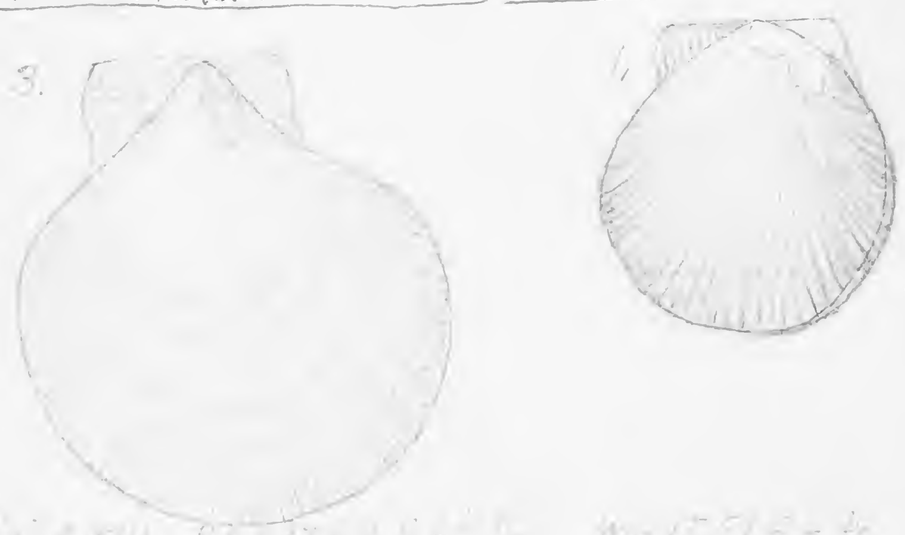
Aug. 1886

Allen's Quarry. Centreville.

Irregular Courses.	11 mm.	
	7 "	
	9 "	
Magnesian	16 "	
	8 "	
Niagara or Dayton	7 "	Secondary divisions indicate the more persistent courses.
	15 "	
	48 "	
	9 "	
Lime-stones	11 "	
	24 "	
Poor Limestone	4 – 6	

Clinton Group. Depth not known, although the formation is seen here.

Halysites catenulata



Chester Group, Maxville.

m. Mus. Nat. Hist. Central Univ. Aug. 1886.

Cleiropion Montfortianus. Var? Morgan-
n, W. Va. Danville Ill. W. The close longi-
dinal striae and rather distant trans-
e creases, chiefly characterized by
rrows instead of a carina along the
ne of the specimens.

Cleiropion percarinatus, Conrad. Dan-
le, Ill. prominent carina. Laterally
ranging striae + ridges. also Danville,
Ill, Spring Dam.

Bellerophon carbonaria. Cox. The longitu-
nal striae are quite coarse, only longitu-
nally striate.

Bellerophon nodocarinata. The striae stand
out nodes as in Bellerophon carbonaria
t towards the aperture the carina becomes
oth double and nodose.

Crania carbonaria, Whitf. looks like pro
specimens of Discina newberryana, Whitf.
lying flat against the rock, the entire
shell projecting in front. Discina
seems fewer.

Bellerophon staminens. Striae closer than in
Bellerophon carbonaria and finer. Pro-
bably represented by one of the Flint Ridge
forms.

Spiriferina Rockymontana Weller. Var.
spina. Hall. Flint Ridge species.

Productus muricatus, Var? apparently
the Flint Ridge specimen which has passed
under the name of Productus longispinus. As
compared with the latter species it has a
broader sinus. Its comparative width is
larger considering the length as stand out.

Productus Nebrascensis, Conr. is the nar-
row, middle sized form with coarse nodose
striations. "curled"

Feb. 1888

Allen's Quarry. Centreville.

Irregular Courses.	11 mm.	
	7 "	
	9 "	
Magnesian	16 "	
	8 "	
Niagara or Dayton	7 "	Secondary divisions indicate the more persistent courses.
	15 "	
	48 "	
	9 "	
Lime-stones	11 "	
	24 "	
Poor blue stone	4 – 6	

Clinton Group. Depth not known, although the formation is seen here.

Halysites catenulata

Chester Group or Waverlie.

Am. Mus. Nat. Hist. Central Park N.Y.
Aug. 1886.

Bellerophon Montfortianus. Var? Morgantown, W. Va. Danville Ill. W. th close longitudinal striae and rather distant transverse creases, chiefly characterized by a groove instead of a carina along the back of the specimens.

Bellerophon percarinatus, Conrad. Danville, Ill. prominent carina. laterally diverging striae & ridges. also Des Moines Valley, Ill, near Dam.

Bellerophon carbonaria. Cox. The longitudinal striae are quite coarse, only longitudinally striate.

Bellerophon nodocarinata. The striae stout without nodes as in Bellerophon carbonaria but towards the aperture the carina becomes both double and nodose.

