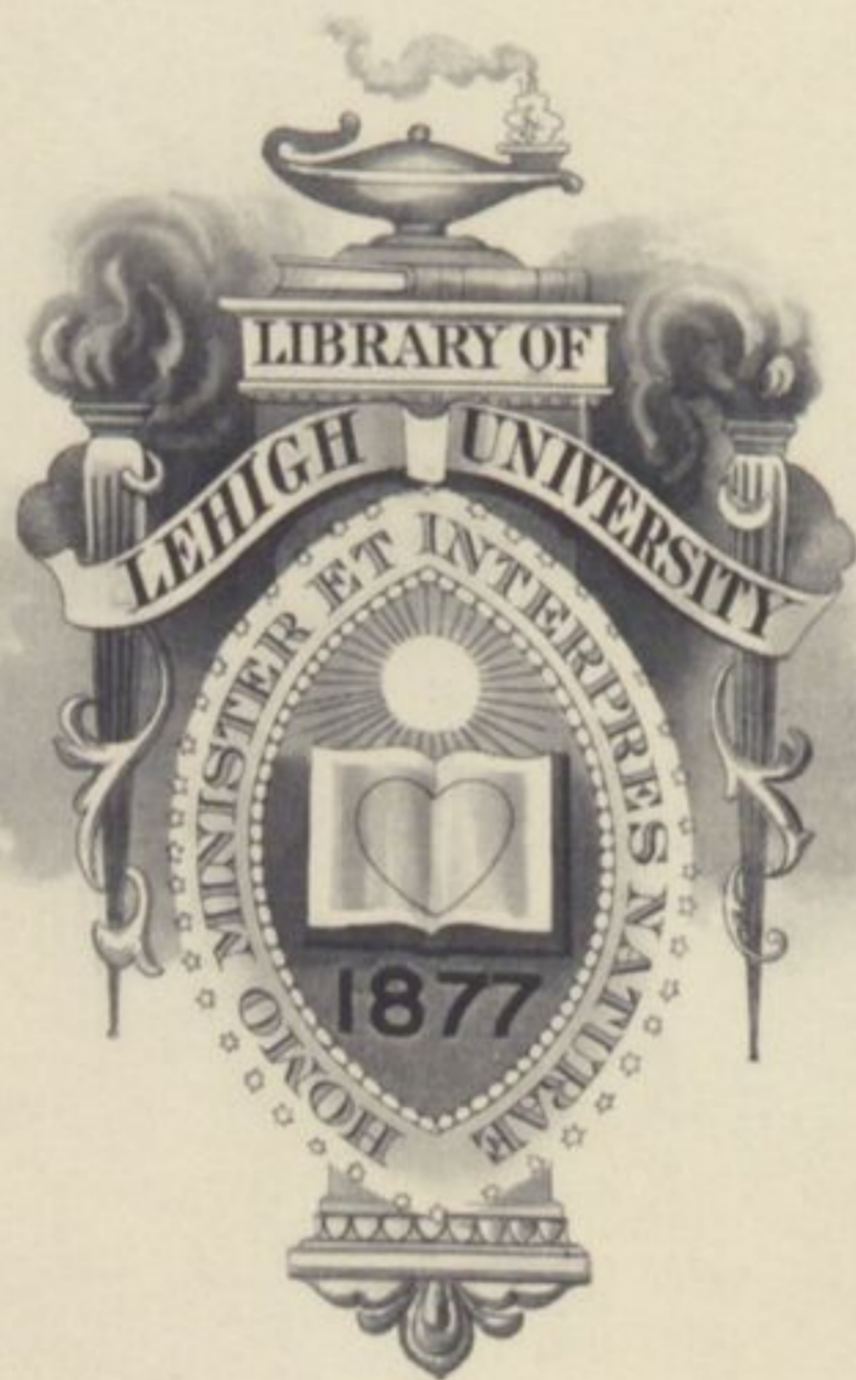


*MICROSCOPICAL
NOTES.*

VOL. VIII.

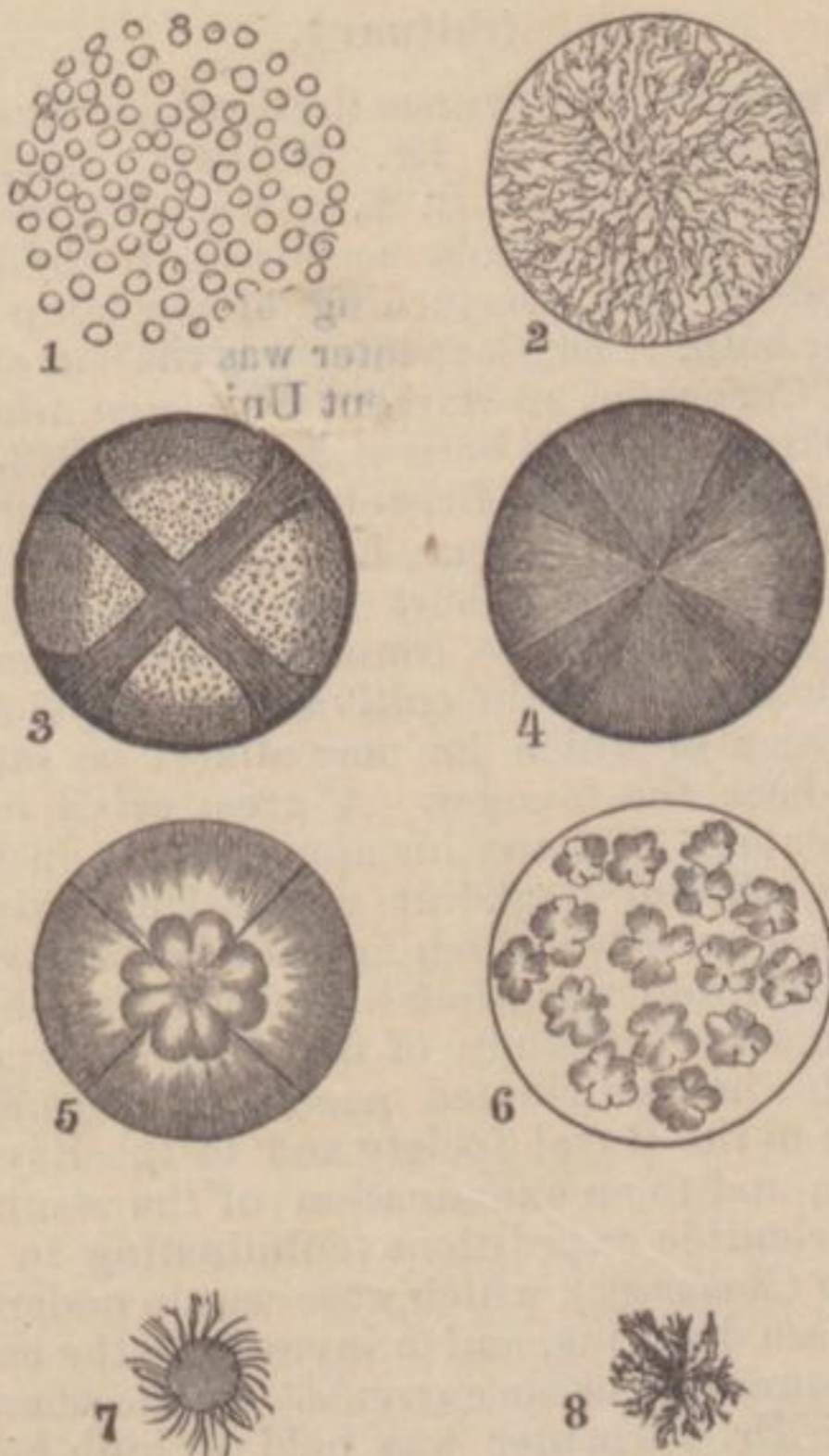


GIFT OF

Mrs. John Boles

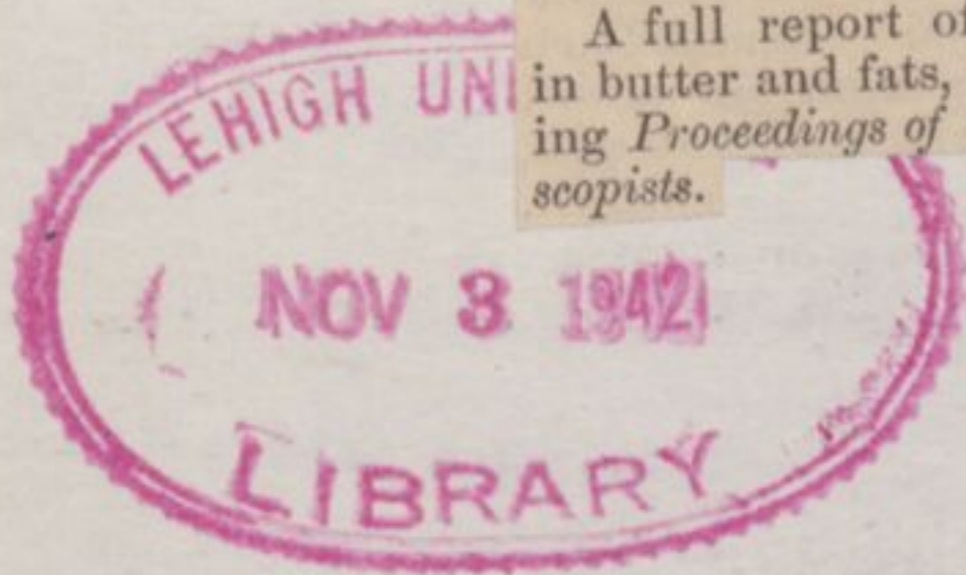
Butter and Fat Illustrations.

BY DR. THOMAS TAYLOR, MICROSCOPIST,
U. S. DEPARTMENT OF AGRICULTURE.



- Fig. 1.—Represents crystals of boiled butter as seen by a pocket lens.
- Fig. 2.—A single crystal of butter, highly magnified, viewed by transmitted light only.
- Fig. 3.—A crystal of butter viewed by polarized light only. It exhibits the cross of St. Andrew.
- Fig. 4.—A crystal of butter as seen under polarized light and selenite plate. In this case beautiful colors are displayed, while the cross is but faintly seen.
- Fig. 5.—Represents what seems to be a budding butter crystal. See description.
- Fig. 6.—Represents the rosette crystals of butter (secondary crystallization).
- Fig. 7.—The crystalline form of lard.
- Fig. 8.—The crystalline form of beef-fat.

A full report of Dr. Taylor's investigations in butter and fats, will appear in the forthcoming *Proceedings of the American Society of Microscopists*.



0408

"Like some watcher of the skies
When a new planet swims into his ken."

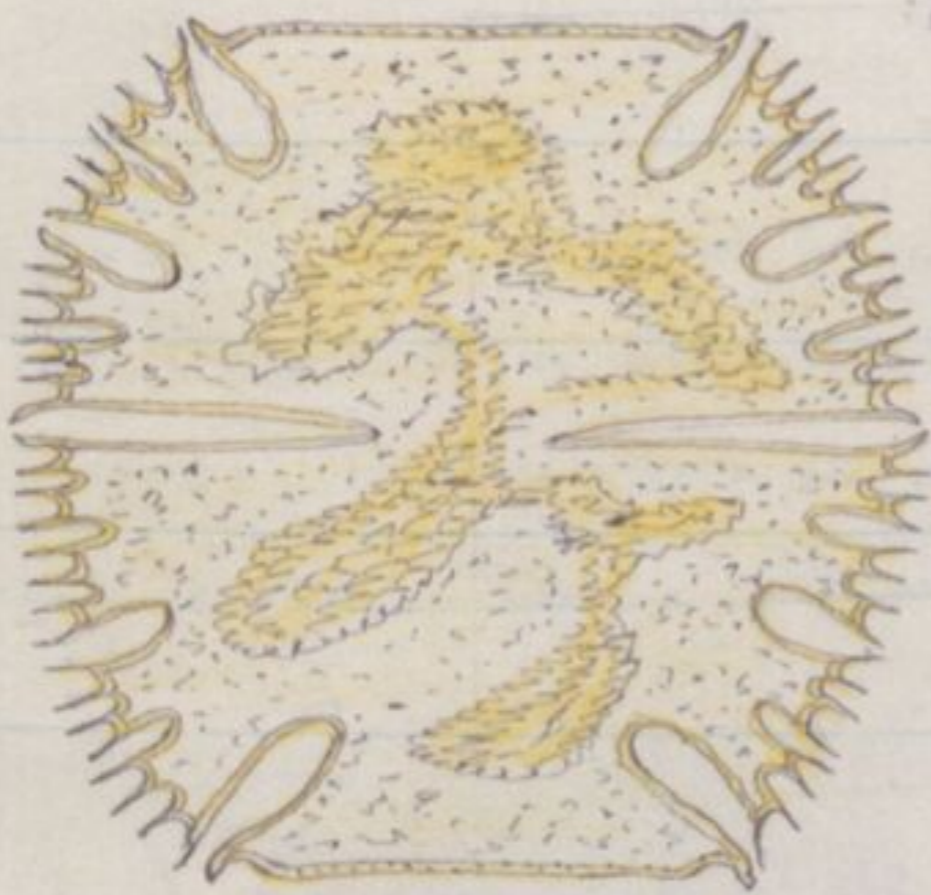
June 19. 1885.

Microscopic Memoranda.

Vol. VIII.

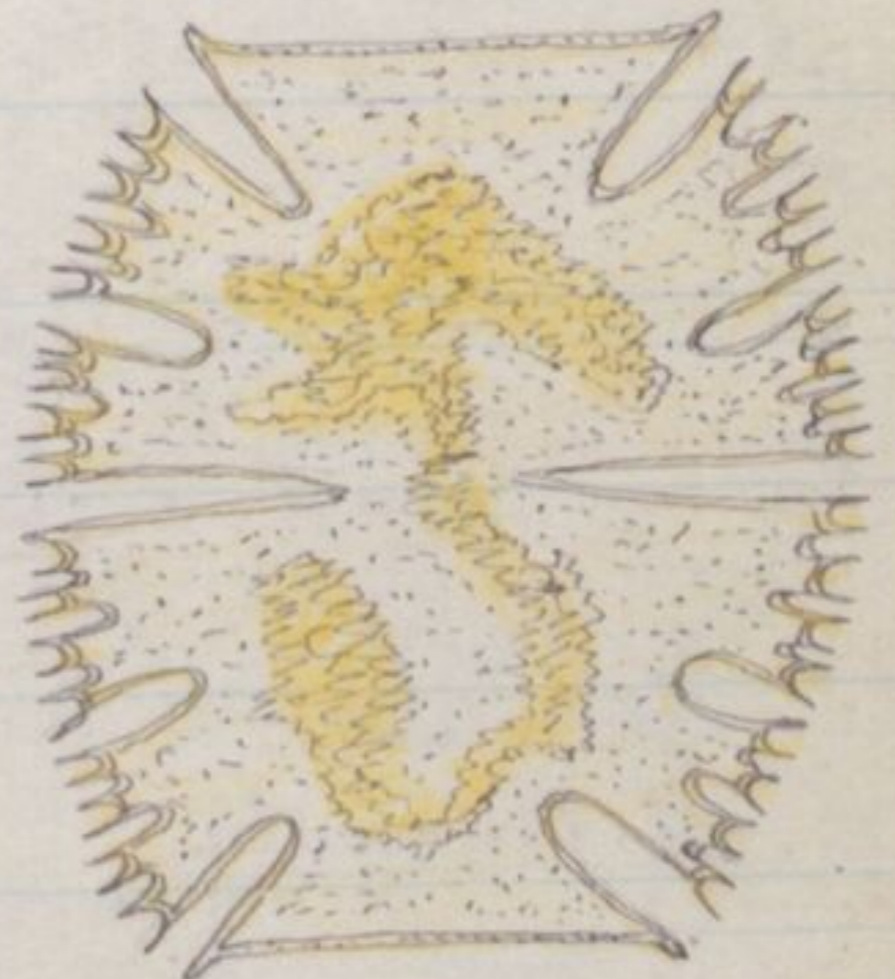
The collection from which a few following figures were drawn was taken Feb. 5th 1885. in a Sphagnum Marsh west of St. Augustine, Fla., near the Morton Woods. Given me by Miss Julia H. Spear.

.0042" l. & w. .0025" pol. ar.



M. truncata.

.0045" l. .004" w. .0024" pol.



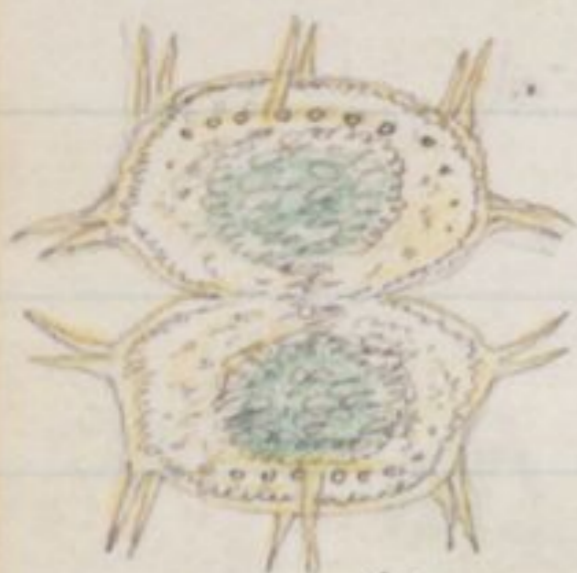
Mic^s truncata.

.00406" l. .0038" w. .0024" pol.



Body .00224" l. .00221" w.

2.



Xanthidium antilopceum
var. Minnrapoliense.

The Collection is full of this desmid. Dividing,
and yields absolutely no other but the M. truncata on p. 1.
But that is a rare & peculiar style of that species.

Later I discover these:

.0062" l. .00042" w.

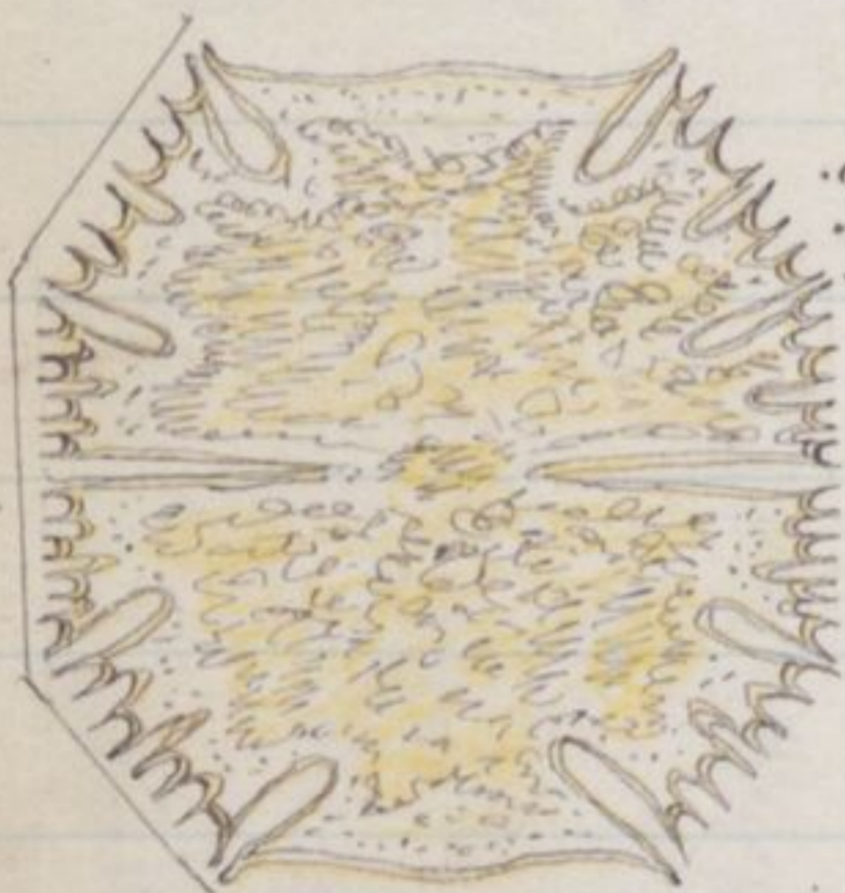


Closterium angustatum.



.00215" l.
.0012" w.
et

St. Elongatum



.0044" l.
.0042" w.
.0025" pol.

M. truncata.

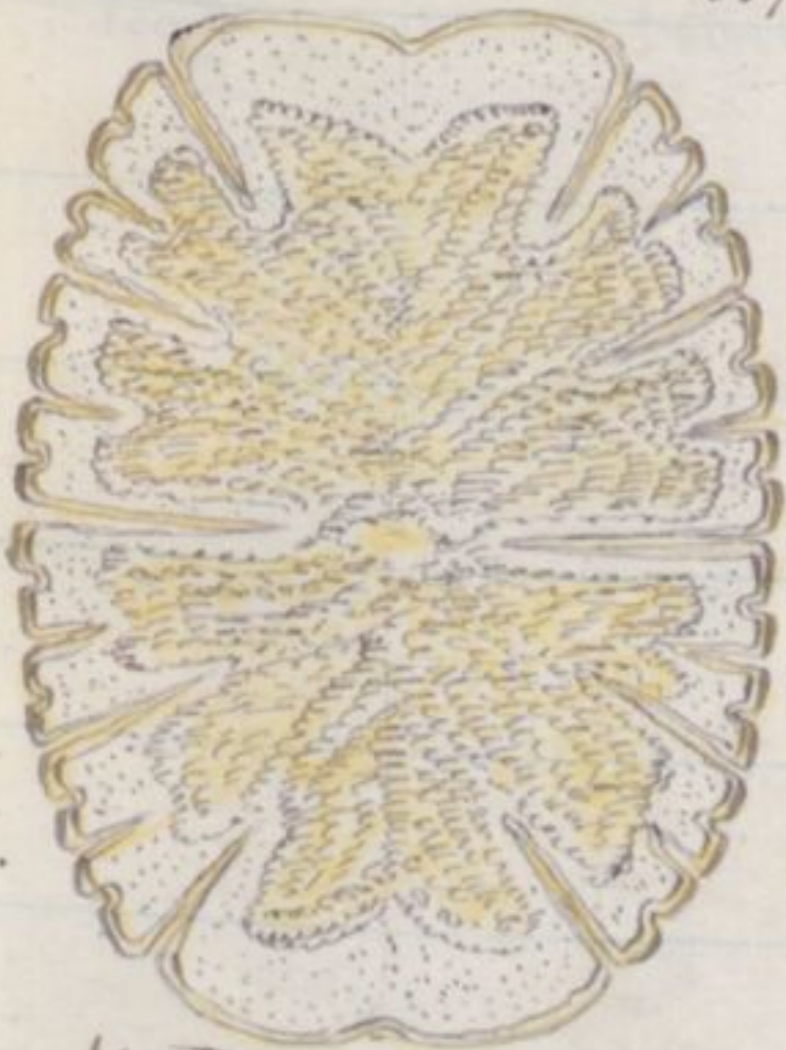
Many of these peculiar forms of the
M. truncata in this collection tend
toward an octagonal figure - shown
unusually in the one here given.