Crania carbonaria, Winch. looks like poor specimens of Discina newberry, Winch. lying flat against the rock, the convex side projecting upwards. Preservation seems poor.

Bellerophon staminens. Striae closer than in Bellerophon carbonaria and finer. Probably represented by one of the Flint Ridge forms.

Spirifera Rowleyana var. var. spina. Hall. Flint Ridge species.

Productus muricatus, Var? apparently the Flint Ridge specimen which has passed under the name of Productus longispinus. As compared with the latter species it has a broader sinus. Its comparative width is larger considering the length as Hall says.

Productus Nebrascensis, Conr. is the narrow, middle sized form with coarse nodose striations. "curled"

Feb. 1888

Aulosisma subcuneata. M+H. Manual p. 332.
As compared with figure the brake is more advanced and the posterior pad not attenuate but rounded.

Productus Cora D'Orb. The large finely striate form.
Productus costatus. Coarsely striate as in P. Nebrascensis but not "curled" like it.
Productus punctatus. The form with pointed beak + triangular outline.
Iscina Meekana Winf. n. sp. Flint Ridge species.
Singula innovata Cox. possibly the species found in the coal at Flint Ridge.
Chonetes mesoloba N+P. Flint Ridge.
Straparollus planodorsatus. N+P. is the flat gasteropod from Brownsville, Ohio.
Taeniopora serratula. Meek sp. from Chester, Illinois identical with Flint Ridge species a barely possible fact being that the spaces left from pores are perhaps a little narrower and finer.
Aulosisma subcuneata M+H. Des Moines River. Iowa. Crate well in front, strise fading out posteriorly, a depressed groove just below the posterior end of line of articulation.
Fenestella Lyelli, Dawson. Like finer Flint Ridge species and with distant connecting pieces. Nova Scotia.
Entolium articulatum Flint Ridge. Des Moines Valley, Alpine Dam, Iowa.

Waverly Group. A.M.N.H.

Entolium articulatum. Burlington. Iowa.
Pernopectra biniformis. N+W. Waverly Group. Burlington. Iowa.
Pernopectra circulus. Shumard. Burlington, Iowa. Waverly series. So perhaps only a broader form of above.
Spiriferina subtexta, White. Larger Waverly species.
Rhynchonella (Stenocisma) contracta, Hall Licking Co. Ohio. smaller, rounded form.
Productus semireticulatus. Mart Licking Co. largest, median striated form.
Orthis Leoni, Hall Licking Co. medium size.
Orthis Michelina, Sevilla, Waverly Group. Licking Co. largest form.
Proetus auriculatus, Hall. Licking Co. Ohio.
Soonema mira. Winchell. Striated long gasteropod.
Platyceras halitoides. M + W.
Productus laericostatus, White.

Niagara Group. A.M.N.H.

Stromatopora concentrica. Goldfuss. Soldiers Home, Dayton, Ohio. Exchange.
Illaenus Daytonensis. H+Wh. Hamburg. Ill. same in glavella + pygidium.
Cyathaxonia Wisconsinensis. Wh. has a raised margin and depressed centre giving it the appearance of a basal calyx if such were possible. Into this the two parallel septa enter meeting at one third the distance from the circumference. Just in front of the junction and occupying the middle is a hole flanked by two walls uniting posteriorly but not noticeably raised above the level of the centre. From this hole the septa radiate.

Zaphrentis Racinensis Wh. Like the above in having the two parallel septa intruded at a higher level into the basal calyx but having no central hole. Instead, the radiating septa rise in the middle. Immediately at

Feb. 1888

the end of the two parallel septa the septa are narrower and usually much closer + the coral is apt to be slimmer and longer than in the previous species. C. Wood.

Sphaeroxocrinus Romingeri, H.

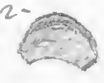
Receptaculites Ohioensis, H & Wh.

Amphicoelia costata. H & Wh.

Amphigastria acutirostrata, H.

Lichas breviceps. H. Waldron. same as Ohio, Clinton form even as to minutiae of head, but the hypostoma is about as broad as long.

Myelodactylus convolutus H. The dotted portion at the junction of the back and front is flat not very narrow. The back is evenly rounded except perhaps a faint elevation along the middle which would pass unnoticed in the last.



Dictyonema gracilis H. The larger Ohio form has closer and coarser connecting bars than this form.

Strophodonta striata, var. Waldron. Cardinal angles projecting and acute. Dorsal valve with depressed beak giving flution appearance to area at this point. Umbo at middle of valve. Cardinal extremities bent upward. Ventral valve convex, deepest just anterior to the middle. Beak very slightly elevated.

Strophodonta semifasciata very coarsely striated

Streptorhynchus surplana Conrad sp. coarsely striated. Cardinal angles prolonged, dorsal valve concave and moderately convex with depressed groove from umbo to brim. Beak not elevated. Apex near the middle. Ventral valve convex with umbo at anterior third or from fourth from. Front faintly convex beak sloping evenly to rear. Sides fluted or even faintly convex anteriorly.

Strophomodonta profunda H. with very convex ventral valve.

Streptorhynchus patenta. H. Niagara, N.Y. striations more irregular, if anything coarser, anteriorly not so much geniculate as Ohio form.

NY

O

Lichas obvius. H. = Lichas breviceps. 20th R. W.Y. large edit.

BUCANIA STIGMOSA H. Carina like that of Ohio spec. in its markings, apparently same number of longitudinal striae, lateral striae have same angle and are similarly "curled". Types distorted and the carina thus unnaturally elevated.

DIPHYLLUM CAESPITOSUM. probably Springfield form.

Cyclonema cancellata H. too high a spire for Dayt. form.

Strophodonta striata, H. ventral valve with depressed beak.

Spiriferina sulcata. Ohio. like dubius Theclia sp.

U. S. National Mus. 1886. Aug.

Fenestella triangulata. Cerro Creek. Newberry. 9480. 9472. 9447. like Flint Ridge Form.

Athyris Bryeri Lower Carb. Bonneville. Mo. with setae 3 mm. long. species must have worked well.

Spiriferina pellucidus M & W. Ariz. a little like Flint Ridge form.

Macrodon obsoletus Meek. W. Va. has longitudinal and also striations along the posterior hinge area, but coarse lateral and anterior longitudinal striae.

Ptilodictya serrata W. Pentamerus Hill Sinai Stage. Flint Ridge. Ohio. Same bed Measures Prof. Orton.

Cundria. Cret. Grand River. Mo. below Eagle River Colorado. 9585. like Flint Ridge form [illegible] apparently [illegible] but this is not so clear.

Polypora submarginata Ow. has a row of [illegible] rather large tubules along the median line with 1-2 rows of pits on either side. Singular [illegible] Lower Carb. Coal Measures. Spring Field Ill. Related to Coal [illegible]

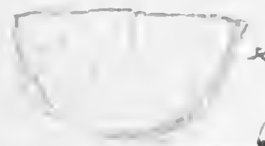
Aviculopecten Hamii Swinitz. is certainly the Flint Ridge form with dentate edges.

Leda bilineata Stevens. Rockford. Neb. City. Nebraska

Feb.
1888

Allorisma subcuneata, is almost certainly the large Flint Ridge form.
Allorisma terminalis Hall. Carb. Big Blue River, Kansas. ident. beaks much farther to the front than in A. subcuneata, has very numerous punctae, granules not pits all over the surface arranged with something like regularity along the longitudinal striae and crossing in like manner. With very minute pits interspersed. Granules 10 one way, 14 the other.

Waverly Group



Chonetes Illinoisensis, Worthen.
Lower Carb. Medina Co. Ohio,
punctate.

At [illegible] there should be a [illegible] collection of [illegible] showing the different methods of fossilization [illegible] applied to different groups of [illegible] N.H. 11. N.H. 5. 8 drawers. There should be a collection of [illegible] arranged according to the groups of animals of 4 drawers for N.H. 14. [illegible] There should be a collection of [illegible] arranged according to stratigraphy to indicate [illegible] of [illegible] types and [illegible] N.H. 15. There should be large [illegible] collection only for the general paleontology [illegible]

The [illegible] should include cases of [illegible] distinct from [illegible] lines of development [illegible] NH 17 [illegible] N.H. 14.

[illegible] objects [illegible] to N.H. 14, N.H. 14 [illegible] N.H. 15 [illegible] for the [illegible] N.H. 14 [illegible] N.H. 15 [illegible] NH 17 [illegible] the [illegible] collections. [illegible] and numbers [illegible] by [illegible] the zoological [illegible] and [illegible] be numbered. [illegible] N.H. 14 [illegible]

[illegible] with [illegible] perfection material, so that it [illegible] much [illegible] things [illegible] models should be made,

[illegible] Proc. [illegible] 1-14,
31, 32, [illegible] 17, 18, 26, 31, 21, 32, 33,
25, 27, 34, Octoni [illegible] 22, 23, 24, 25, 26, 27,
31, 32, 34, [illegible] 17, 18, 21,
26, 34, Leiningia 20 26, 27, 31, 35

[illegible] Bull. I-16, [illegible]

[illegible] 26-27, 28, 29, 30, 31, 32, 33.

[illegible] 732.

[illegible] 1872, [illegible] pp. 3-362
421-432, [illegible] 456-465, [illegible]
466-555, [illegible] 556-565, [illegible]
565-580, [illegible] 591-661.

Pleurodictyum problematicum, Goldfuss. 18 a, b, c. with separate figure and gemmate covers. 18 d, e, the same but partition of [illegible] fig. [illegible] 18 f. a section. 18 g. Ideal representation of the fossil fails in representing only connecting foramina, not the tubercules.