N. B. These Micrasteria have very
much the figure of the M. triangula-
laris, especially in the polar lobe.
But they are small for that species, &
the lobular division unlike any I have
seen of that species.

From a Sphagnum ditch at Guild's on S. Osceola.

Gathered Mar. 20, '85.

.0053" l. .0036" w. .00225" col.



M. Jenneri.

.0038" l. .0037" w. .0024" col.



.00112" l. .001" w. body.



Stm furcatum.

.0028" l. .00308" w.



Dividing.

.0016" l. .0012" w.

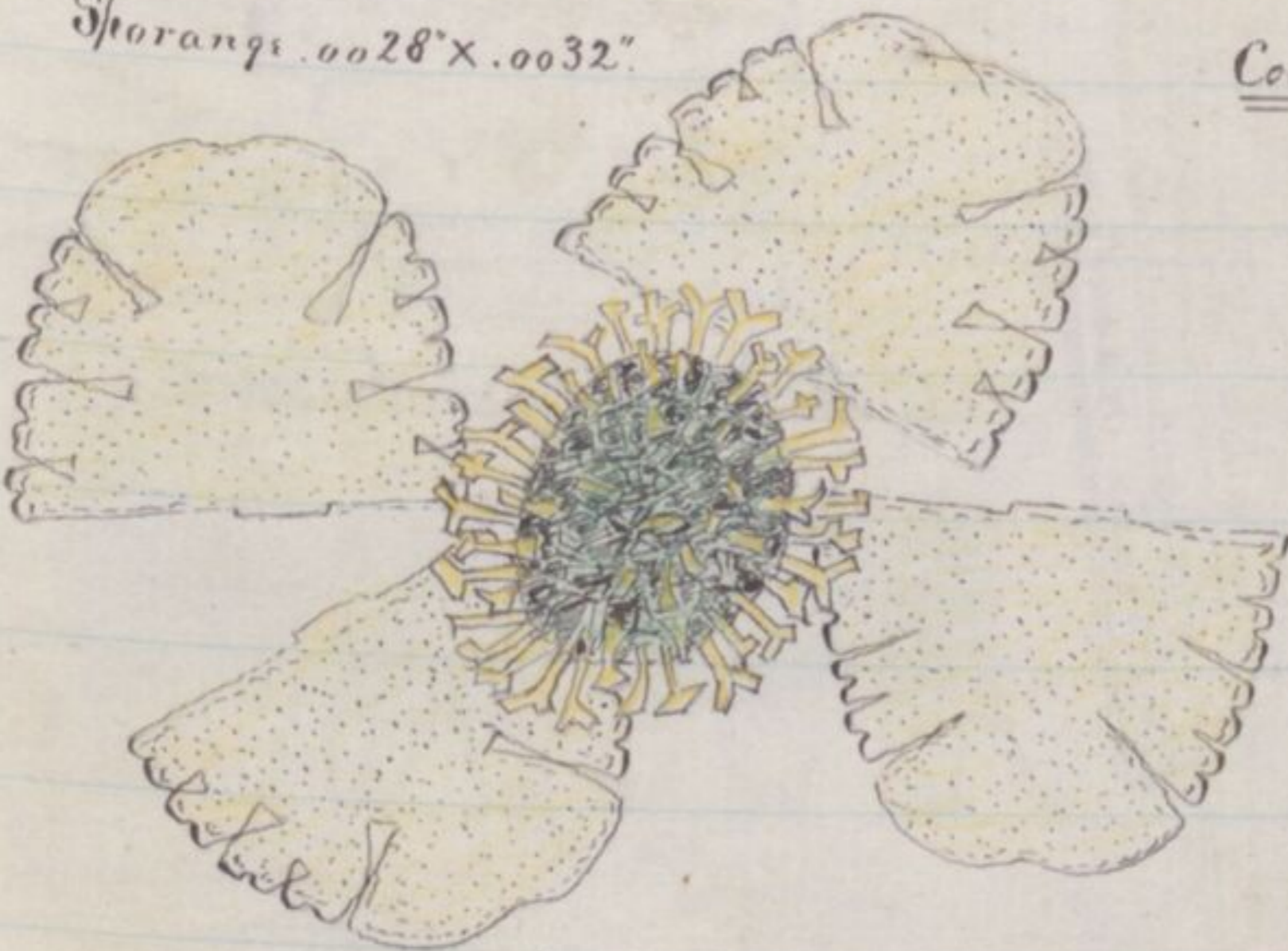


Cosm Hammeri.



Cosm Obsoletum.

Sporangia .0028" x .0032"



Sporangium of M. Jenneri.

.0024" l. .00155" w.



.0027" l. .003" w.



C. Obsoletum.

.0042" l. .0028" bulb.

4



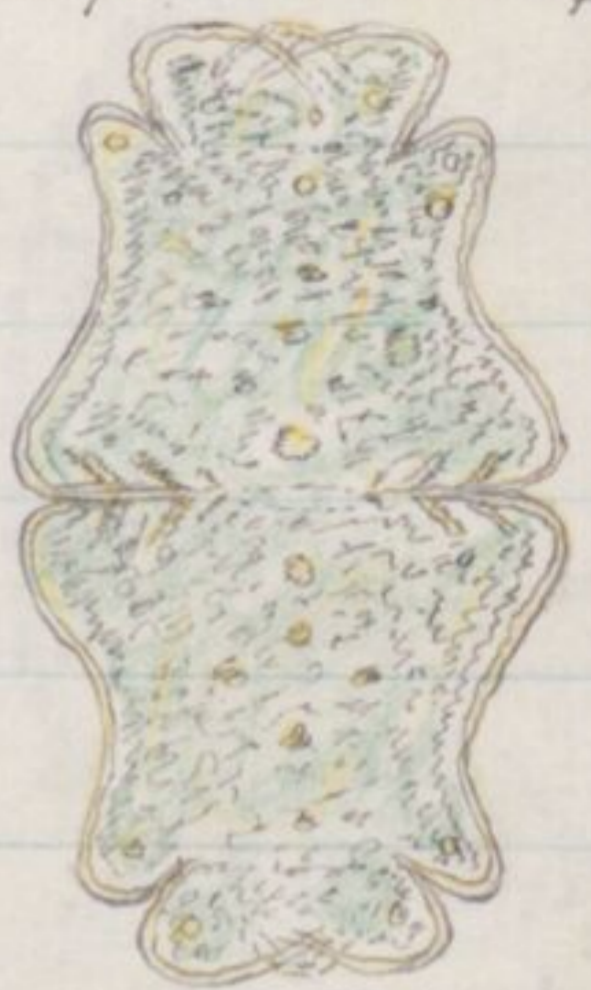
Diffugia spiralis.

.0049" l. .0027" w. .0015" pol

.0032" l. .0017" w.



Coi. Granatum.
var. elongatum.



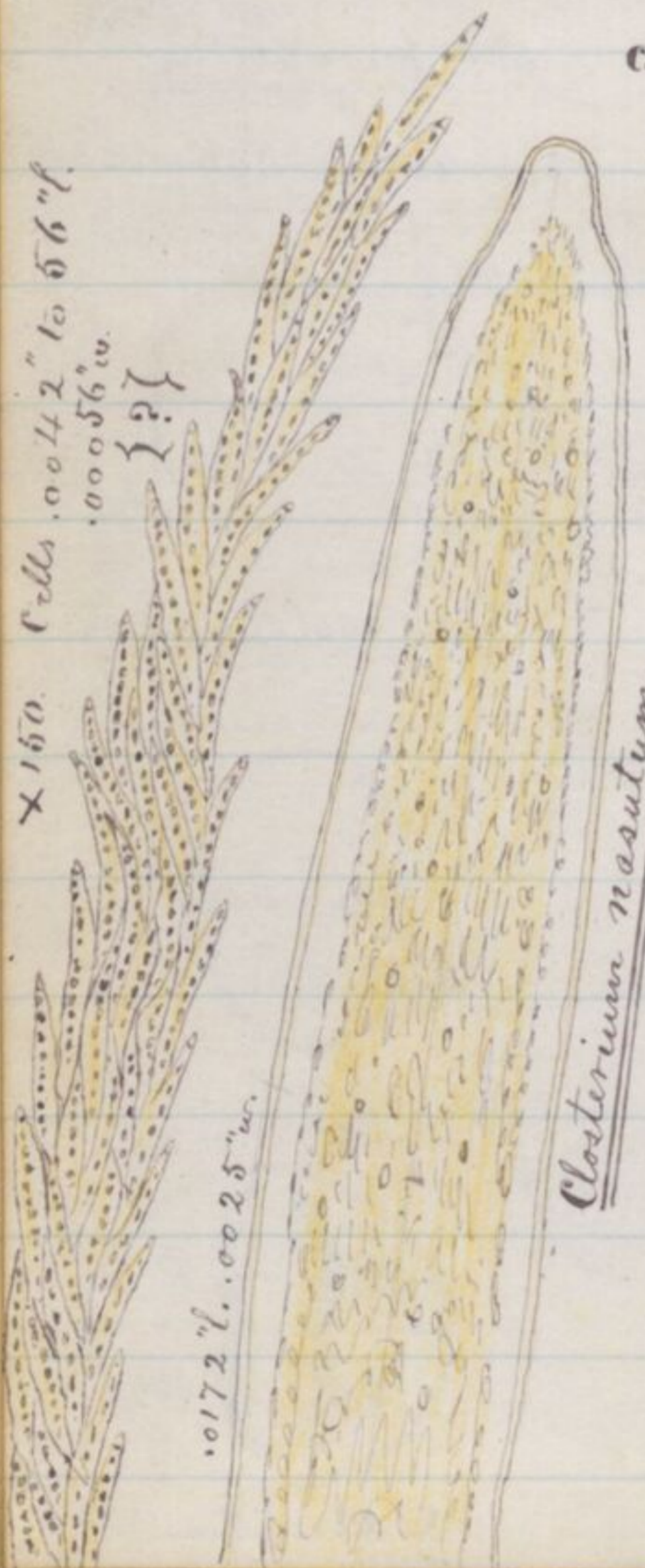
Euastrum crassum.
var. serobiculatum.

.0035" l. .00038" w.



Spirotenia.

X 160. Cells .0042" to .0056" l.
.00056" w.



Closterium nasutum.

.0172" l. .0025" w.

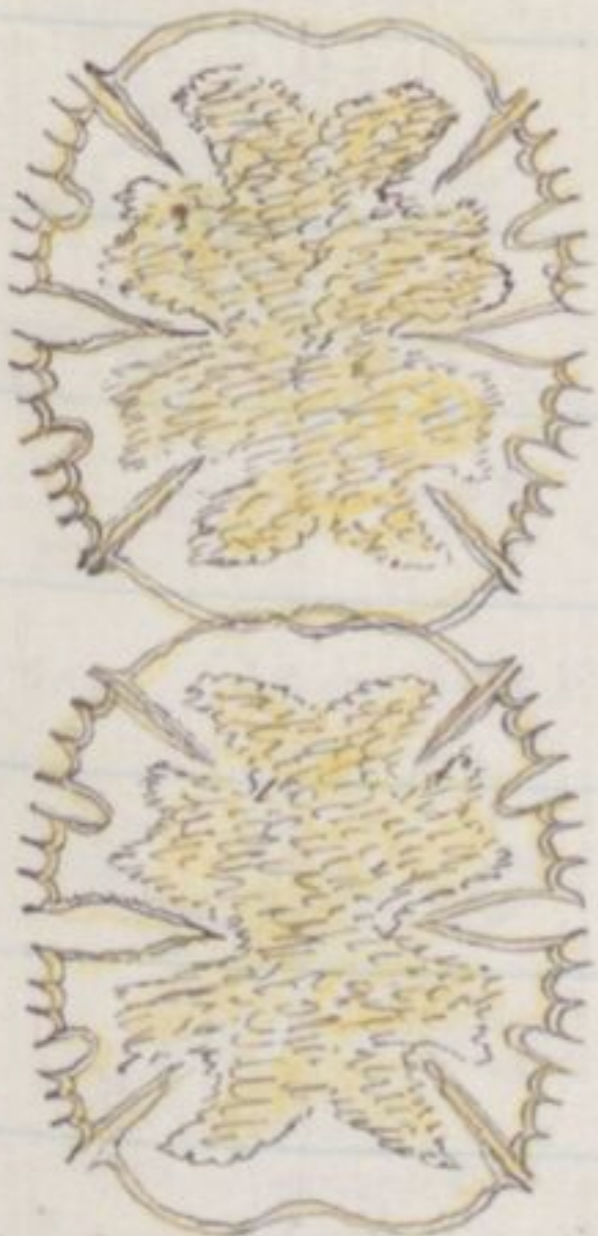
Old. .0019" l.
.0037" w.

New. .0015" l.
.0025" w.



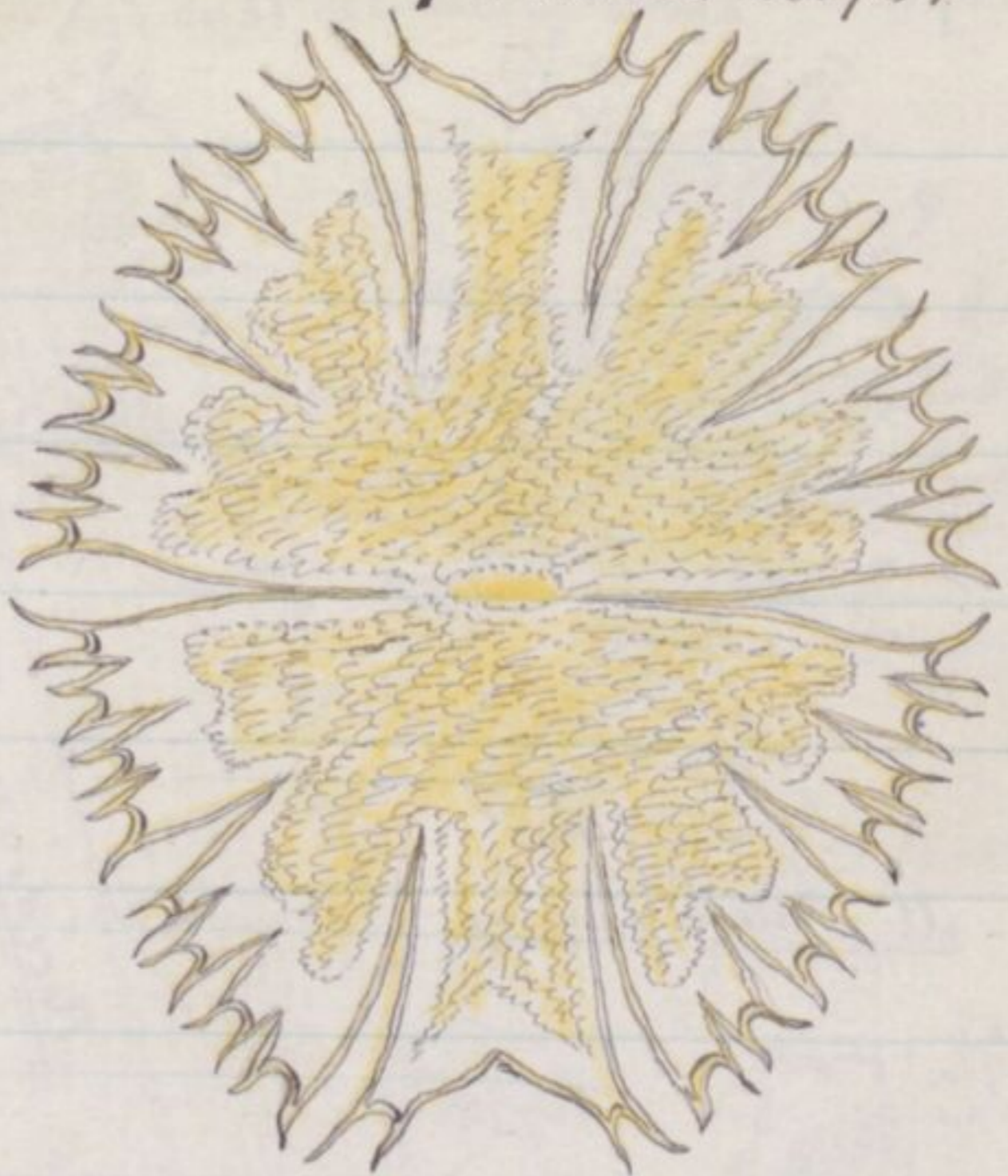
M. Janneri, in division.

Each
 .00308"l. .0028" w. .0021" pol.



M. truncata.
 dividing

5. .007"l. .006" w. .00196" polar.



M. rotata.

A collection from the outlet of Lake Mirrell yielded these following, with many more common.

.00112" w
 cell
 .0005" w.



Desmidium Swartzii.
 veget. filament.



End view of cell.



Same in fruit.

filament points .0025" w.

Cells + spores .0008" w.

In others the spore is rounder, more mature.

.00112"l. .00129" w.



Cos^m. Commissuralis.

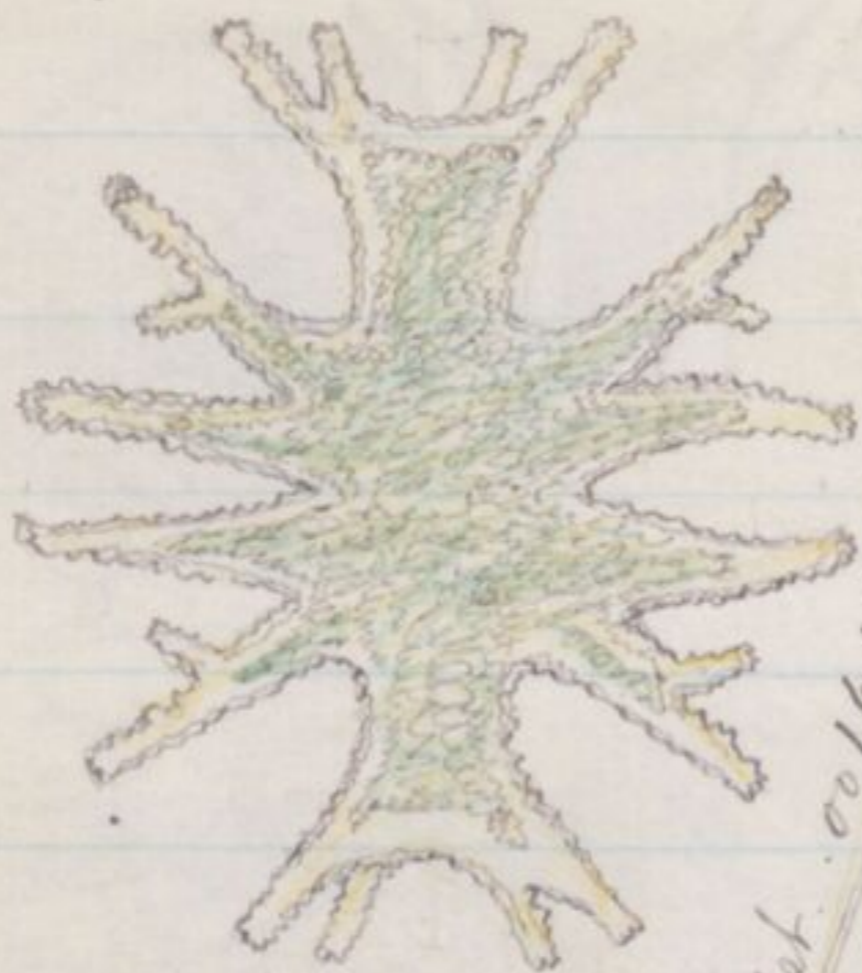
.00084"l. .00118" w.



Staurastrum pulchrum.

.0040"l. .0045" w. .0025" polar

6.



M. Americana.

.0035"l.
.0019" w.
.0007" pol.



Eu. Diditta.

.0196"l. .0018" w. dot. .00165" End.

Decidium Coronatum

.00154"l. + w.



Xanthidium

.00224"l. .0026" w. .0015" pol.



M. pinnatifida.

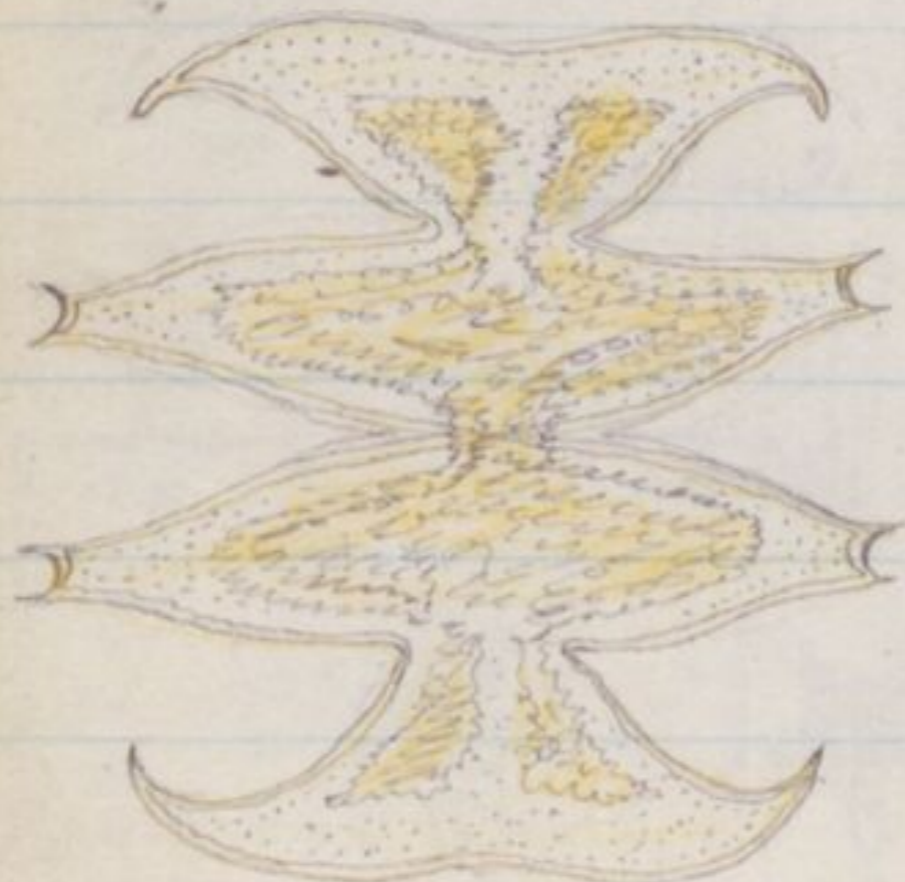
July 1. '85.