McCoy: Prod. Victoria, Australia. Fossils. Up. Sil.

Decade III. 1. Phacops (Odontochile) caudatus (Brong.) olive mudstones of Broadhurst's Creek. E. of Kilmore.
2. Phacops (Portlockia) fecundus (Bar.). sandy, yellow and red, bds (probably identical with the May Hill sandstone) at Section 12. parish of Yering.
3. Forbesia euryceps. (Trenlock) shale of Broadhurst's Creek, east of Kilmore. B^b 18.
4. Lichas australis, McCoy. Olive schists of junction of Wooriyallock and Yarra (Stewarts Station.)
5. Homalonotus Harrisoni (McCoy) sandy (May Hill Sandstone) strata near Flemington, north of Melbourne.
Decade V. 6. Leptaena (Leptagonia) rhomboidalis (Wilck.sp) shale. Yering. Upper Yarra.
7. Trematospira liopleura McCoy. May Hill sandst. of hills near porphyry dyke near Mt Disappointment. B^b 17.
8. Trematospira formosa. Hall. May Hill sandstone of (B^b 17) hills west of Mt. Disappointment.
9. Spirifera plicatella (Lin) var. macropleura (Conr.) shale (B^b 22) near Kilmore (N.E.)
10. Spirifera sulcata His. shale of Yering. Upper Yarra.
11. Spirigerina reticularis. Yering. Upper Yarra.
12. Rhynchonella (Atrypa) decemplicata? in fine yellowish May Hill sandstone (B^b 15) exposed in the road in section 44. parish of Wallan. very common in whitish May Hill sandstone (B^b 17) near porphyry dyke, west of mount Disappointment.
13. Nucleospira australis. McCoy. May Hill sandstone (B^b 17) of hills west of Mount Disappointment.
14. Pentamerus australis. McCoy. May Hill sandstone (base of Upper Silurian) Section 12. parish of Yering.
Decade VI. 5 Cardium Gippslandicum. black flags of Mount Matlock; yellow & pinkish cutting beds of Upper Silurian, 4 mi. above Starvation Creek, blackish cuttle flags of Bonesels Creek, Gippsland.

16. Orthoceras (Cycloceras) ibex. (Sow) May Hill sandstone, at road section, sect. 44, parish of Wallan (B 15); also in similar sandstone at (A 1) also in sandstones of the same age in Royal Park, near Melbourne; rarer in (B 20) shale near Kilmore.
17. Orthoceras bullatum. Sow. olive mudstones in cutting at Johnston street, Collingwood, Melbourne. In fine sandy beds (B 1) hills in township of Whittlesea, parish of Toorourrong.
18. Orthoceras capillosum. Bar. shale of Broadhurst's Creek, (B 18) E. of Kilmore.
19. Orthoceras lineare. (Minster) olive mudstones of the junction of Woori-Yallock, and the Yarra.
20. Orthoceras striato-punctatum. Minster olive mudstones, McMahons Creek. Upper Castlemaine beds at Reefton, Warburton.
Decade I. 21. Strophomena Smythii. Hall. fine sandy upper Silurian rocks. Mount Ombs. Flemington, a little north of Melbourne.
21. Urastrella Selwyni. fine sandy beds. range. E. of Cummings reserve, Kilmore.
22 Encrinurus Bowningi.
23. Encrinurus Mitchelli.
24 Phacops serratus.
25 Cyathaspidium australe
26. Eucephalaspis spongospondyloides.
27. Cyathaspidium
28. Plenrodictyum problematicum.

Feb. 1888

C. N. S. Ringueberg's Fossils.
Feb. 1888.

Leptaena sericea, Clinton limestone. This form is found in good solid limestone, showing partial foliation of the surface, so that the striae are spaced by rows of tubercles. Their most striking feature consists in the tendency the surface to become folded, the folds varying from fault to rare with no moderate radiate direction outwards, the folds being low and of varied width. This folding usually expresses itself most plainly upon the median line, the dorsal, since the more convex valve. There is a low medial ridge towards which becomes more prominent so it recedes from the diverging upon quite a prominent ridge near the margin:

The back of course is not prominent but it is characteristic in the fact that it is quite narrow so far as its influence on the image in question is concerned in comparison with other varieties of this species.

Leptaena sericea Niagara shale. In this shale the specimens are found in good condition preserving the striae. These consist of prominent striae at intervals similar distances apart, between which are numerous fine striae. The general aspect of the convex valve is more strongly rounded. The folds are not seen. There is no inside elevation. The back interior has a rougher aspect especially as diverging from the striae of the cardinal area from the upper surface of the shell.