Feb. 17. '85.

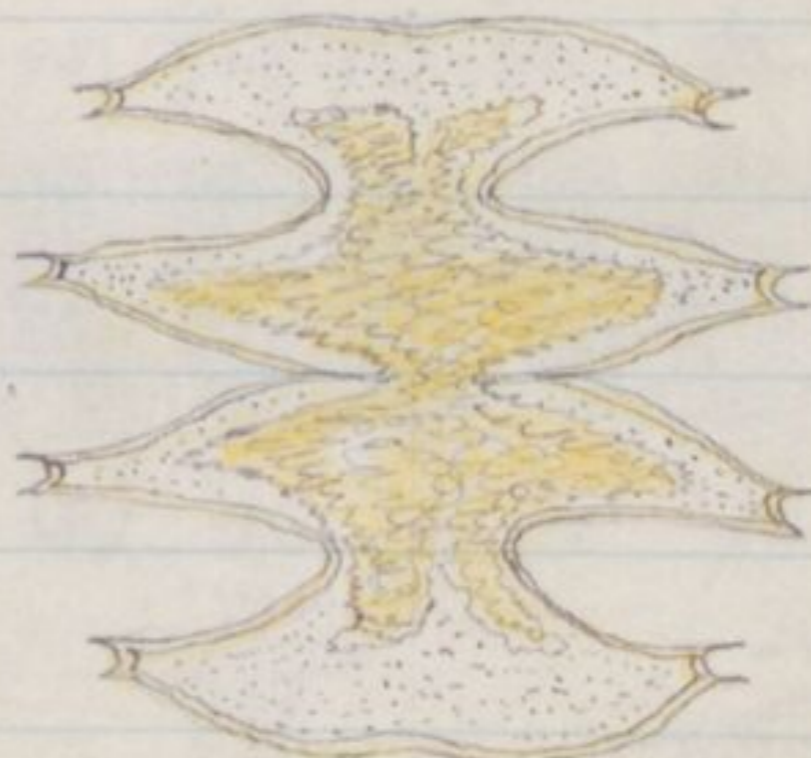
From a collection in Lake Oserola, these:

.0046"l. .0048" w. .0045" polar.

.0043"l. .0045" w. .0037" polar.

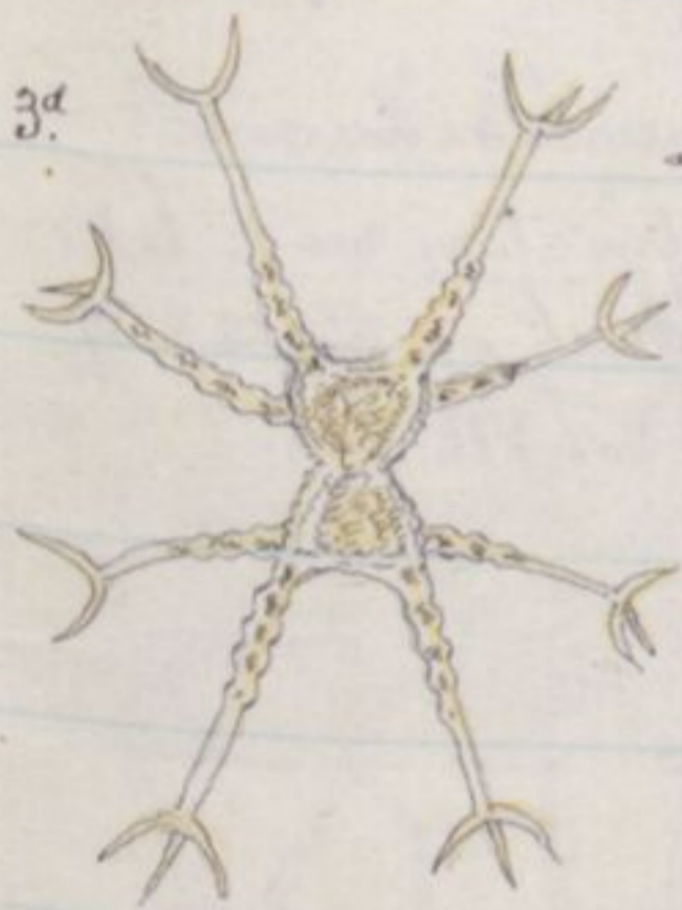
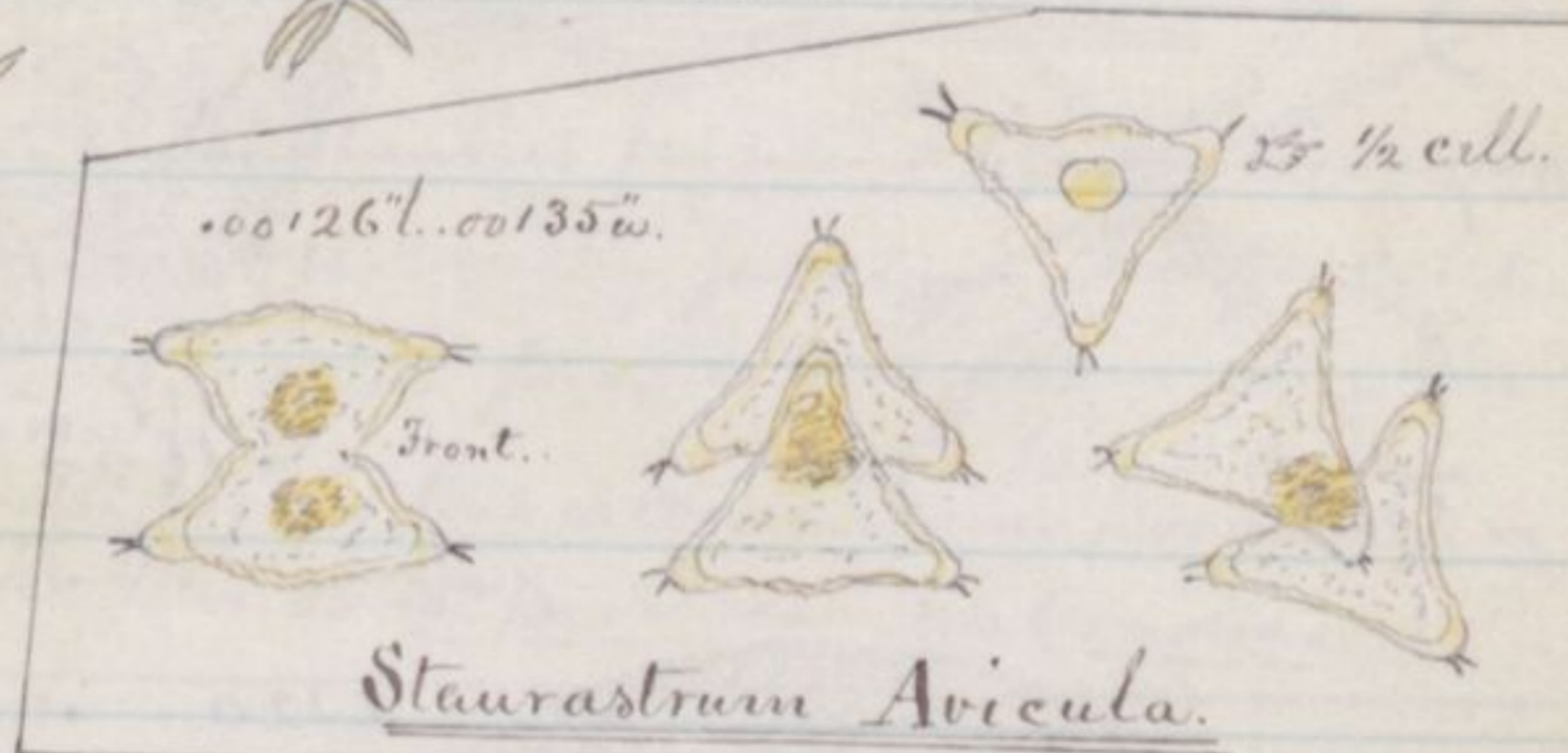
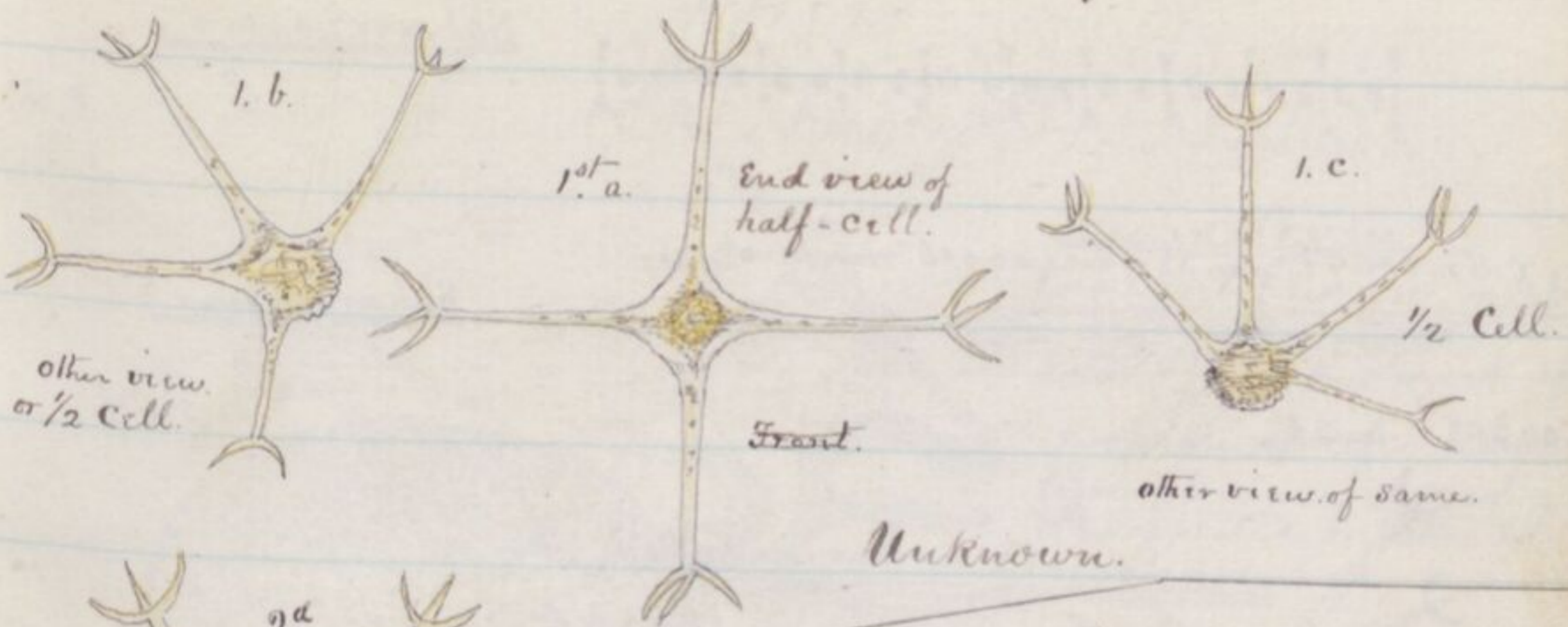


M. laticeps.



M. laticeps.

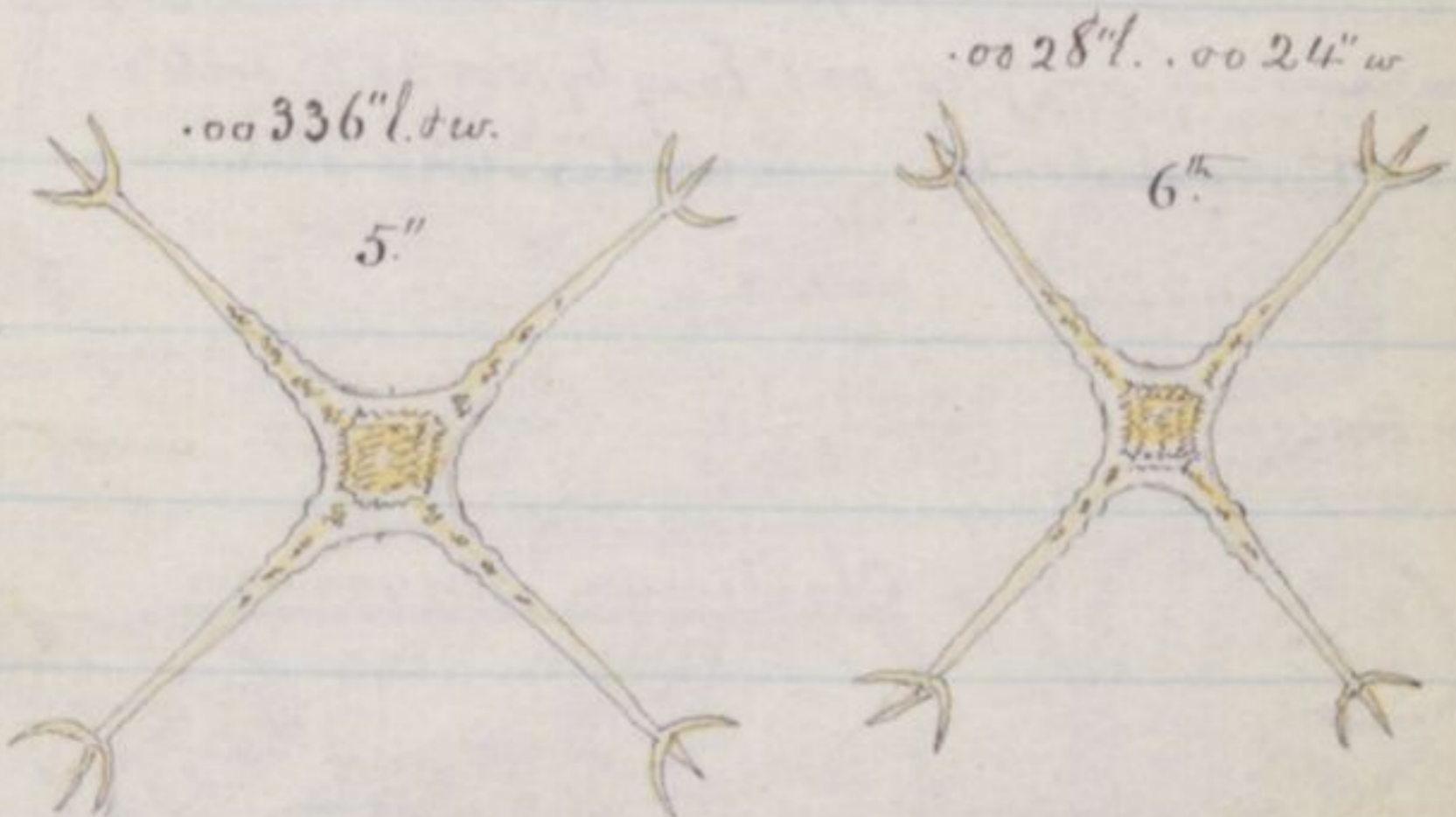
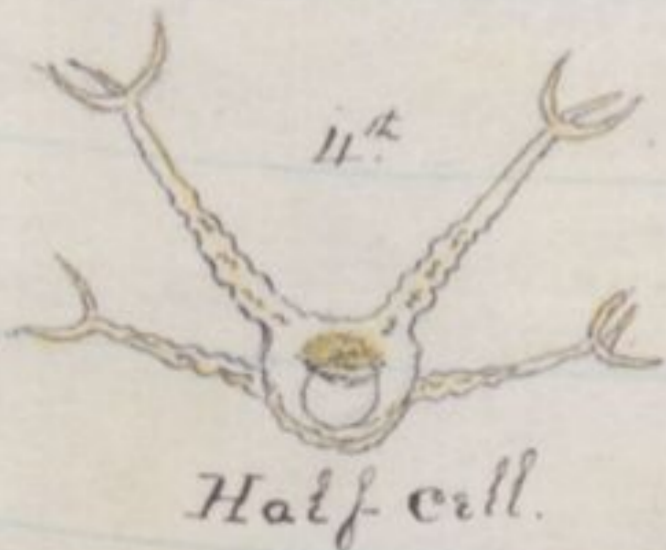
0038" Extremes of arms.



This 3^a seems a more complete form, & one quite new, at least unlike anything I can anywhere find.

.0034" l. tip to tip. .0024" w. mid-arms, tips.
body .00112" l. .0006" w.

No 4 is .00154" l. .0025" w.

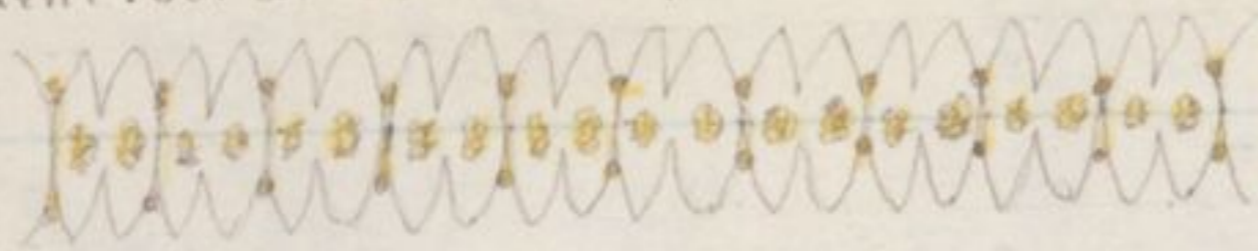


I find this plentiful in Vial 19. from L. Osceola.

I think, so far, No 3 is the complete form, front view.

No 1.b. & 1.c. & 4 are 1/2 cell views. No 1.a. 5. & 6. I do not yet quite comprehend. Later, 1.a. & 5 & 6 are end views of half cells.

Filament .001" w. Cell .00057" w.



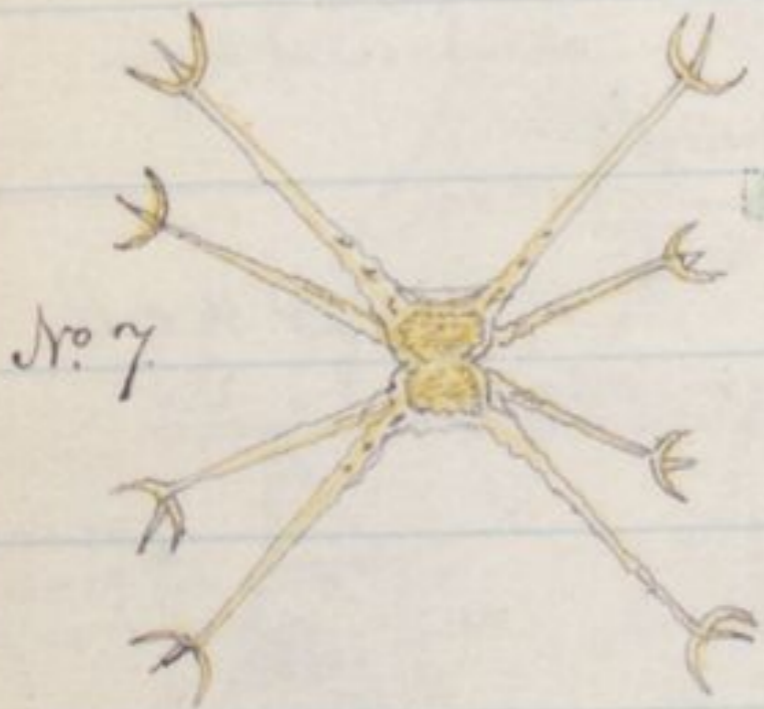
Sphaerozasma.
?

Cells .0009" l. .00033" w dot. .00015" narrow w.



Sphaerozasma?

.00308" l. .0028" w.

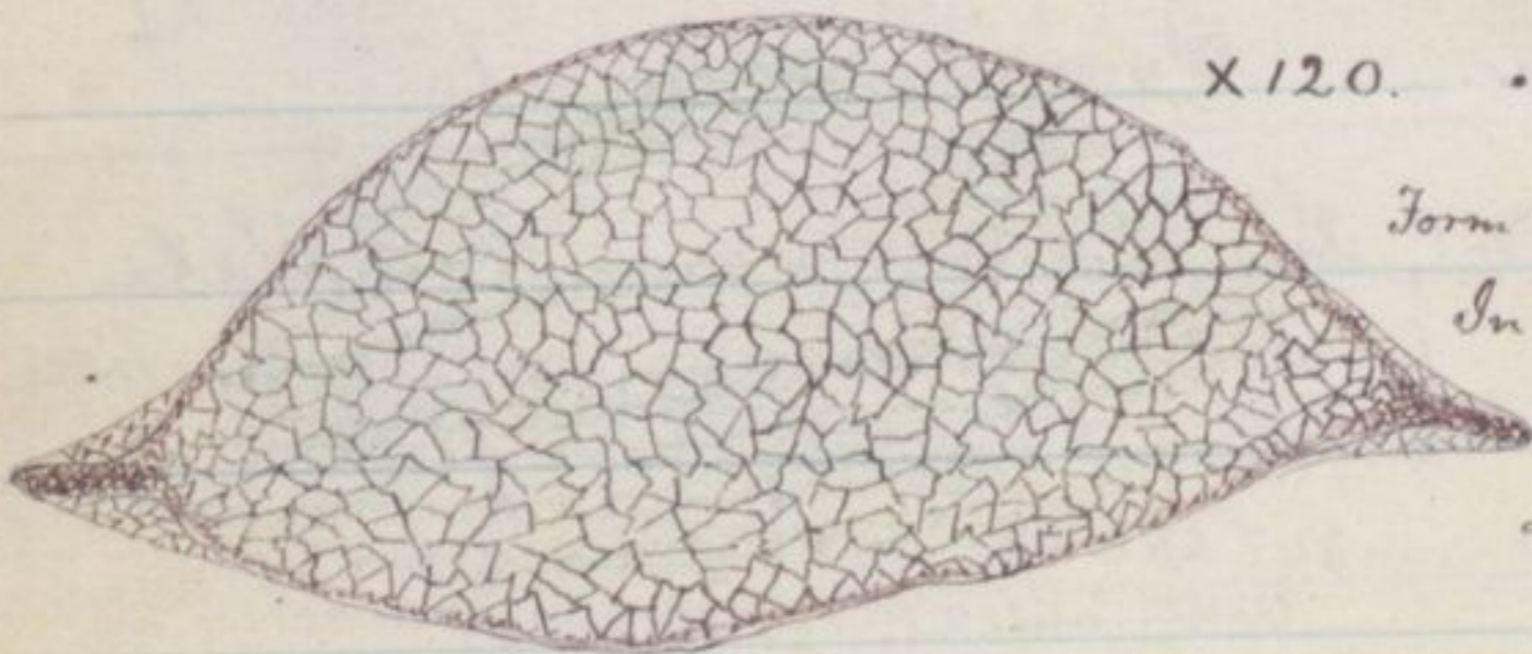


No. 7



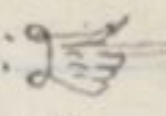
.0042" l. .003" w

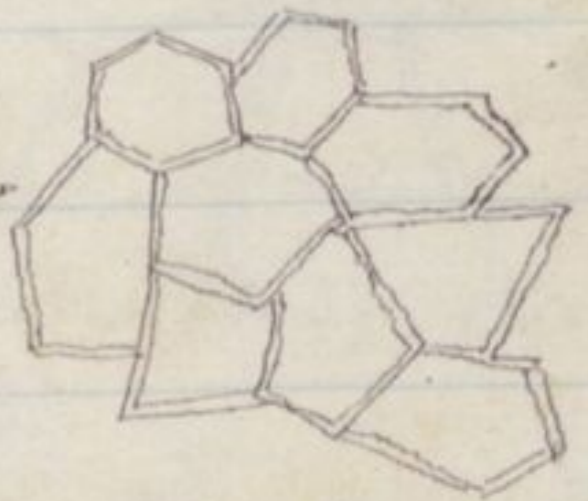
Diffugia Globulosa.



x120. .028" l. .01176" w dot.