Leptaena sericea var intermedia. Ring. Specimens from in most cases is a hard flinty limestone of grey blue color. In some with green tinge. A cast of the striae shows that the surface in the few more prominent ones is not as plain

16. Orthoceras (Cycloceras) ibex. (Sow) May Hill sandstone, at road section, sect. 44, parish of Wallan (B 15); also in similar sandstone at (A 1) also in sandstones of the same age in Royal Park, near Melbourne; rarer in (B 6. 20) shale near Kilmore.
17. Orthoceras bullatum. Sow. olive mudstones in cutting at Johnston street, Collingwood, Melbourne. In fine sandy beds (B 1) of hills in township of Whittlesea, parish of Yarrowitchy.
18. Orthoceras capillosum. Bar. shale of Broadhurst's Creek, (B 4 18) E. of Kilmore.
19. Orthoceras lineare. (Wilson) olive mudstones of the junction of Woori-yallock, and the Yarra.
20. Orthoceras striato-punctatum. Wilson. olive mudstones, McMahons Creek. Upper Yarra. similar beds at Reefton, Warburton.
Decade I. 21. Petraster Smythii McCoy. fine sandy upper Silurian rocks. Morwell Ponds. Flemington, a little north of Melbourne.
21. Urastella Selwyni. fine sandy beds. range. E. of commonage reserve, Kilmore.
22 Encrinurus Bowningi.
23. Encrinurus Mitchelli.
24 Phacops serratus.
25 Cyathaspidium arthaer
26. Eucalpidium spongspaydeides.
27. Euatthospidium
28. Plenocitgum problematicum.

E. N. S. Ringnet-ro's Fossils.
Feb. 1888.

Leptaena sericea, Clinton limestone. This form is found in good solid limestone, showing partial exfoliation of the surface, so that the shells are replaced by casts of sandstone. Their most striking feature consists in the tendency of the surface to become folded, the folds passing from front to rear with a moderate radiate direction outwards, the folds being broad and of varied outline. This folding usually or always itself most plain along the median line, the fold, rule in the more convex valve there is a low median ridge forming which becomes more prominent as it recedes from the ringed beak often quite a dominant fold near the margin:
The beak of course not prominent but it is characteristic in the fact that it is quite narrow so far as its influence on the ringed margin is concerned in comparison with other varieties of this species.

Leptaena sericea Niagara shale. In this shale the convex valves are found in good condition preserving the external sculpture. These consist of prominent striae at moderate similar distances apart, between which are numerous finer striae. The general aspect of the convex valve is more strongly rounded. The folds are not seen, there is no median elevation. The beak interior has a broader aspect, especially as seen against the striae of the cardinal area from the upper surface of the shell.

Leptaena sericea var intermedia. Ring. Specimens from Wenlock limestone is a hard flinty limestone of grey blue color, or with green tinge. A cast of the shell shows that the folds are few, not prominent and not appreciable

The type specimen itself however does not show these. The form is very small and in the type specimen the cardinal angles are more prominently prolonged from an otherwise quite regularly lenticular body of the shell. The back is of medium width. In my own opinion all three types would certainly form distinct species in the common acceptance of that term. My Clinton form is more like the two Oak Hill form with the cardinal angles produced.

Singula. sp. n.

In the same rock with the two types of the septaria series our intermedia are two small specimens of a lingulaid form which Clarke in his private notes informs with that species associate with them in the same rock. They are well in bring quite small, having the anterior border somewhat rounded, in having fine concentric and radiating striae and in having about the same general outline. The larger specimen seems to be more less expanded showing a central line of depression without broad the ridge, and the lines margin is more rounded. In the smaller specimen, there seems a new form of exfoliation, and the specimen is more convex and the ring position more pointed the back view perhaps a little inclined. I should suggest this form to be Singula, as a possible new species.

Cornularia transversa. Ring.
Found in Niagara Shales
fairly good state of preservation.
On the average about 7.5 or 8
horizontal striations occur in a distance 2 mm.
and this holds quite well for the distance of the
length of the specimen. in the type 25 mm.
There is much greater variation in the finer vertical striae. Of these there are 15 in 2 mm. at
the smaller end, and 7 at the larger end on
the average. The number of these striae also in-

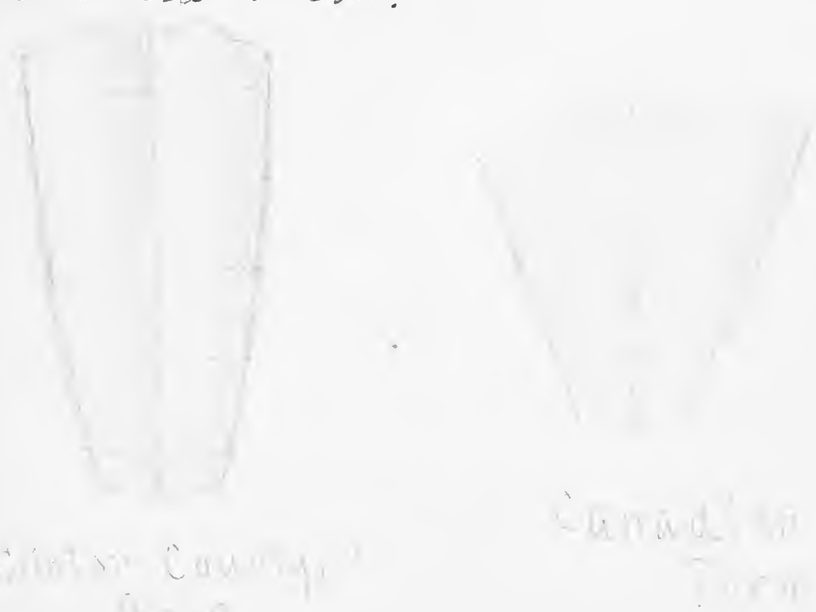
crease as they approach the various sulci.
These longitudinal striae at a slow angle approach each other from the two sides of each sulcus thus forming a coarse pinnate arrangement. They branch out pinnately at a wider angle at the bend of the horizontal striae along the median line of each of the four sides. Along the lower half of the specimen the longitudinal ridges are more distinct between the horizontal ridges, the median ridge, the four at the four corners, the horizontal ridges, there are there also no transverse striae that would attract attention, and we individually observe no right angles in the ridge across the horizontal ridges, and not their continuation over them. Further towards the top however the continuation of the prominent transverse striae give the feel of the horizontal ridges. That part of the ridge which lies between the horizontal ridges in the median line seems to have not much importance but this could not be determined by measurement of the present number of specimens at hand in the ridges of the specimen. My private opinion is that this is the Cornularia Wilkinsi of Hall. = Cornularia Wilkinsi, Spencer?

Cornularia bifurca. Ringueberg.

The comparatively full bifurcation of the horizontal striae form a marked feature of this species. This bifurcation takes place on the striae recede from what appears to be the median line of the sides, at least if this is not the case there is no distinct median line. In my opinion there are no long inclined striae or commissure ridge. Transverse ridges occur at the rate of 12 in a length of 2 mm. but this varies with the amount of flattening of the tube. One specimen seems to be to be a good one, and one of a characteristic, strong, or not bifurcation form, perhaps it is unusually numerous.

Cornularia multifunicata. Ring.
This species also occurs in the Niagara shale. Of horizontal striae there are about 17-20 in a distance of 2 mm. These horizontal ridges are directly minute granules along their crest, about 33 in a length of 2 mm. These "punctae" or really granules are of course the longitudinal ridges as they pass over the horizontal ones and are hence arranged in longitudinal rows. The ridges between the horizontal ridges are very faint or obsolete. These minute granules are a distinct and evident characteristic of the species.

Cornularia ———. This is the specimen I got from Winston and it is a cast of a fossil found in Clinton County. This is identical in the character of its surface ornamentation with the Cornularia transversa of Ringueberg, namely in longitudinal ridges very marked in the grooves, of pearling in the crests as indistinct or even very distinct nodules. There are 8 horizontal and 13 longitudinal striae in the space of 2 mm. The main difference that of the general shape which is well indicated below.



Ceramopora ovoideata Ringueberg.
Found in the Niagara shales, parasitic on a Rhynchonella. The epithecal membrane grows a slight distance ahead of the rest of the zoarium. On one side there seems to be a unilateral reproduction of this membrane which threatens to add a second layer of cells to this part. Cells oblique with arched lip. Cells arranged in in curved rows indicating more or less zonal from the centre, 8 in a width of 2 mm. 10 cells in the length of 2 mm. in the type specimen, but I should say from this to be variable. Very private opinion is that [illegible] this species [illegible] specimen.

Rhinopora curvata Ringueberg from the Niagara shale with numerous fine zooecia in the same. Specimen also Rafinesquina? a small fragment [illegible] used in type. Cells in curved rows. Curvature not more marked than is usual in the genus. Cells 54 to 60 in a distance of 25 mm. Here and there on the specimen is indication of the place where the peculiar fundus in instances occur. The cell mouths are large, owing it seems to some to decided erosion. I should not call it distinct from Rh. [illegible]

Stictopora obliqua Ringueberg. type. This is a typical specimen of the genus Cribricitya with a resemblance to Cribricitya exfunica, Hall, in that the sides are straight. The type is 12 mm. broad and 52 mm. long preserving its width pretty well. It differs from the Ohio Devonian species in that the cells are not arranged in evident oblique lateral rows and a central narrow space but the cells pass almost horizontally across the fossil so begin

horizontally and curve downwards a little towards the centre. There are about 10.5 cells in a length of 2 mm. laterally, and 7 longitudinally. This is very much as in Clinton County Elm's specimens. But the central area of curved strial is much broader, 6 mm. In fact the real point of difference consists in the absence of a distinct smaller median area and the absence of distinct pinnate arrangement with reference to this. It may be noted that some of my surface views of Clinton County specimens also showed an obscure of this median area so that I also thought that this character was more or less confined to epithecal views, but now and the two Elm specimens do not show it.