Form much reduced.
In structure much like
that on pp. 128, 9
of Vol. VII.

The meshes under 1/5" power show thus:  measuring .0007" to .001" long by .00035" to .0006" w. and the net double - an under-web showing.



.0014" l. .00112" w.



Closterium strigosum.



.0095" l.
.0024" w.

Perium
lamellosum.

Body .00112" l. .0007" w.

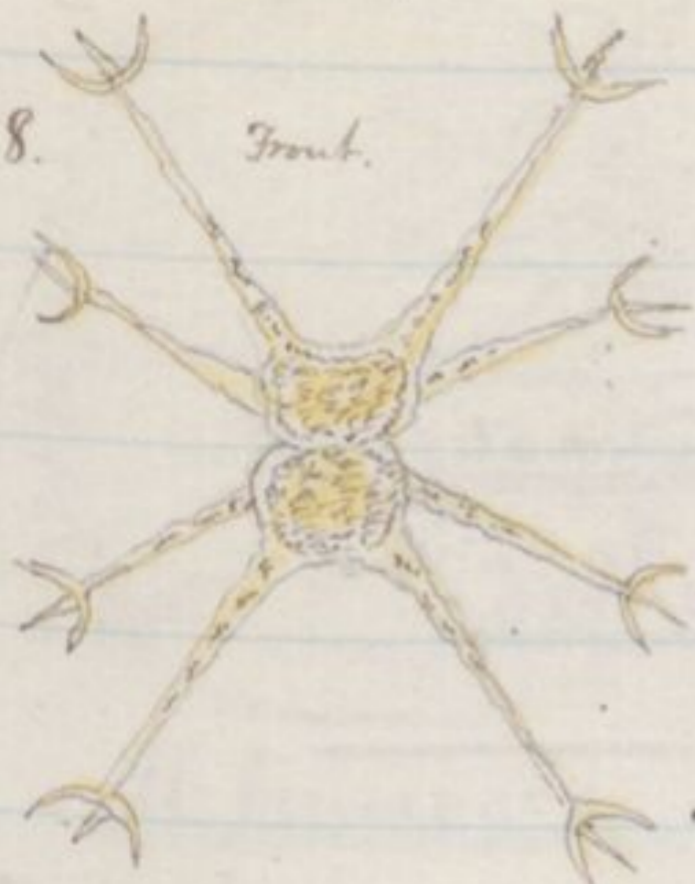
.00308" l. .0027" w.

9.

.0027" l. & w.

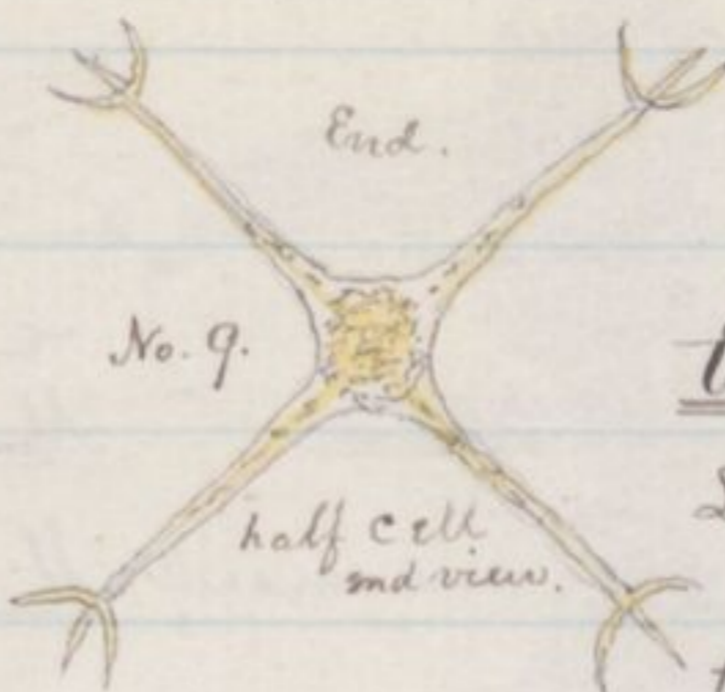
No. 8.

Front.



End.

No. 9.



half cell
end view.

Staurastrum
tridentiferum. n. sp.

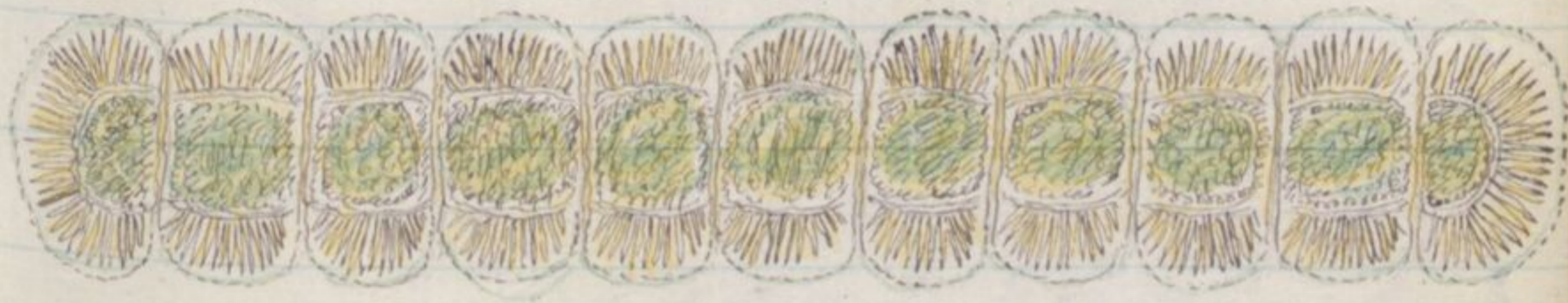
Later I find this most appropriate specific name tridentiferum is already appropriated. See Wolle's Vol.

Therefore Staurastrum Osciolense.

The plant is fragile, & by its structure easily parts in the centre, & is usually found in half-cells. But I have found the whole forms, 4 or 5 of them, as in the Nos. 3. 7. 8. (Mr. Wolle insists this is Staurastrum paradoxum, and reports it in the Bulletin as St. paradoxum, var. Osciolense.)

From S. Virginia, foot of Interlaken St., Winter Park:

.0133" l. filament .00224" w. cell. .0012" w. Unknown.



Each .00133" l. .0035" w.



Stm coronulatum.

Double, in dividing.

.00133" l. & w.



Stm teliferum.

.00105" l. .00126" w.



Cos. ornatum

.001" l. .00157" w.



Staurastrum distentum.



.00156"l. .0021"w.



Cosm. Broomei.

10.
.00177"l. .00086"w.



Cosm. Ammanni.

.002"l. & polar. .0026"w.



M. pinnatifida.

Also M. Americana, and many M. laticeps.

In the brook issuing from S. Killarney, down toward Maitland - in Eddies of sphagnum:

.00634"l. .00075"w.



Docidium Baculum.



.005"l. .00336"w. .0025"pol.

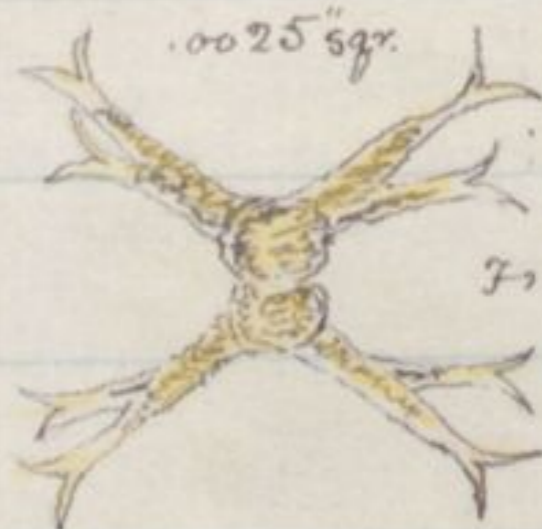


M. Jenueri.

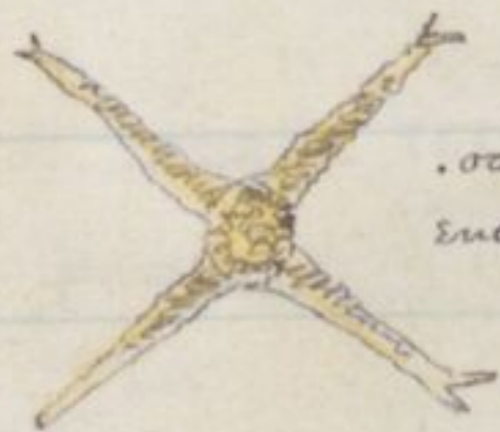
Penium lamellosum.



.0056"l. .00154"w.



Stm brachiatum.



.00175"sqz.
End.

.00112"l. .001"body.



Stm quaternium.

.0036"l. .00084"w.



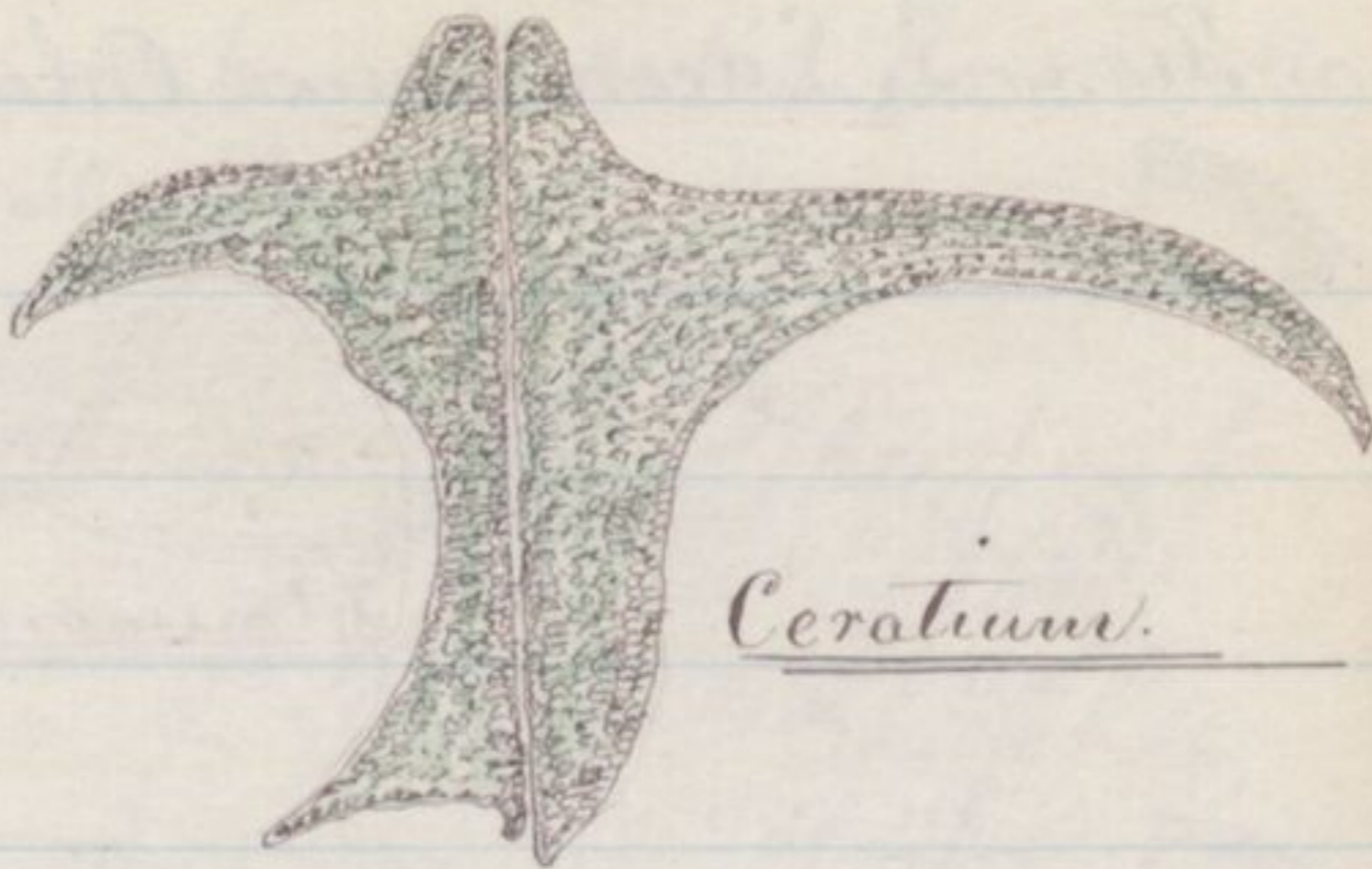
Penium Porbissonii.

.0062" spread.
.0042" l.

.0035" l. .003" w. .0024" pol.



M. truncata.



Ceratium.



.0095" fr. end to end.
.0009" wdth.

Closterium moniliferum.

Later in same:

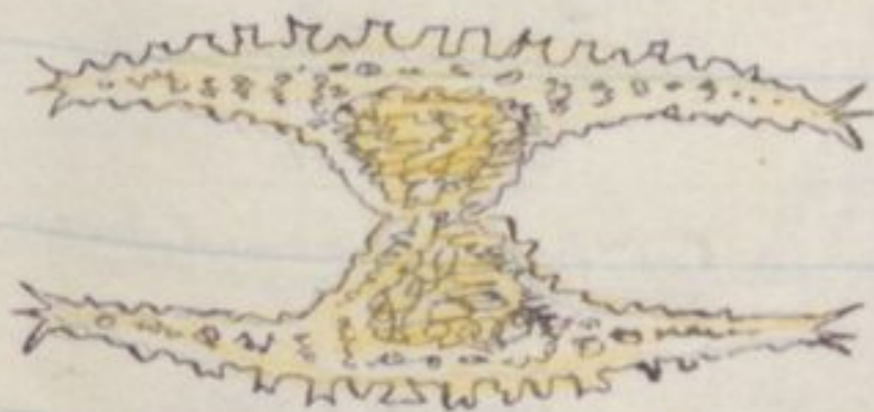
Filament .0028" widest .0007" thick
cell .0014" w.



Sphaeroszoma pulchrum.

In long chains twisting from widest to narrowest in about 6 cells.

.0028" w. .00145" l.



Staurastrum aratum.



From S. Lucerne, near Orlando - April 8th 1885:

.0074" l. .0014" wd. st. .00084" near end.



Filamentosus granulatus.

.00308" l.
.00112" w.



.00476" l.
.00238" w.
.0016" pol.



Euastrum Crassum.

.0021" l.
.0014" w.

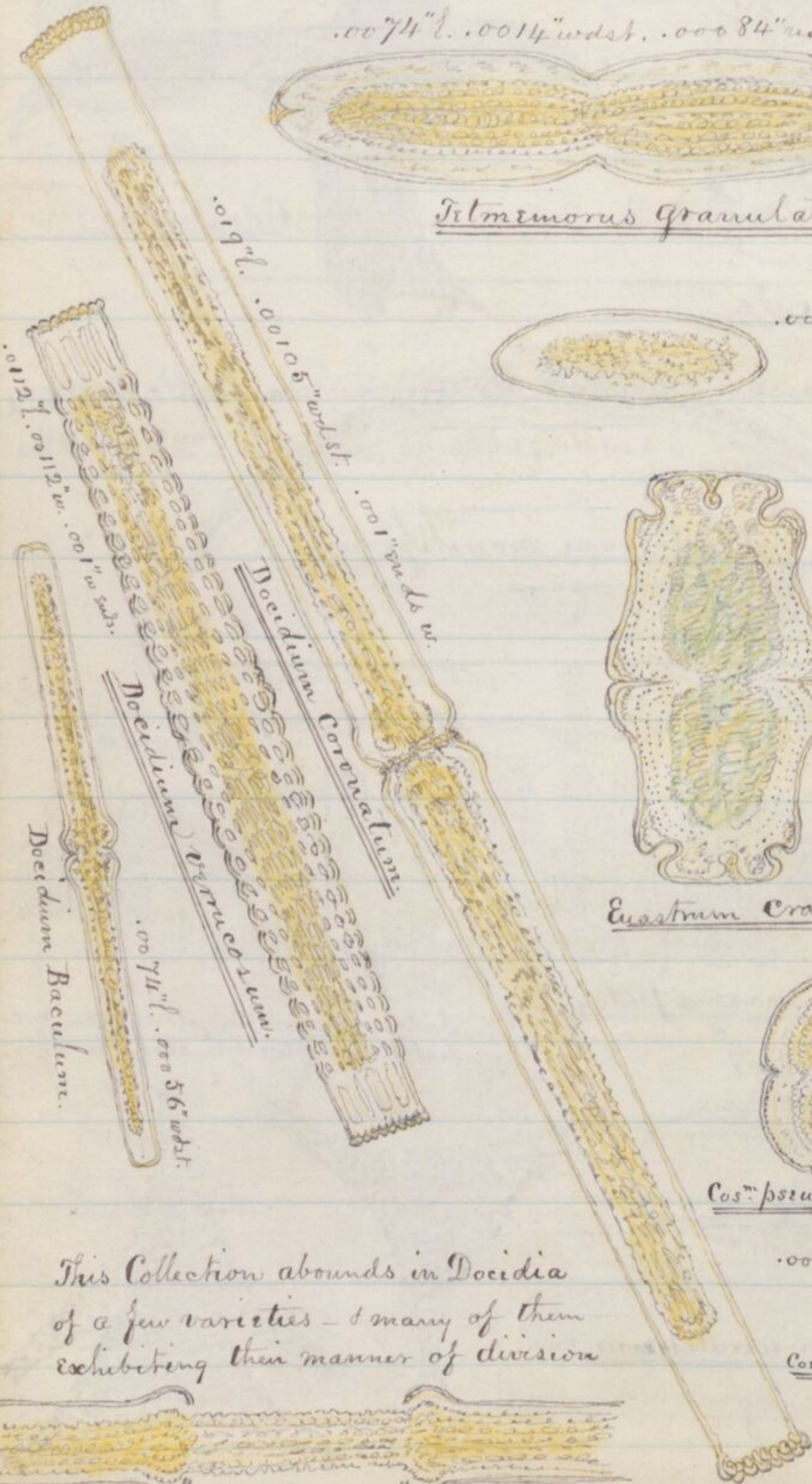


Coscinodiscus pseudopyramidatum.

.00056" l. + w.



Coscinodiscus biremis.



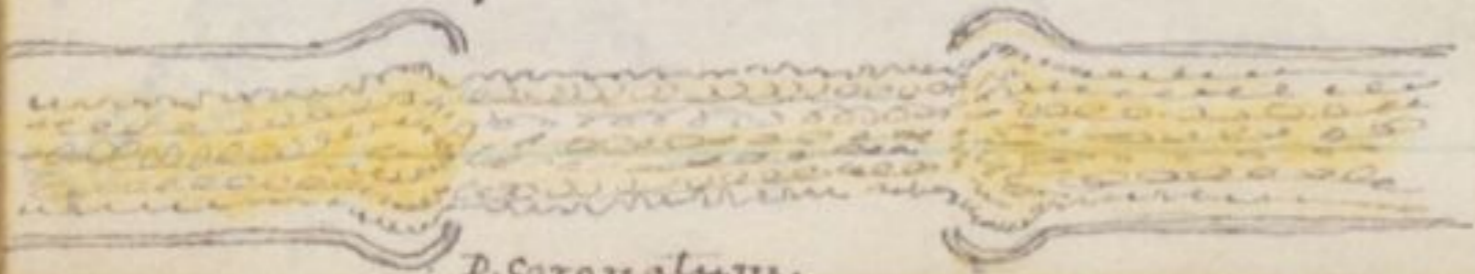
.019" l.
.00105" wd. st.
.001" end ps w.

Docidium Coronatum.

Docidium verrucosum.

Docidium Baculum.
.0074" l. .00056" wd. st.

This Collection abounds in Docidia of a few varieties - & many of them exhibiting their manner of division



D. Coronatum.

In the marshy pools, just above the outlet from Lake Killarney, down towards Maitland:

.0017"l. .002"ar.



St^m brachiatum.

Eusheathed.

.0014"l. .0022"w. .00028"isthmus



varieties of St^m dejectum.

.0014"l. .0013"w.



St^m Echinatum.

.00145"l. .001"w.



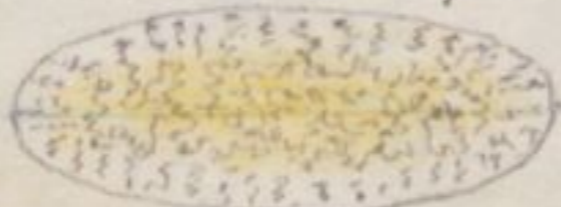
Cos^m Hammeri.

.0017"w. arms. .00078"l.