Stictopora obliqua, a second specimen but not the type. Here there is a central area 3.3 mm wide with 12 cells in 2 mm. in width, the lateral cells being 10 in the same distance. There is also slightly more of the pinnate arrangement. But the sides are not parallel. The specimen is 52 mm. long, at one end it must have been 12 mm. wide; at the other end at least 22 mm. I have a suspicion that the specimen with parallel sides is more closely related to the Clinton County forms than is any single specimen would determine. I should call Fig 2a of Plate II. incorrect decidedly. The obliquity of the lateral rows is the secondary obliquity which is always most marked in epithecal views.

Stictopora graminifolia Ringueberg. Other type looks very much like two fragments of this species of Fenestrapora which occur in Brownhead but I cannot make out the secondary cells. The large cells are close together or perhaps intratitial cells do not exist. If so I can make nothing very definite out of the specimen. 19.5 cells occur in a ~~long~~ width of 2 mm. 8.5 in the same length. Niagara Transition Group.

Stictopora graminifolia from upper part of Clinton Group. Is also destitute of minute interstitial cells. Longitudinally there are 7.2 cells in 2 mm. horizontally being greatly crowded their number may amount to 15 but owing to narrowness of specimen it is not safe to judge.

Chaetetes expansus, Ringueberg. Seems to be in doubt. It is found flattened or twisted in fronds which lie close to another fossil (coral +c) and then is lost again for some distance. Cells of very nearly equal size, pentagonal, hexagonal most frequently, with no interstitial cells visible in surface views, but a close row of spiniform tubuli appear in the rests of the narrow walls. Diaphragms in thin section made appeared all straight. Sections showed no interstitial cells, but there on the surface in monticules of very low size are larger cells. 6 cells of the radiating kind occupy a length of 2 mm. Species like Fenestrapora but without thickened walls.

Lemon Sponge.

Juice and rind of two lemons, the juice of one orange and a lemon.

Lemon Custard Pudding.

½ lb. of sugar, 3 eggs, juice of lemon and rind, ½ lb. of butter, ½ pint of milk, ½ pint of cream, 2 tablespoonfuls of flour, 2 tablespoonfuls of lemon juice and rind and cut-up sponge cake when cold.

Old-fashioned Cream Pudding.

2½ pints of milk, 2 eggs, 1 tablespoonful of flour, 1 tablespoonful of arrowroot, piece of butter, juice and rind of one lemon, half a nutmeg, half a teacup of sugar, 2 tablespoonfuls of brandy, 2 tablespoonfuls of cream, 1 teacup of currants, half a teacup of candied peel, half a teacup of almonds.

Chocolate Pudding.

1 cup of milk, 2 cups of cream, 1 cup of sugar, 1 cup of milk, ½ lb. [illegible]

Cocoanut Pudding.

[illegible]