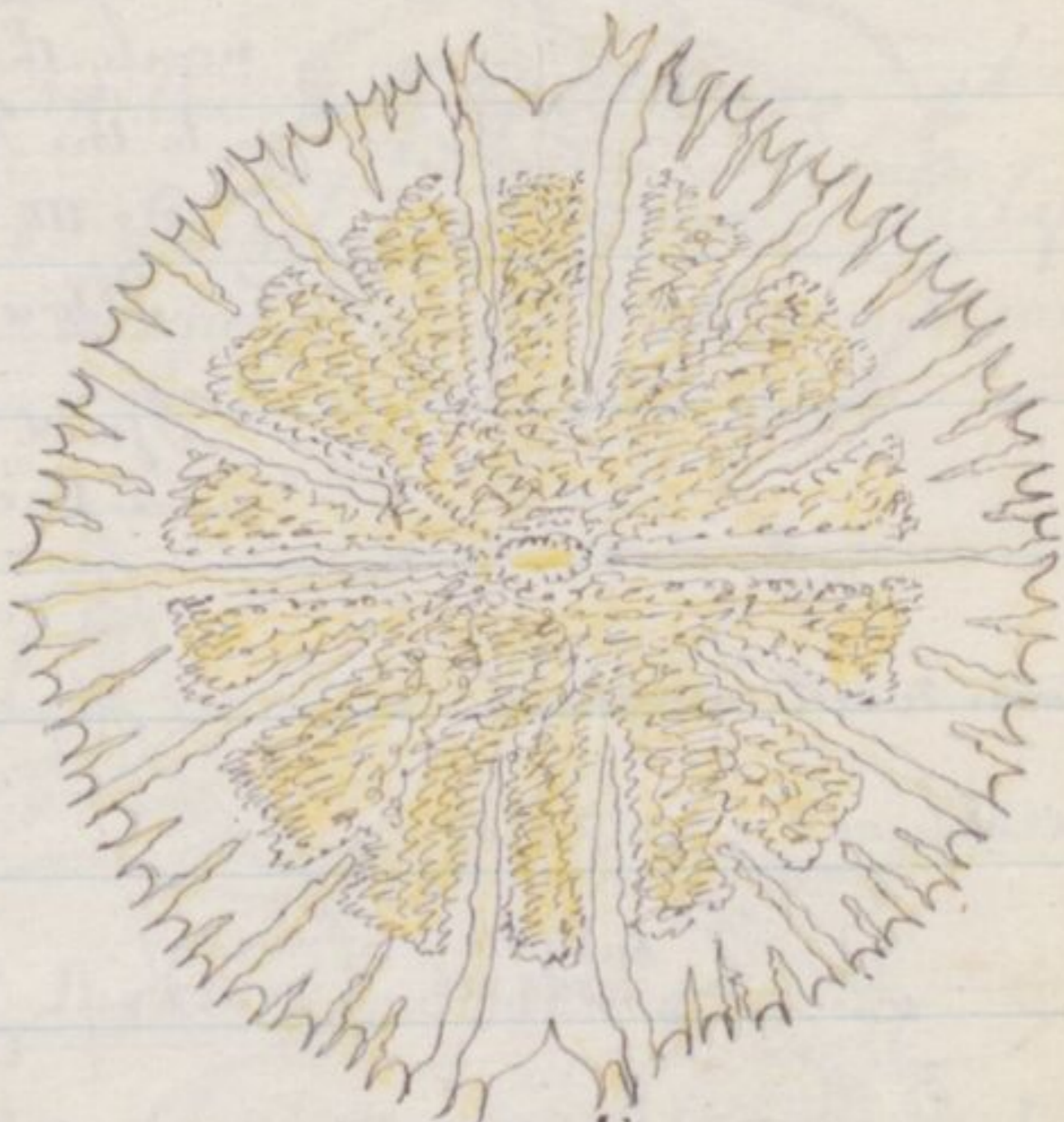
St. dejectum.

.00252"l. .0009"w.



Penium polymorphum.

.00644"l. + w. .001"w polar.



M. radiosa.

.00588"l. .00112"width. .00098"tail. .00065"nar. -ventral.



Docidium Verticillatum.

See Vol. VII. p. 119.

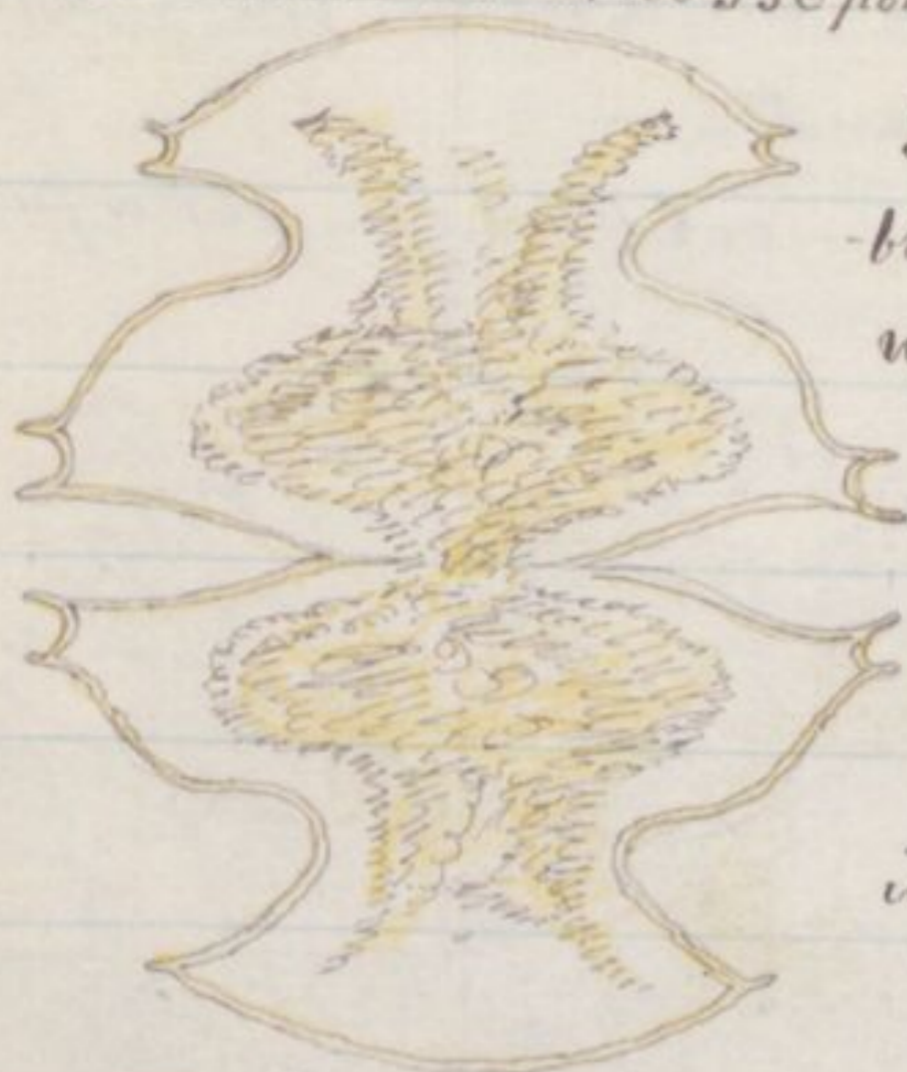
.00336"l.
.00182"w.
.0009"pol.



Euastrium.

unique form.

.0056"l. .0045"w. .00336"pol.



This unique form nearest resembles M. Kitchellii, and comes more nearly than anything I have seen to the Rabenhorst figure [See his Sec. III. p. 109.] wh. he calls the Tetrachastrum. (M. mucronatum.)

I find this & the following forms in S. Osceola, near Guilds Landing.

.00476"l. .0045"w. .0021"pol.

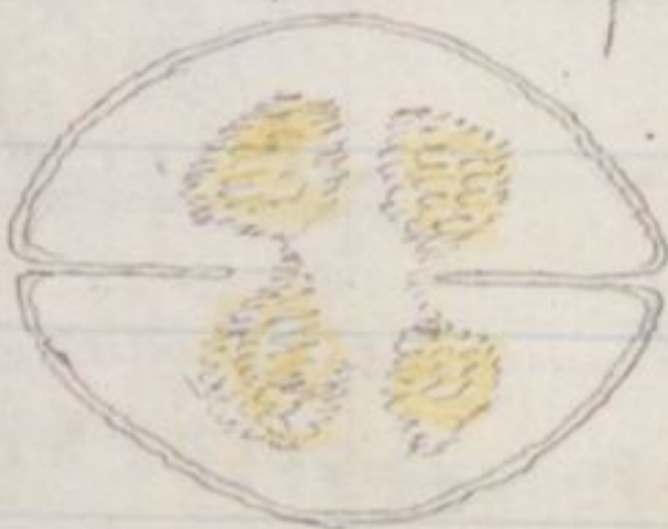
Lower 1/2 cell immature.

.0038"l. .002"w. .00125"pol.

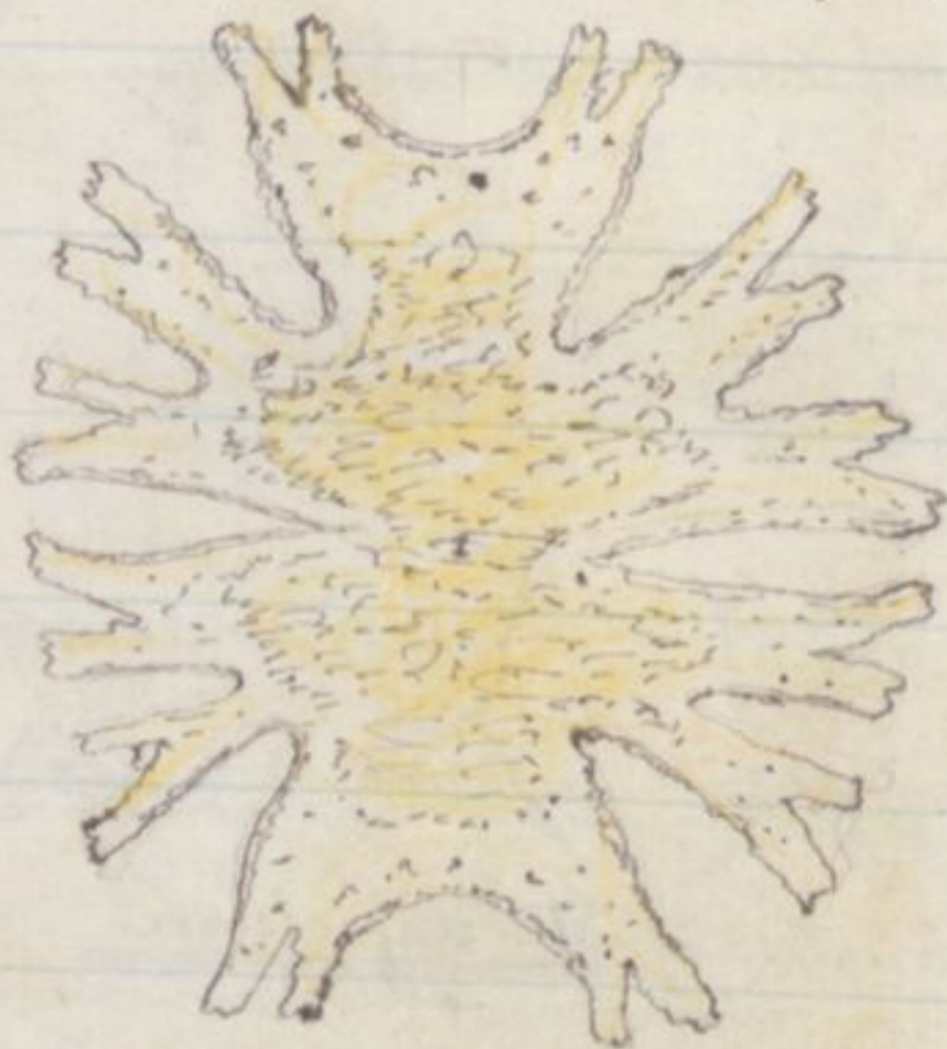


See Vol. VII. p. 123, 126.

.00266"l. .00322"w



Cos. Obsoleteum.

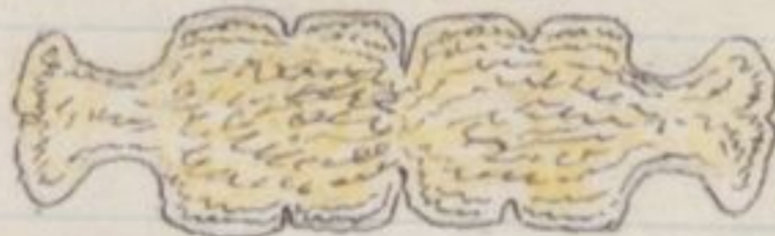


M. Americana.

.00365"l. .002"w. .0012"pol. shldr. .00135"w.



I repeat this, for it seems a form nowhere given in Wolle's work or any other seen. Side view.



Nearest Ralfs Eu. affinis, but basal lobes not emarginate, but very slightly rounded, more nearly straight.

Body .0013"l. .001"w.



St. furcatum.



dividing.



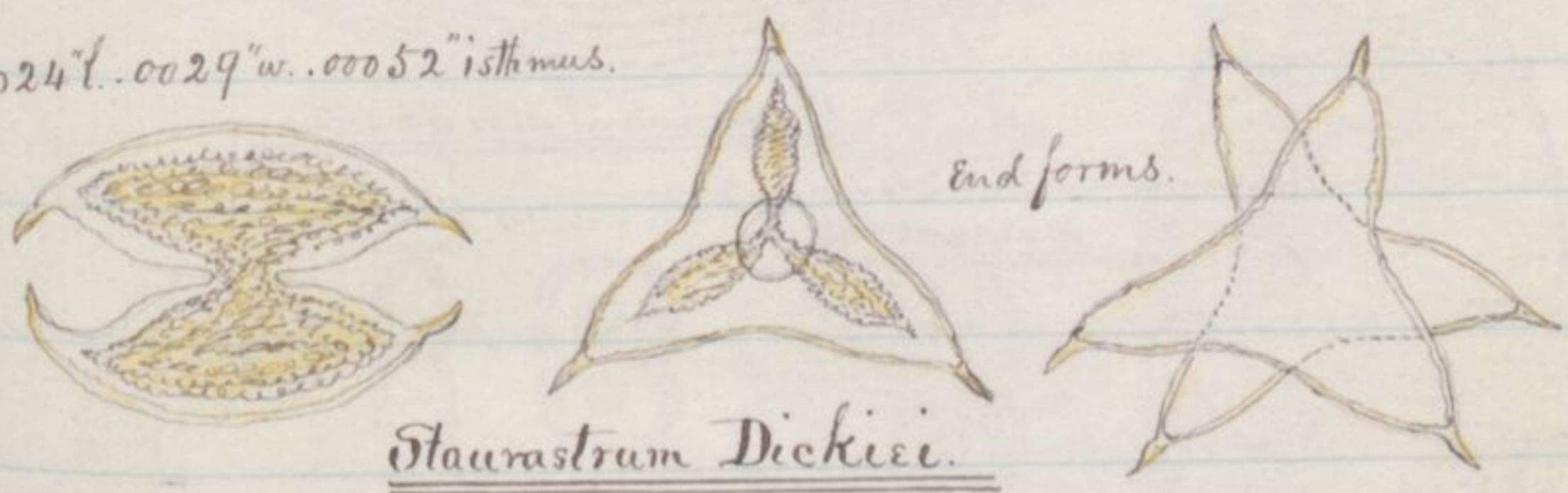
Compare on p. 3. differing.



See in Vial 21.

Lake Tohopekaliga is 22 ms. south of Winter Park, quite over the divide, in the system of waters that sheds southward by way of S. Okeechobee, & through the Caloosahatchie River into the Gulf of Mexico, at Punta Rassa. March 30th, '85 I visited Kissimmee City on this Lake To-ho-pe-ka-li-ga, & made collections, with Mr. Wolle & son, & Mr. Raw.

.0024"l. .0029"w. .00052"isthmus.

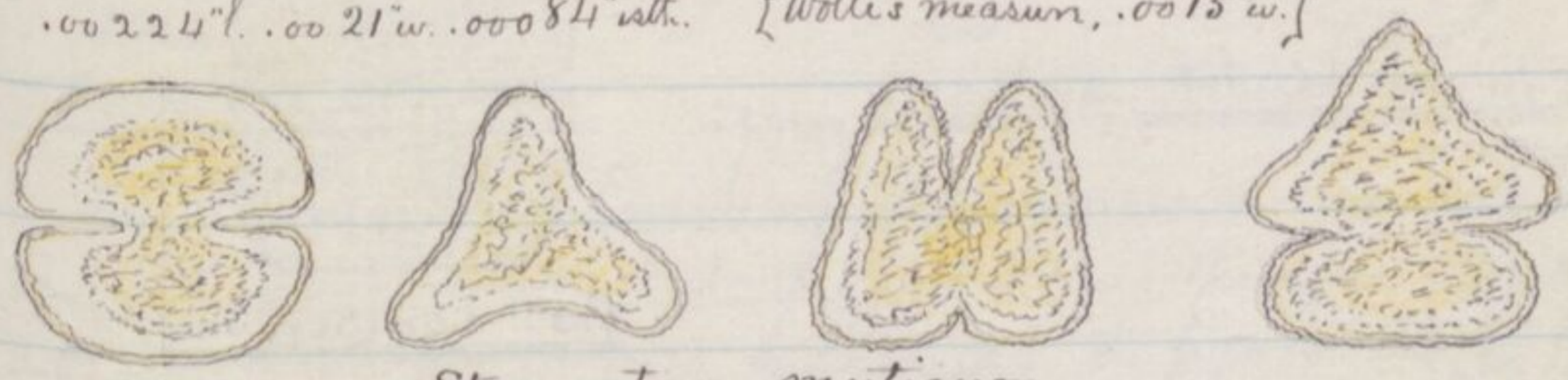


End forms.

Staurastrum Dickiei.

N.B. Larger than Wolle's measure, which is .00173"w. at largest.

.00224"l. .0021"w. .00084"isth. [Wolle's measure, .0015"w.]



Staurastrum muticum.

.0046"l. .0056"w. .0053"kolara.

.001"l. .00138"w.



Staurastrum incisum.

M. laticeps.

various aspects.
Grayerd form. 522 p. 17.

.00182"l. .00126" w. .00044" polar.



side.



End.



Euastrum Kissimmensis.

.00149"l. .00045" w.



Closterium strigosum.

.0027"l. .00225" w. .0014" pol.



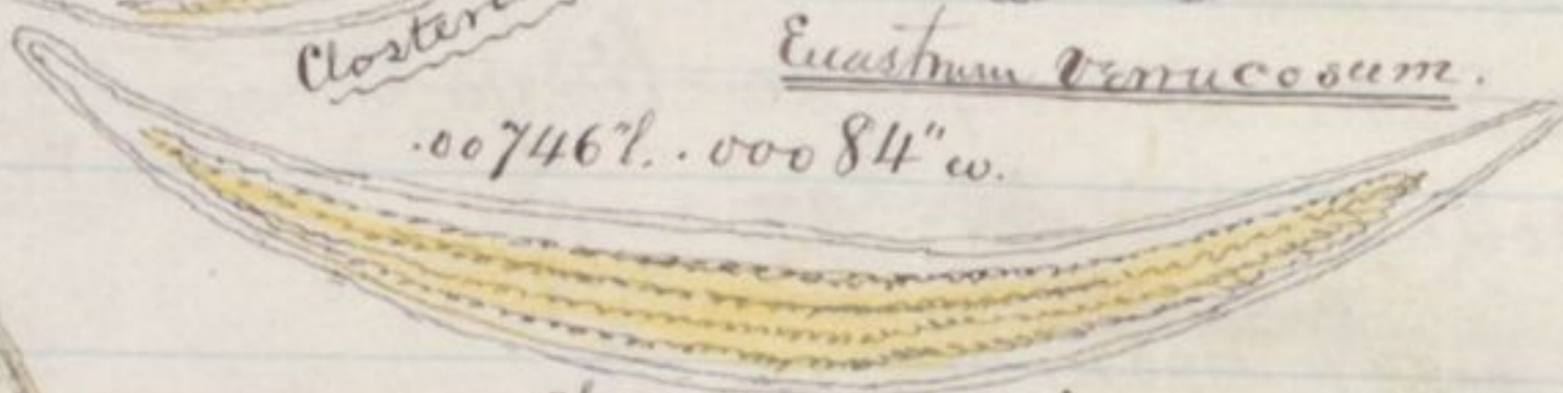
Euastrum verrucosum.

.00546"l. .003" w.



Cos^m pyramidatum.

.00746"l. .00084" w.



Closterium strigosum.

.00224"l. .002" w.



Cos^m Ralfsii.

.0014"l. .001" w.



side.

end.

.00252"l. .0024" w.



Cos^m conspersum.

.00322"l. .00155" w.



Eu^m ansatum.

.00186"l. .00144" w.



Calocyclus conuatus.

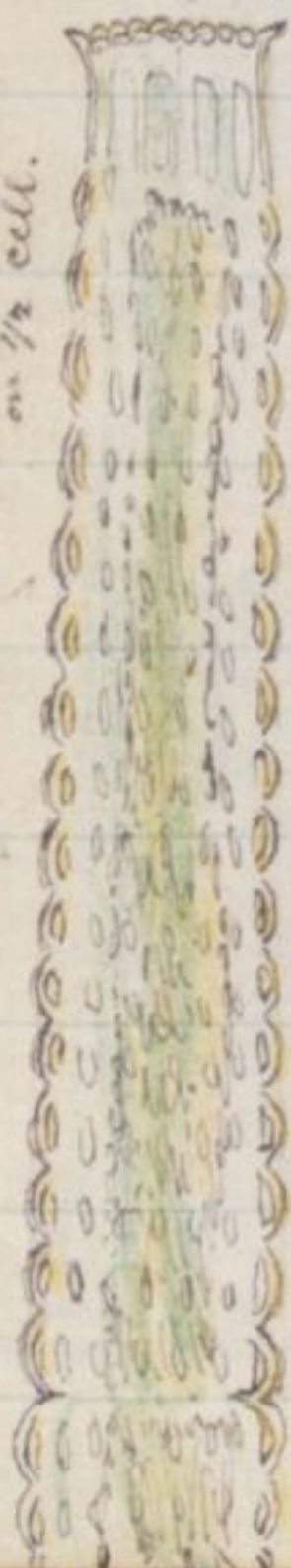
.002"l. .0013" w. .0005" - polar



End & side as above.

Euastrium verrucosum.

.0114"l. .00112" w. .001" End. 16 verrucosae in 1/2 cell.

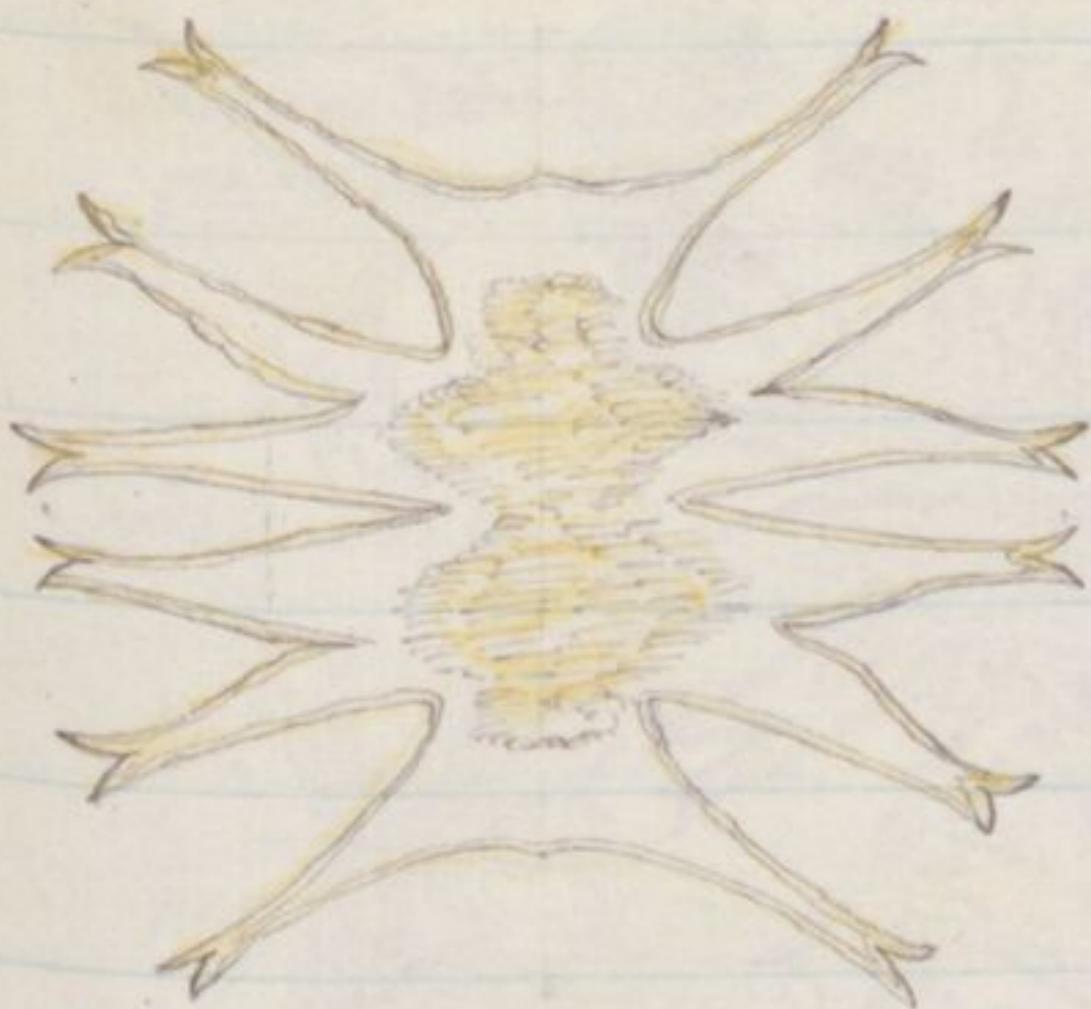


A new species, I judge, and call it provisionally

Euastrium Kissimmensis.

Frequent in "East ditch" vial, from Lake Tokopskaliga.

.005"l. .0057"w. .0033"polar.



This seems very distinctly to be 3-lobed, & in that separates itself from M. furcata, as defined in Wolle's "Desmids", p. 111, & Figs. 5, 6, Plate XXXV. & conforms to the M. furcata simplex. See Vol. VII. p. 115, & p. 126, 7.

.008"l. .0014 w.

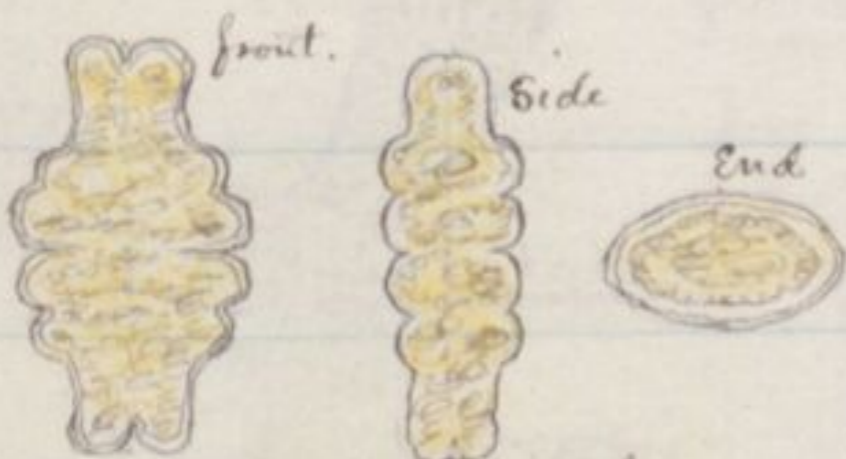


.0014" diam.

End.

St. incisum. 6-rayed.

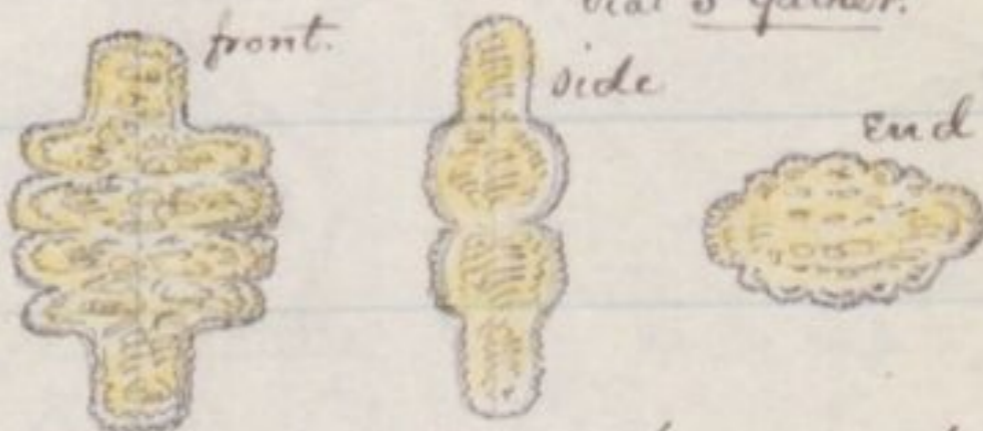
.002"l. .00106"w. .00056"w. polar.



clay bit.

Euastrum Circulare.

.00188"l. .00121"w. .00043"w. polar.
Vial "5" gather."



Euastrum Kissimmeeense.

The only doubt of Euastrum Kissimmeeense lies in its resemblance to Euastrum Circulare, and I have therefore studied & figured the two in fresh instances. The figures above fairly represent them. In side & end views the difference is marked; In front views the E. K. is shorter & broader, square-shouldered, the polar lobe narrower & with no perceptible incision.

.00196"l. .0021"w.



Cos. Broomei.

.00156"l. & w.



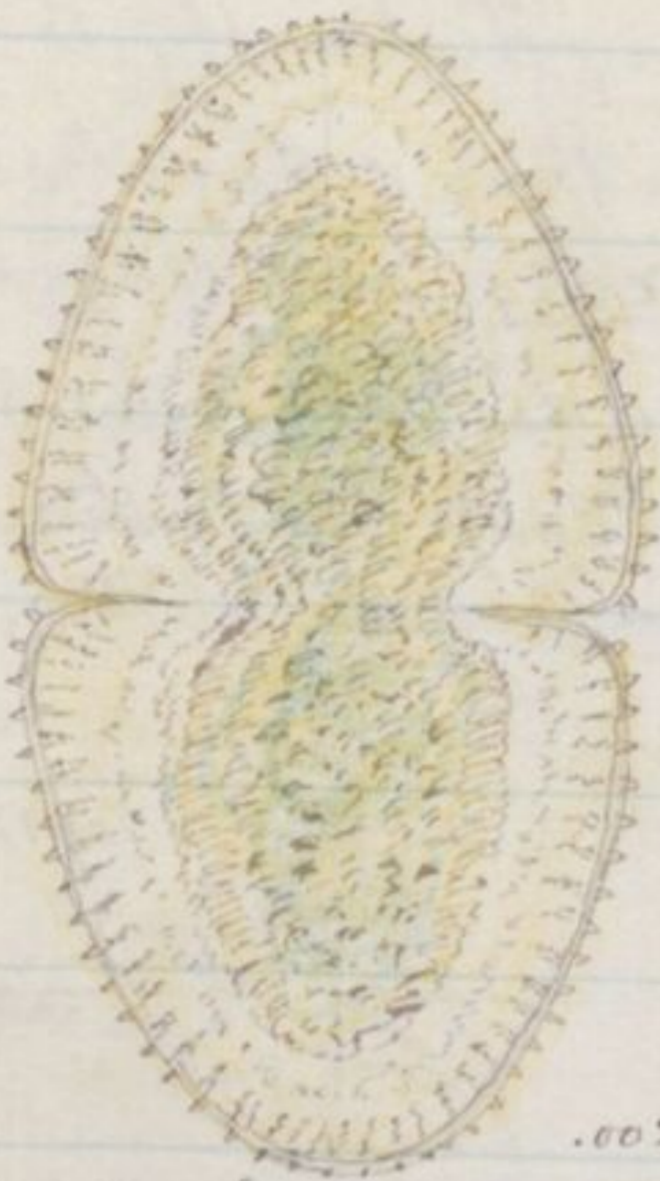
Cos. Broomei.
variety.



.0042"l.
.0047"w.
.0041" polar

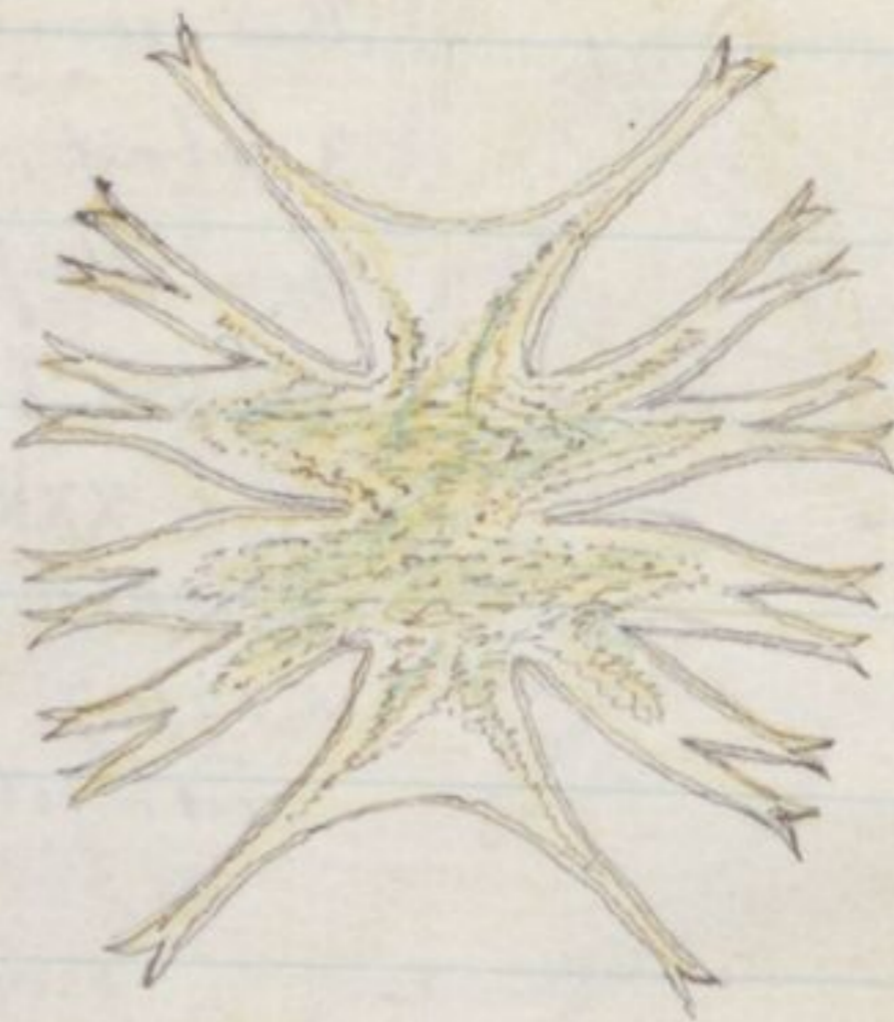
M. laticeps.

.00574"l. .00294"w.



18.

Compare M. dichotoma. Woll. Plate LII.



.005"l. .0043"w.
.00224" polar.

Compare
on p. 17.

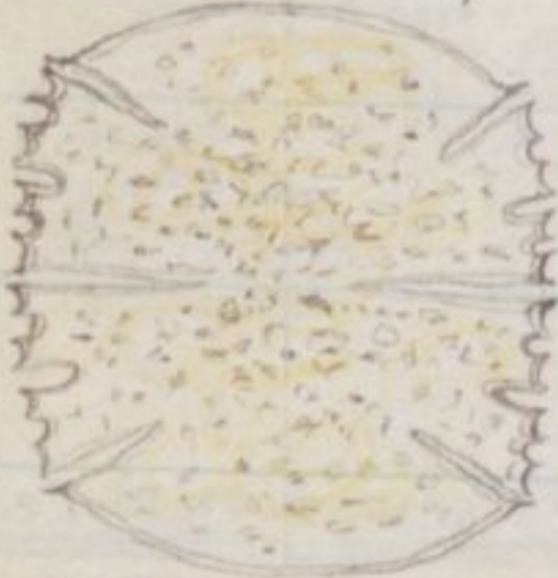
.0025"l. .0018"w.

Cosm. ovale.



.0042" spread.
.00266"l.

.003"l. .0026" .002" pol.



Novelty.

Ceratium.

.006"l. .0039"w.
x 200.

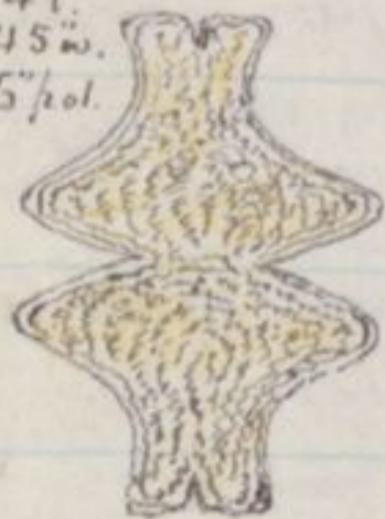


.0045"l.
.00225" w.
.00144" pol.

M. truncata.



.0024"l.
.00145" w.
.0006" pol.



Cyathophyllum
laeve.

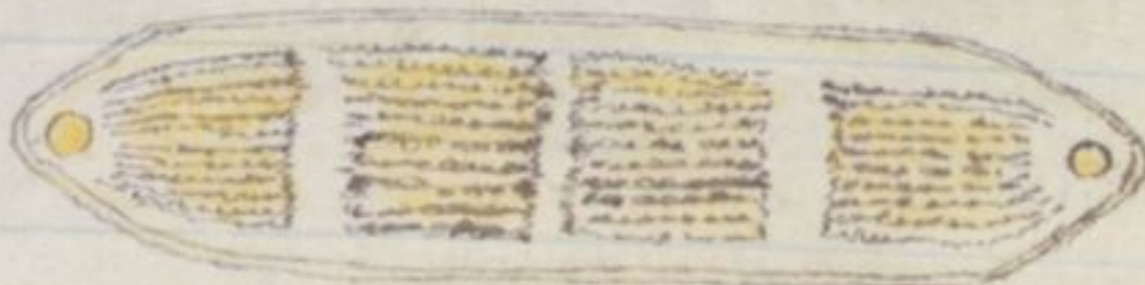
Eu. oblongum.

Euastrum purum.

.0021"l.
.00126" w.



.0058"l. .00128" w.

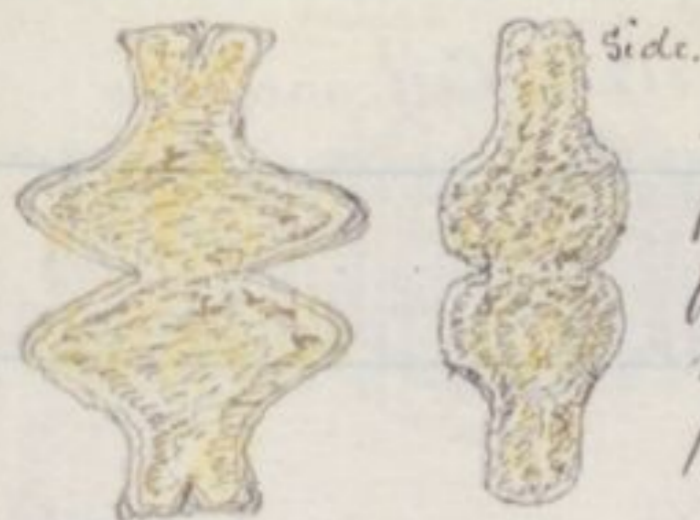


Cosm. tumidum.

Pinnium interruptum.

.0025" l. .00145" w. .0006" polar.

19.



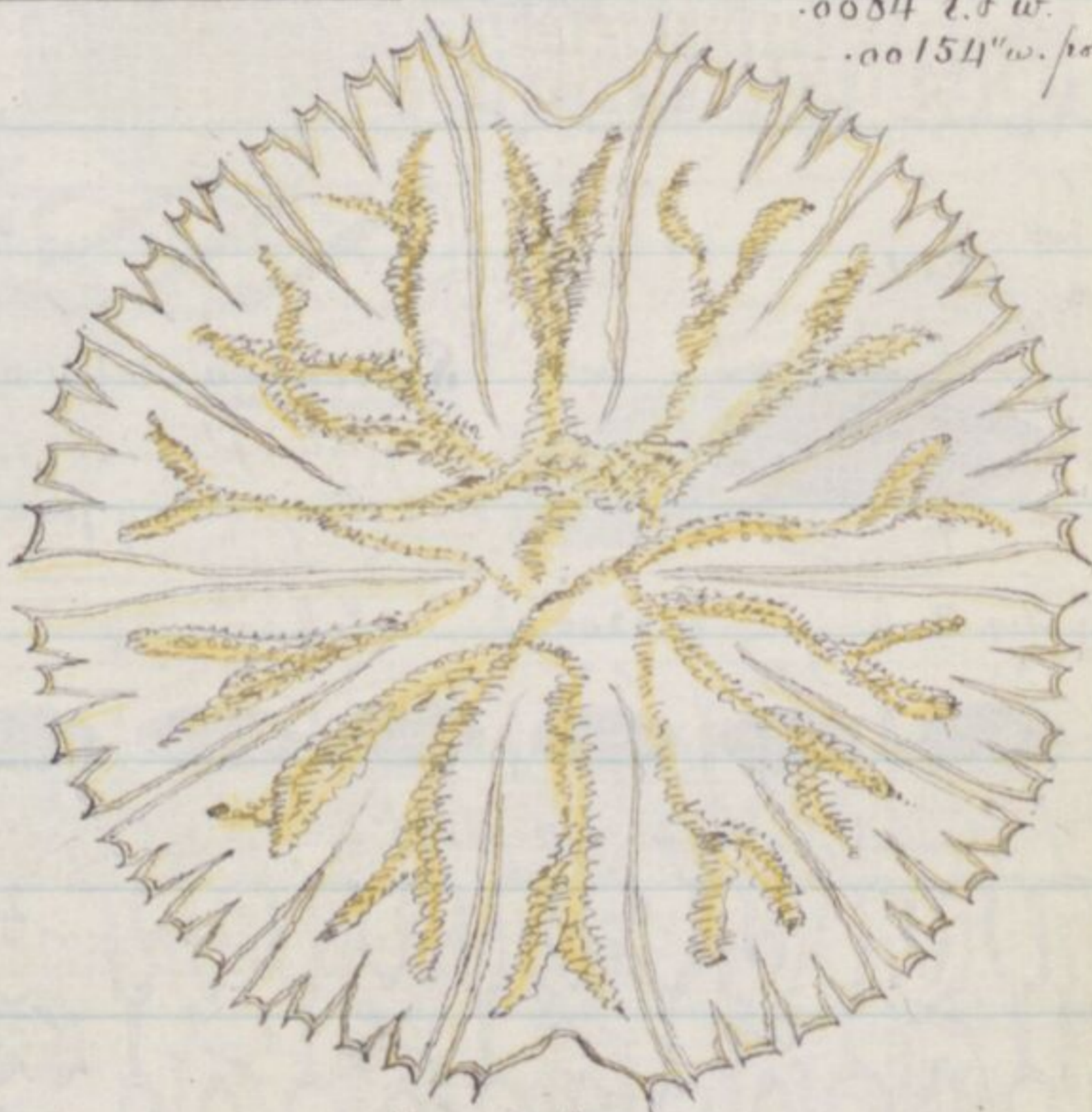
Here is the Euastrium purum again, & in plenty, in this southernmost water, differing from the New Jersey plant in being slightly smaller, more slender in the basal swell, & in a square polar lobe. Compare Vol. VII. p. 103, et passim.

.0084" l. & w.
.00154" w. polar.

.00287" l. .00224" w



St^m furcatum
variety.



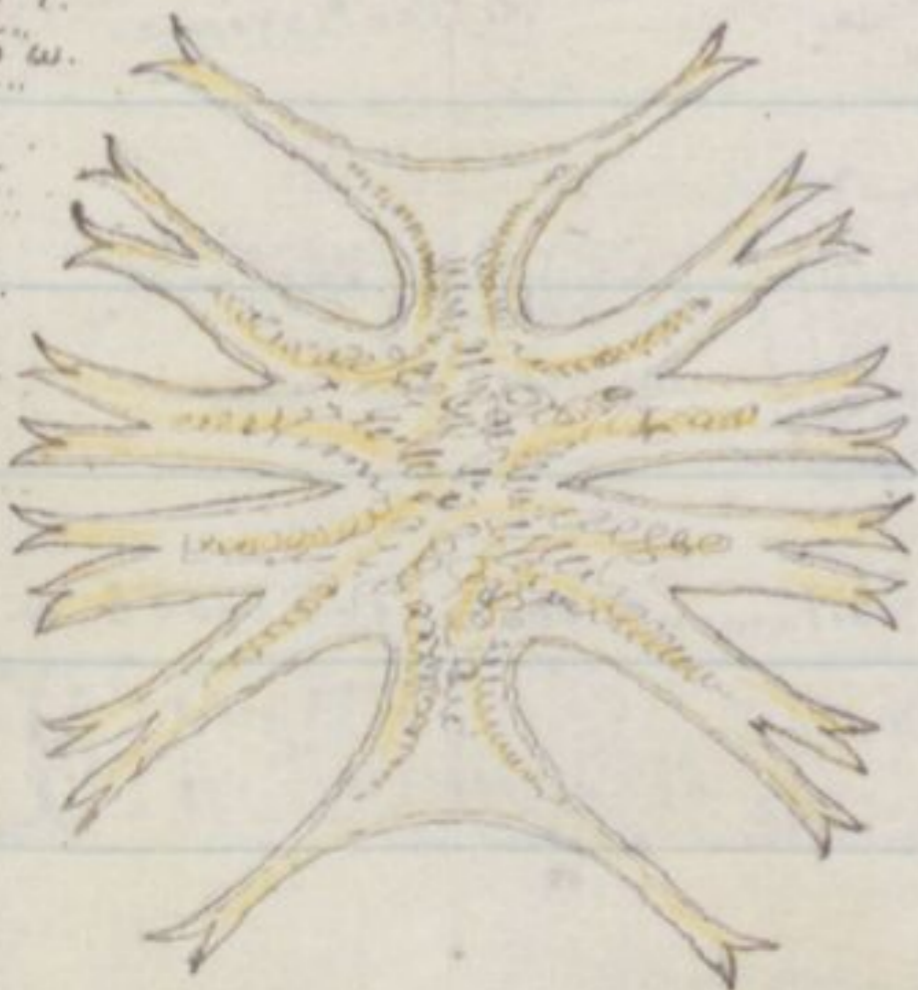
M. rotata.