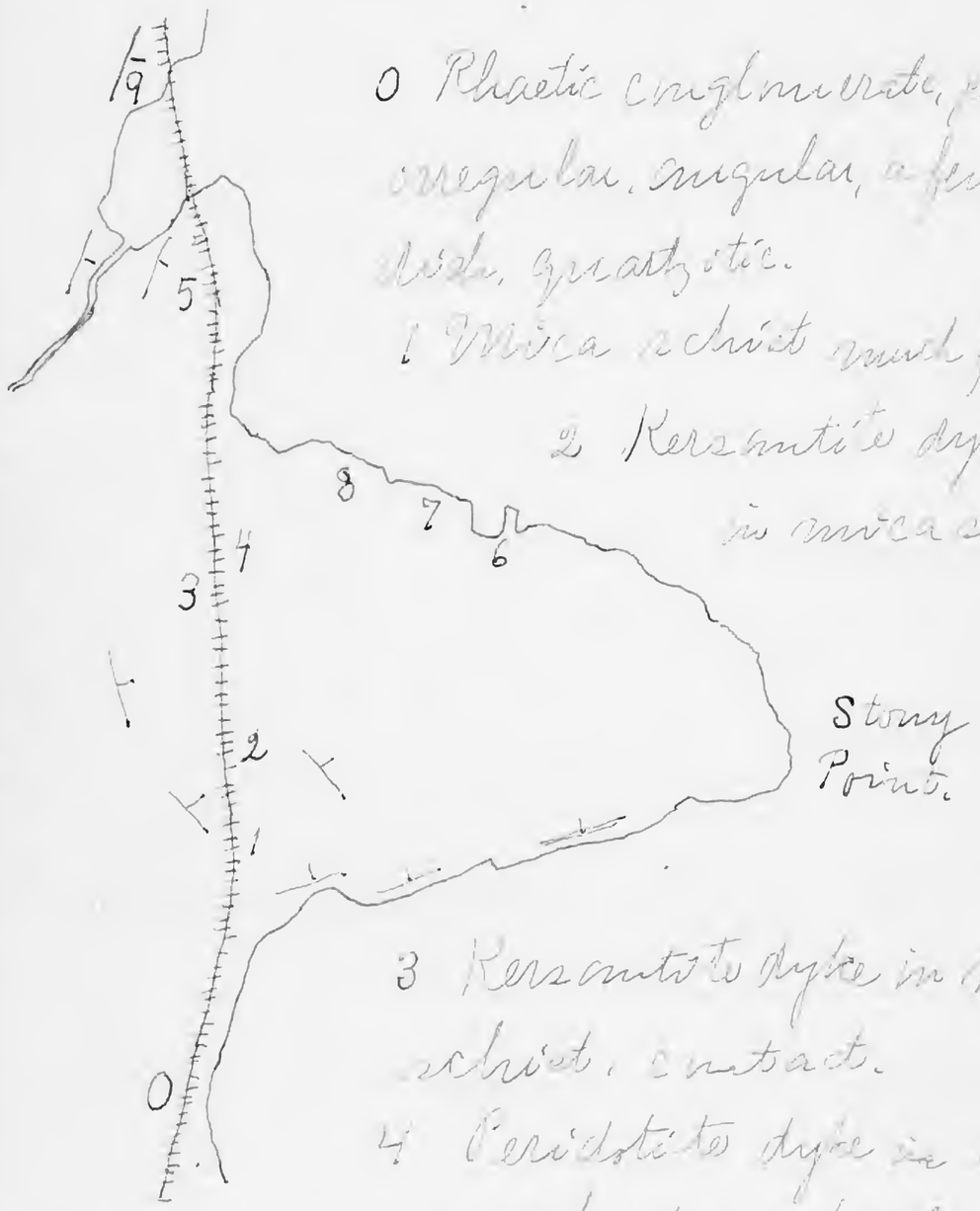
[illegible]

[illegible]

Harvard Collections.

Microscopic slides of hydroids, diatoms, crinoids, diseased tissues, crinoids, sections of brachiopodal shells.

Stony Point, New York.



0 Rhaetic conglomerate, pebbles irregular, angular, a few rounded, quartzitic.

1 Mica schist much folded.

2 Kersantite dyke in mica schist

3 Kersantite dyke in mica schist, contact.

4 Peridotite dyke in mica schist contact.

5 Mica diorite large exposure. Farther south is limestone bedded and slaty bedded with revolutions in dir of bedding. Farther south peridotite.

6 7 8 occasional stations for peridotite

9 Limestone in large exposure. A series of small black dykes of fine grain cut all of these rocks.

At Dunderberg Mt the clay rocks rise to a definite height against the side of the Mt. 650 or more? feet and a similar cut can be seen up and down the river and on the other side at about the same level. These are the great clay beds of the Hudson River brick yards.

ularia , Forste, found
lint in New York. has an apical
le of about 15 degrees or less, The
cimen found is considerably
tened increasing its diameter
nsversely in the plane in
ich the specimen is figured. The
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se its sides are 4 mm. wide.
mm. above its base the sides
10 mm. broad. Beyond that the
specimens seems to decrease again
in width but this apparent con-
traction is believed to be due to the
crushing which the specimen has
evidently undergone. At the base of
the specimen about 7 horizontal
striations occupy a length of 2 mm.
From 3 to 3.4 striations occupy
the length of 2 mm. near the top
of the shell. Longitudinal striations

Annularia, Forste, found at Clinton New York, has an apical angle of about 15 degrees or less. The specimen found is considerably flattened increasing its diameter transversely in the plane in which the specimen is figured. The specimen is 36 mm. long. At its base its sides are 4 mm. wide. 23 mm. above its base the sides are 10 mm. broad. Beyond that the specimens seems to decrease again in width but this apparent contraction is believed to be due to the crushing which the specimen has evidently undergone. At the base of the specimen about 7 horizontal striations occupy a length of 2 mm. From 3 to 3.4 striations occupy the length of 2 mm. near the top of the shell. Longitudinal striations

are sometimes equally strong both above and below the transverse striae. As a rule however they are less marked just below the transverse striae. Where crossing the transverse striae the ~~horizontal~~ longitudinal striae become more prominent, and doing so give rise to numerous series of granules which line the crests of the transverse striae. These granules are not strictly round but are rather the thickened portions of the longitudinal striae where passing over the transverse striae. These thickenings as a rule do not occur at the very crest of the transverse striae but just along the upper border of this crest. There are longitudinal striations in a length of 2 mm. along the upper part of the shell.