.0035" l.
.00195" w.
.0007" pol.



Eu^m Didelta.

.0047" l.
.0046" w.
.0027" pol.



All the many furcata forms in S. Tokopekaliga are, like this, distinctly 3-lobed. I find none of them like the M. furcata simplex of the Winter Park Col. Ch. pool. See Vol. VII. p. 115, but 3-lobed as they are, and the lateral lobes not so deeply incised as in the M. furcata of the books.

See "Wolfe's Desmids", p. 159.

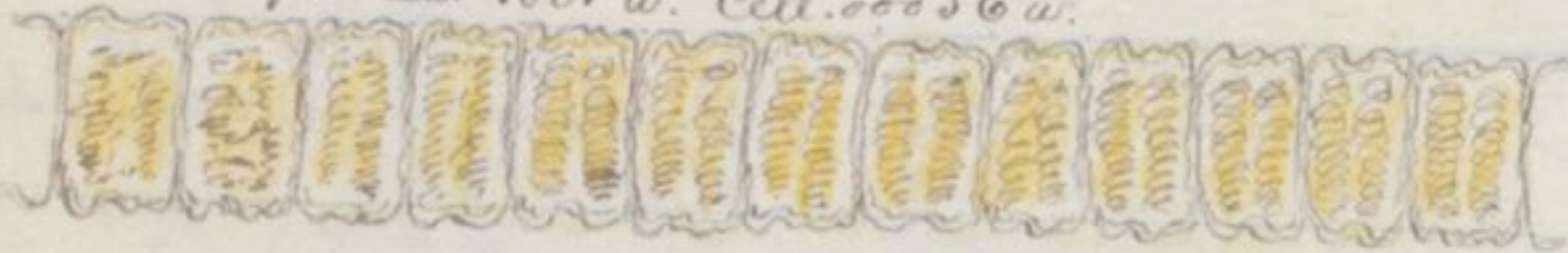
Fila. .0012" w. Cell. .00056" w.

.00056" thick.



Desmidium diagonum.

Filament .001" w. Cell. .00056" w.

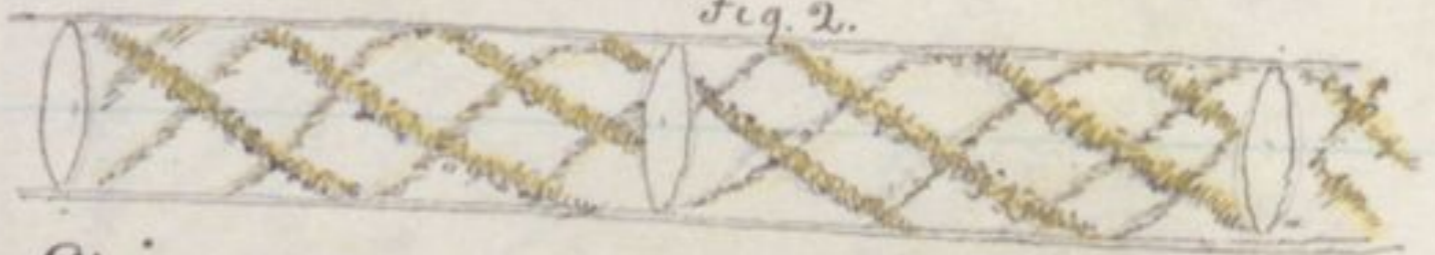
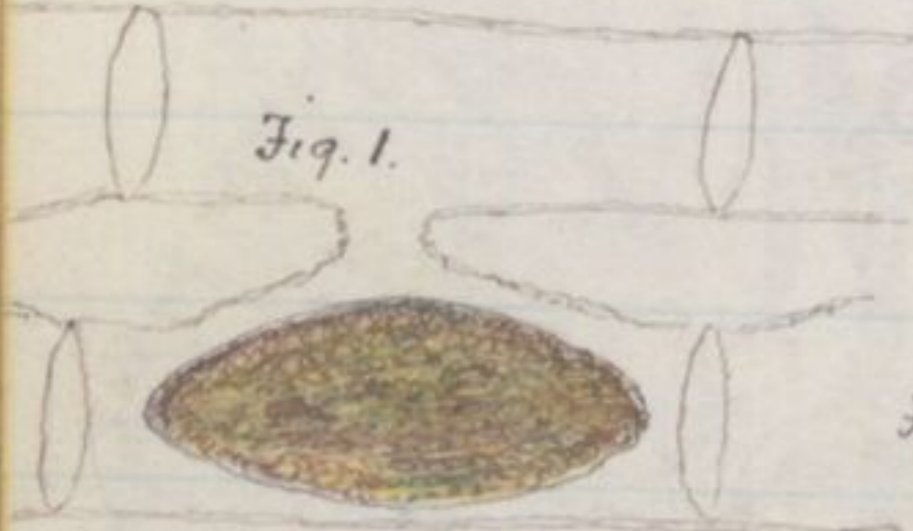


Hyalotheca dissiliens.



Fig. 1.

Fig. 2.



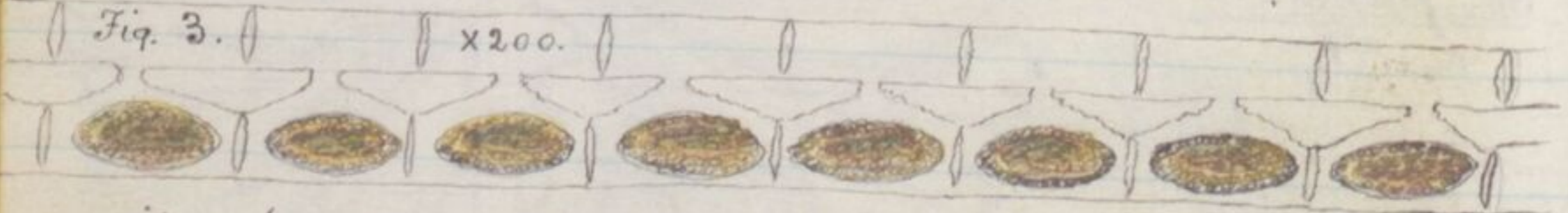
Spirogyra. Fig. 1. Spore. .0024" l. .0013" w.

Fig. 2. Vegetative filament .001" w. cell. .0028" l.

Fig. 3. Conjugating form, reduced, at x200.

Fig. 3.

x200.



Filament .00215" w. Cell. .00133" w.



Turned edgewise
.0007" thick



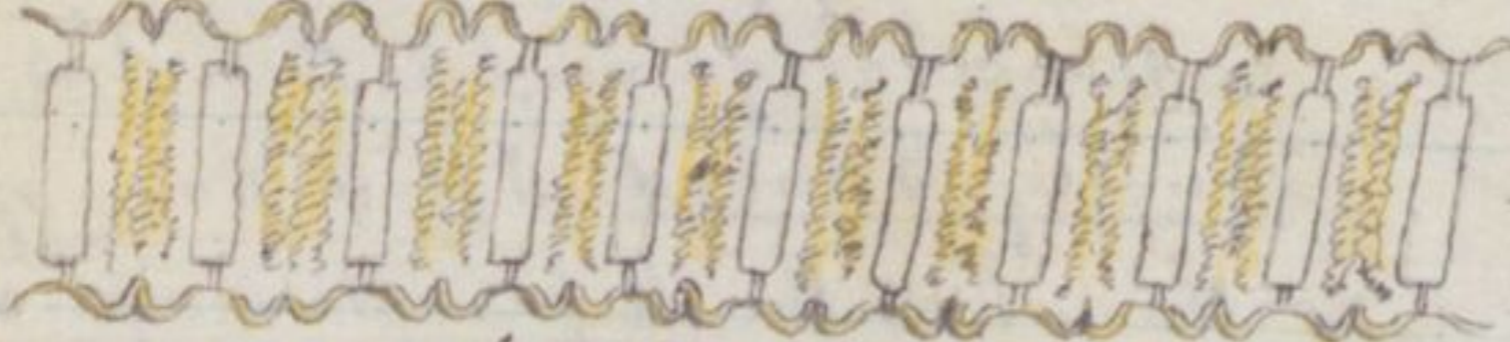
Sphaeroszoma pulchrum.

Fila. .00058" w. Cell. .0008" l.



Bambusina delicatissima.

Filament .0014" w. Cell. .00056" w.



On edge, flatwise.

Hyalotheca hians.

Filament .00085" w. Cell. .00075" w.



Filament .001" w. Cell. .00055" w.



Aptogonum Baileyi.

(Desmidium Baileyi)



a. Cell dividing.

Outer line .00196" diam. 21.
inner " .00154" "

.0018" diam.

Fig. 1.



Oedogonium undulatum. Woll.
The manner of filament is new to me.

Fig. 2.

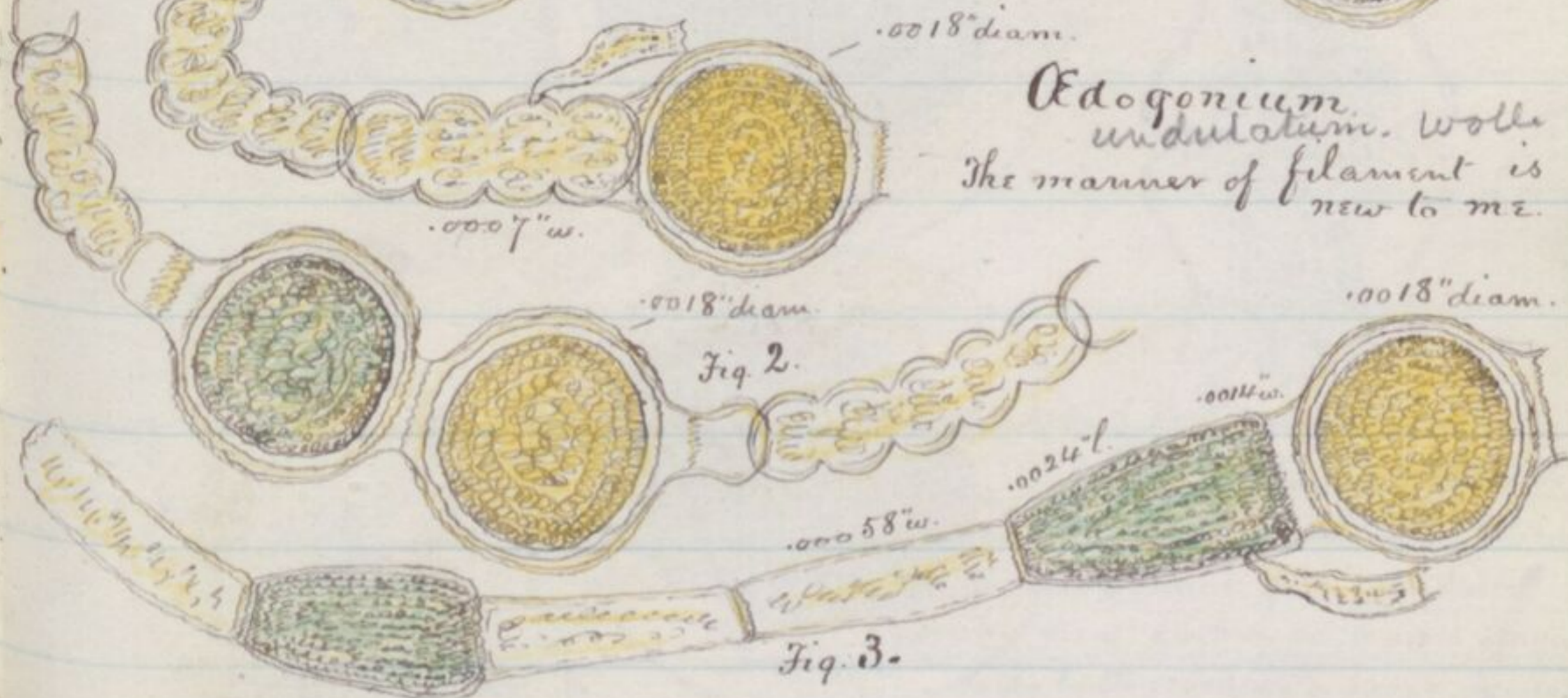
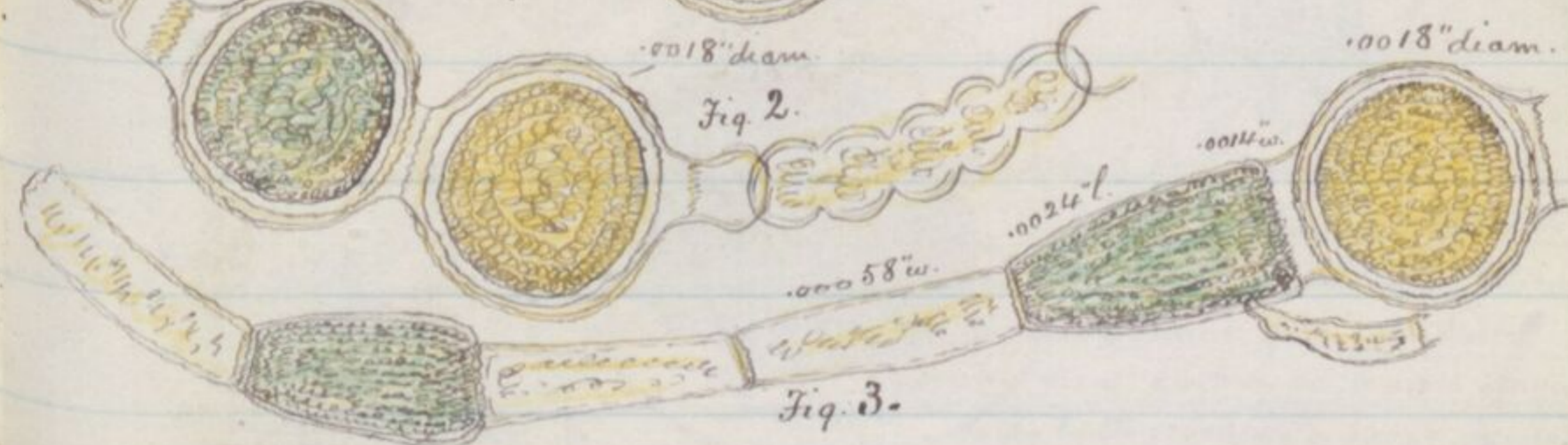


Fig. 3.



Filament .0008" w. Cell .00112" l. .0003" narrowest

Sphaerosoma moniliforme. Lund.

Body
.0042" l.
.0028" w.

x150.



Eu^m Kissimmeeense.

Cyathophyllum
Cornutum.



.0013" l.
.00115" w.
.00042" pol.

Eu^m spinosum.



.002" l.
.0013" w.
.00084" pol.

Eu^m spinosum.



.0018" l. .00126" w. .0007" pol.

.00252" l. .00322" w.



Eu^m purum.



.0023" l.
.0014" w.



.0006" l. + w.

Pediastrum Tetras.

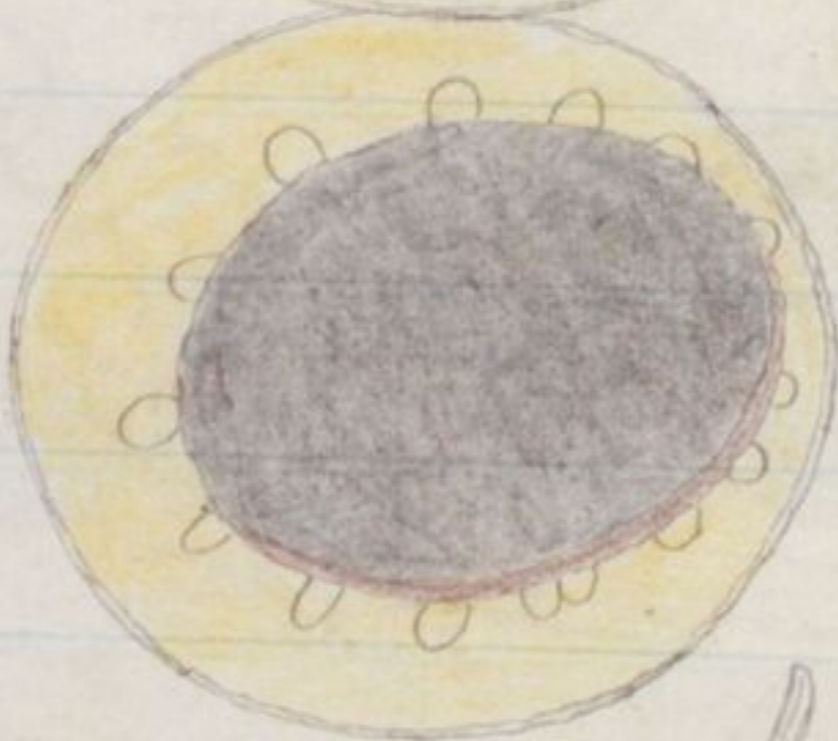
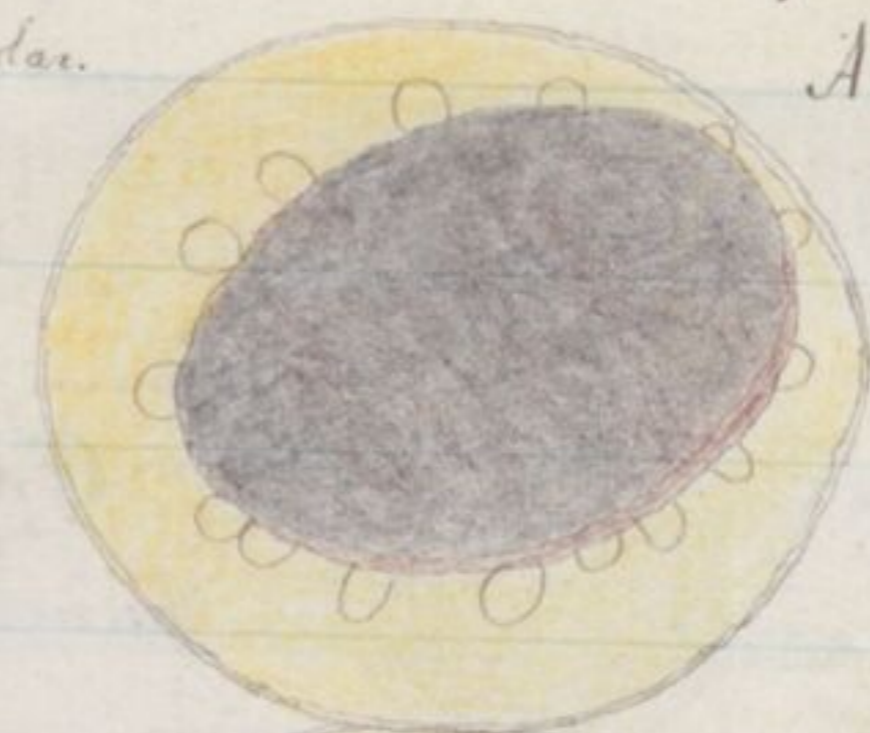
Peculiar in the emarginate end of the lobes, as at a. a.

St^m Dickizi. In L. Johopikaliga, & in Florida waters generally. This is much larger than Woll's measure, (.00141" to .00173" w.) See also on p. 15. supra.

.00462"l. .0024"w. .0015"pol.



Euastrium Crassum.
var. scrobiculatum.



.00756"l. .0042"w.

A Whatever.

Odd and Curious.

.001"l. .00135"w.

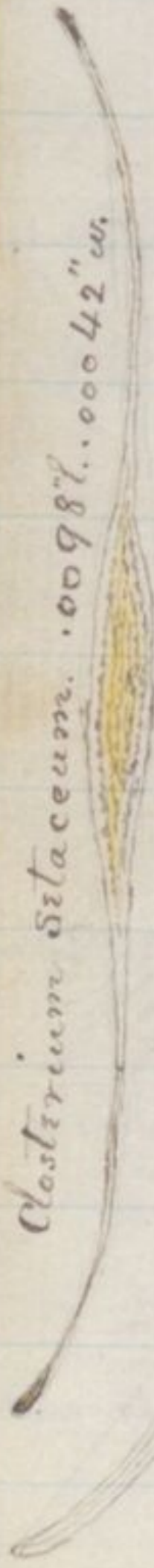


Stm. pulchrum?
but end-view 7-rayed.

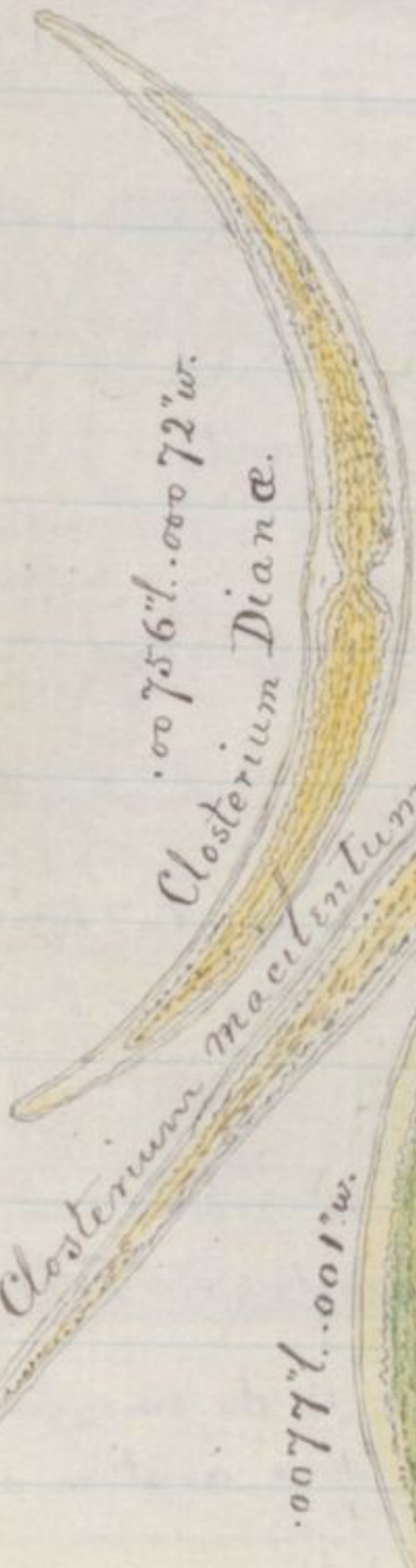
.0008"l. .001"w.



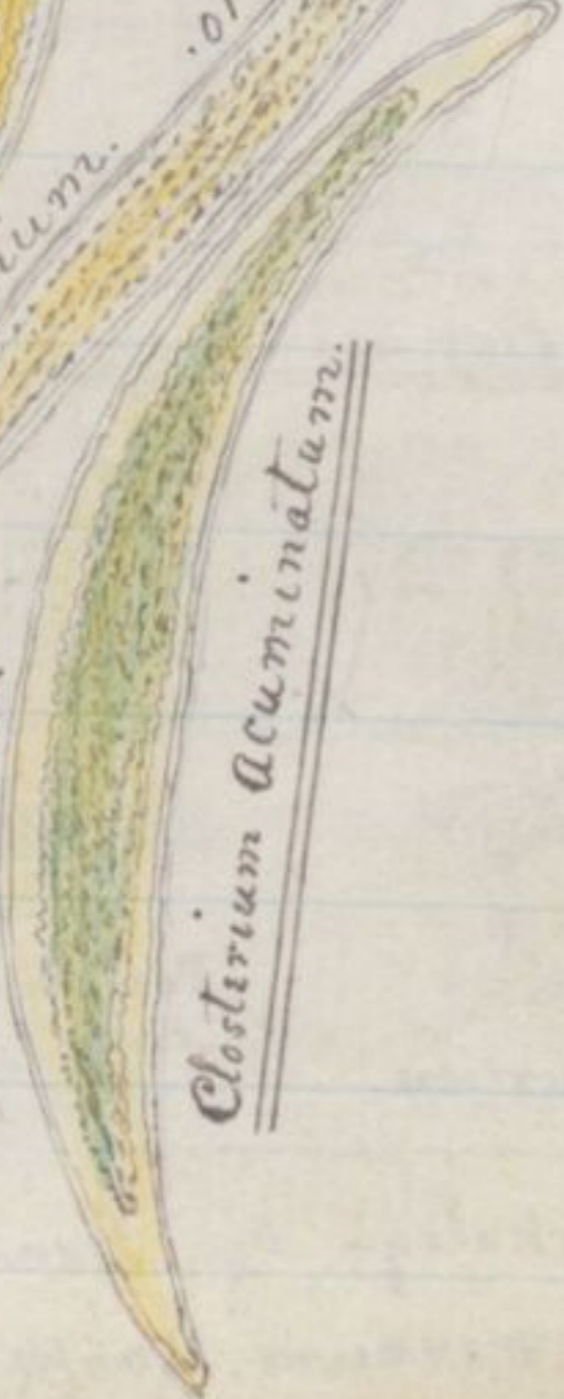
Staurastrum tricornis



Closterium Sitaceum. .0098"l. .00042"w.



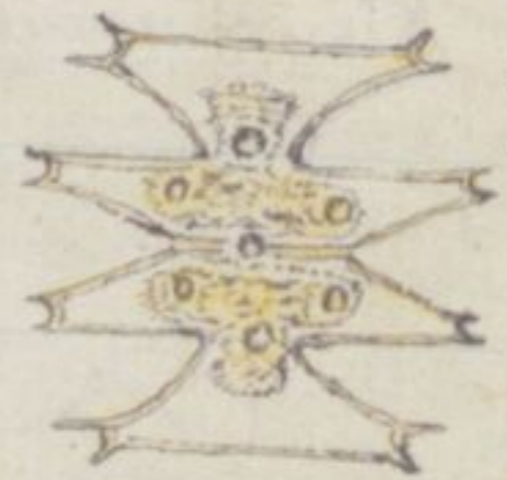
.00756"l. .00072"w.
Closterium Dianæ.



.0187"l. .00052"w.
Closterium macilentum.



.0014"l. .0038"w. arms.
Staurastrum grillatorium.



.0021"l. .00225"w. .00154"pol.
M. pinnatifida.

.00255" l. .00269" w.



Cosm. Conspersum.

End view.

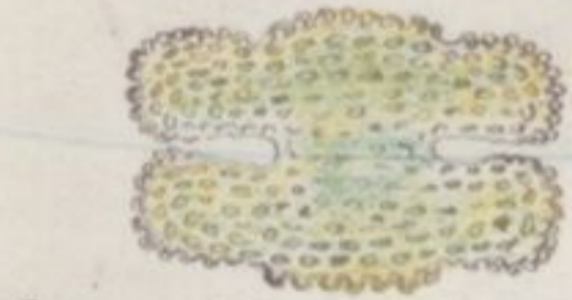


.00182" l. arms.
.00112" wdsharms



Front & side of unknown form.

In L. Oserola. Vial 19.



C. Commissurale.

Closterium Acerosum.

.0015" diam.



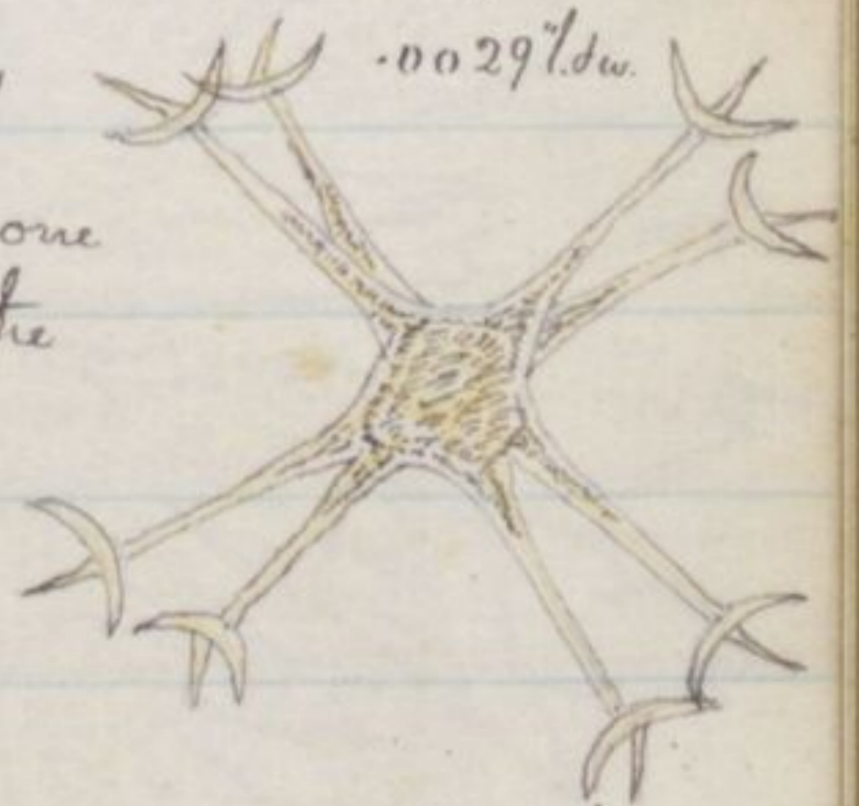
A variety, I think, of St. incisum,
end view, each of the 5 arms singu-
larly buttressed by a short armlet
on each side at the base.

In L. Oserola. Vial 19.

N.B. Another form exactly like the one above.

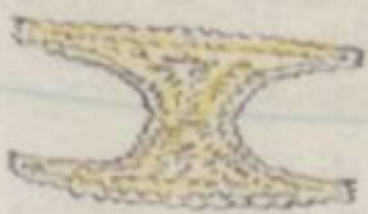
The last 8 pages are S. Ichopetraliga forms, with exception
of the two just above from S. Oserola. Now follow certain
miscellaneous finds, each credited to its locality.

This is the 4th entire form I have found of
the Staurastrum Oserolense, and the only one
I have succeeded in turning so as to get the
End view of the complete plant. Front &
end views of half-cells are plenty. See pp. 7.8.9.



.0029" l. diam.

.00075" l. .0014" w.



Staurastrum Crenulatum.

L. Oserola. Vial 19.



.00097" l.
.00065" w.

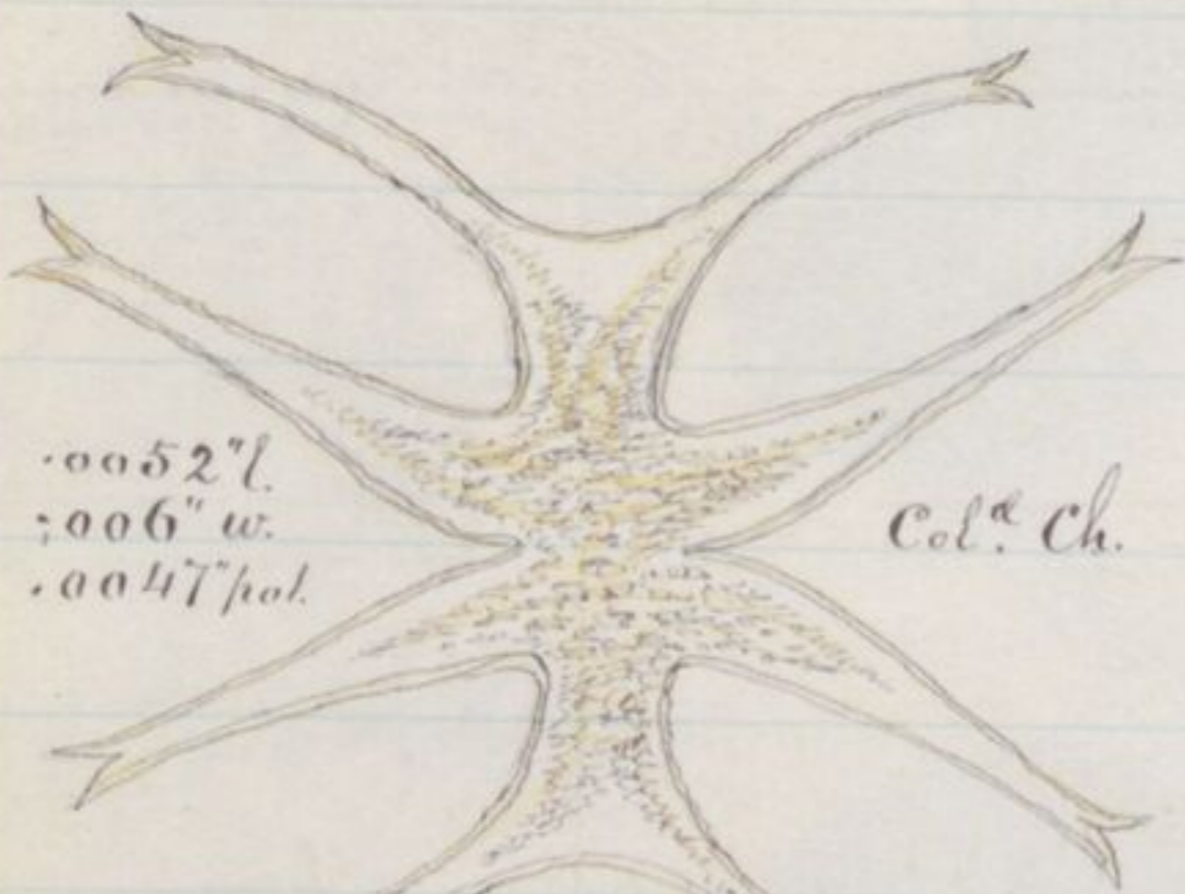
Euastrium Simplex.

small variety.

On shore near Guild's landing, this Collection

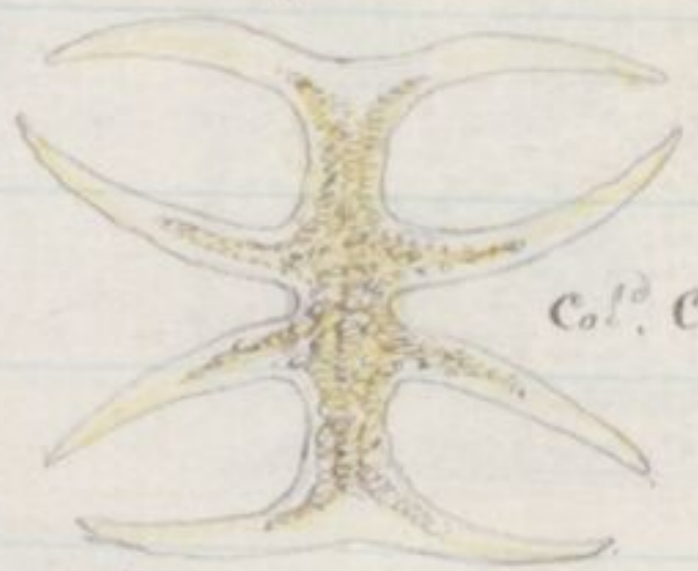
Miscellaneous.

.0026 l. .0034" .0029"
.0039" w. .0035" polaris.



.0052 l.
.006" w.
.0047 pol.

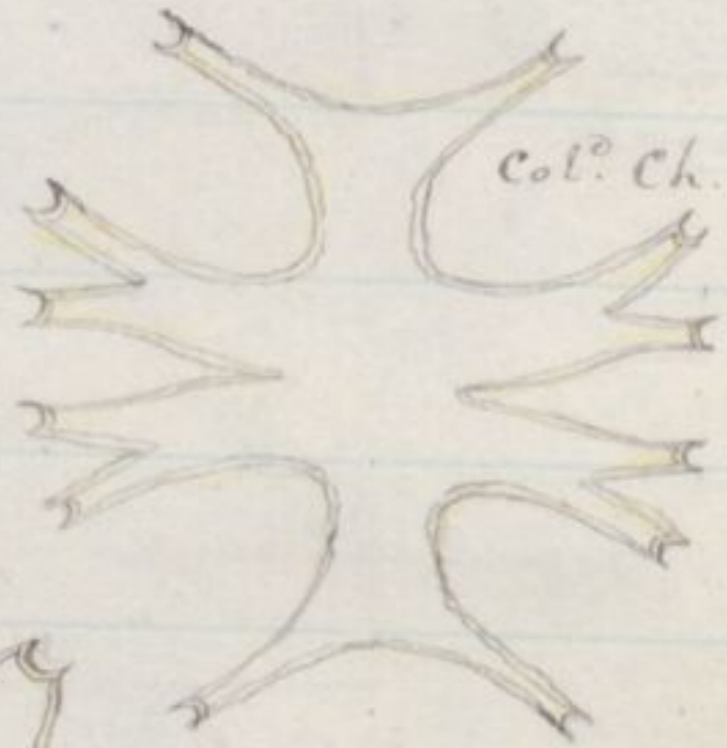
Col. Ch.



Col. Ch.

M. arcuata.

.0039 l. .0036" w. .0021" pol.



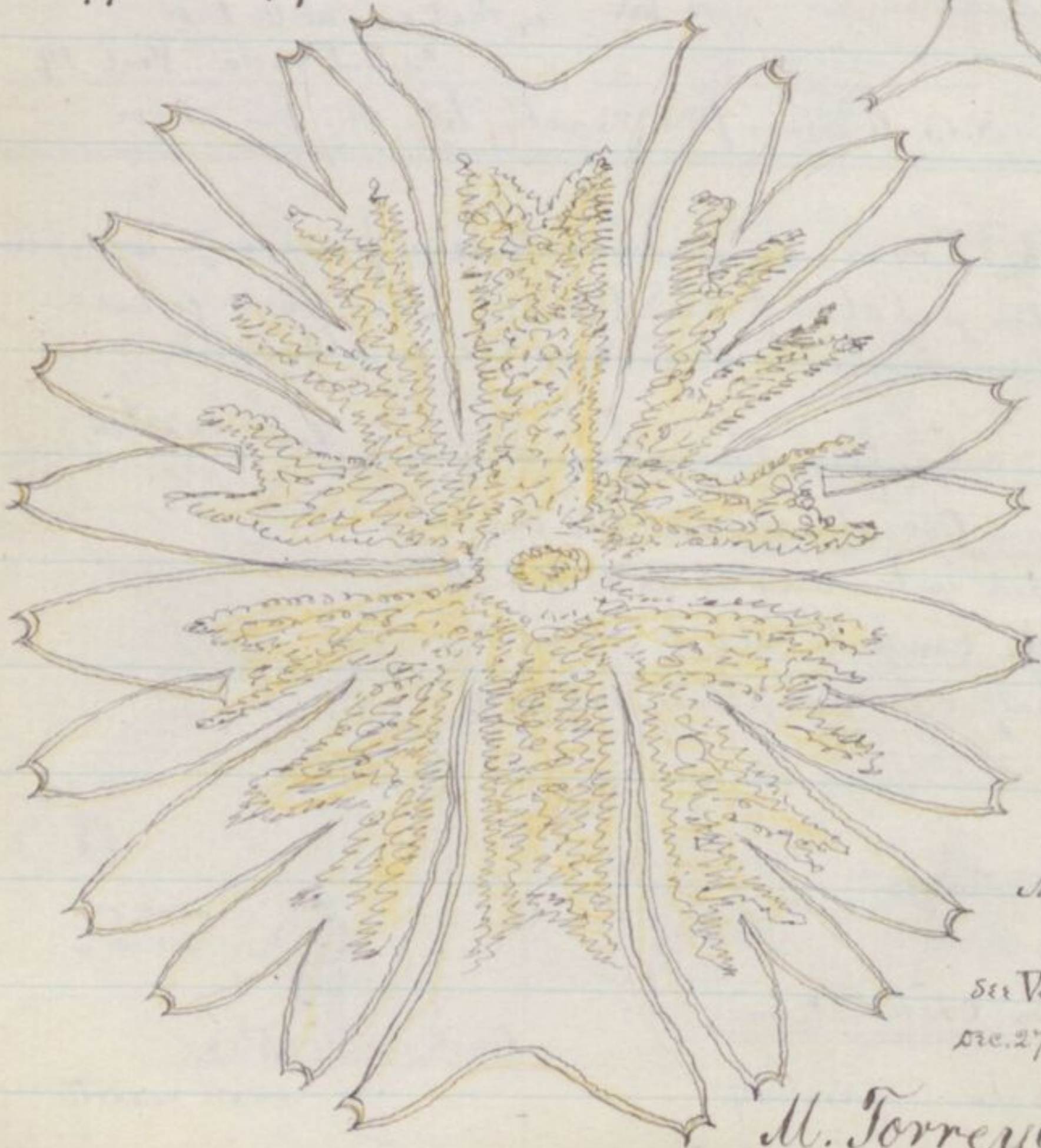
Col. Ch.

Euas
va

M. furcata simplex.

.00994 l. .00975" w. .0032" polar.

Cladostrium ditaceum. .0098 l. .00042" w.



This is a
second
M. Torreyi on
Col. Ch.

See Vol. VII. p. 120.
Dec. 27 '85 found a 3^d

M. Torreyi.

Dec. 16 '85

25.

.0052" l. .0045" w. .00154" polar.

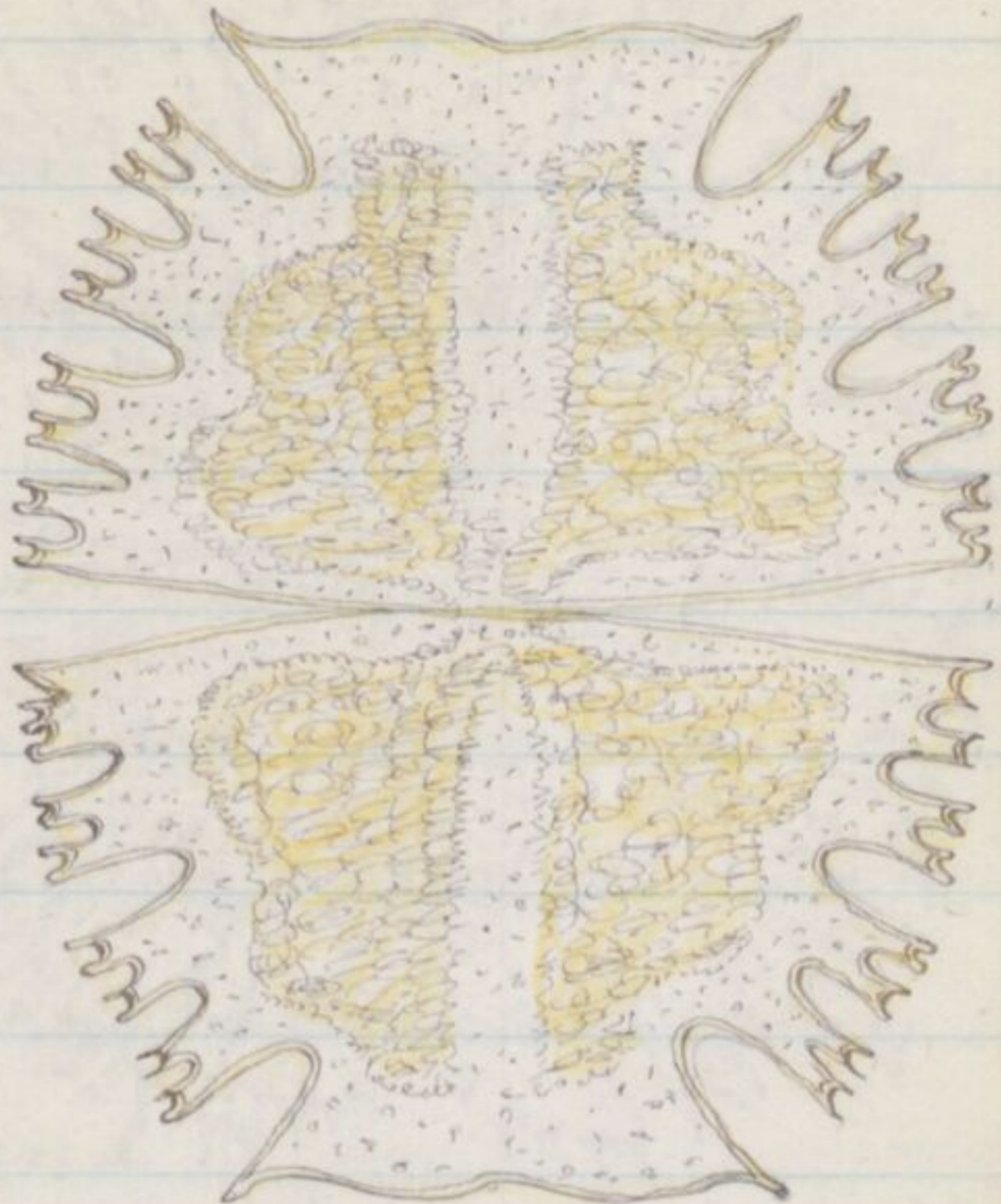
Dec. '85.



M. speciosa.

Pool near Horicon Lake, N. J.

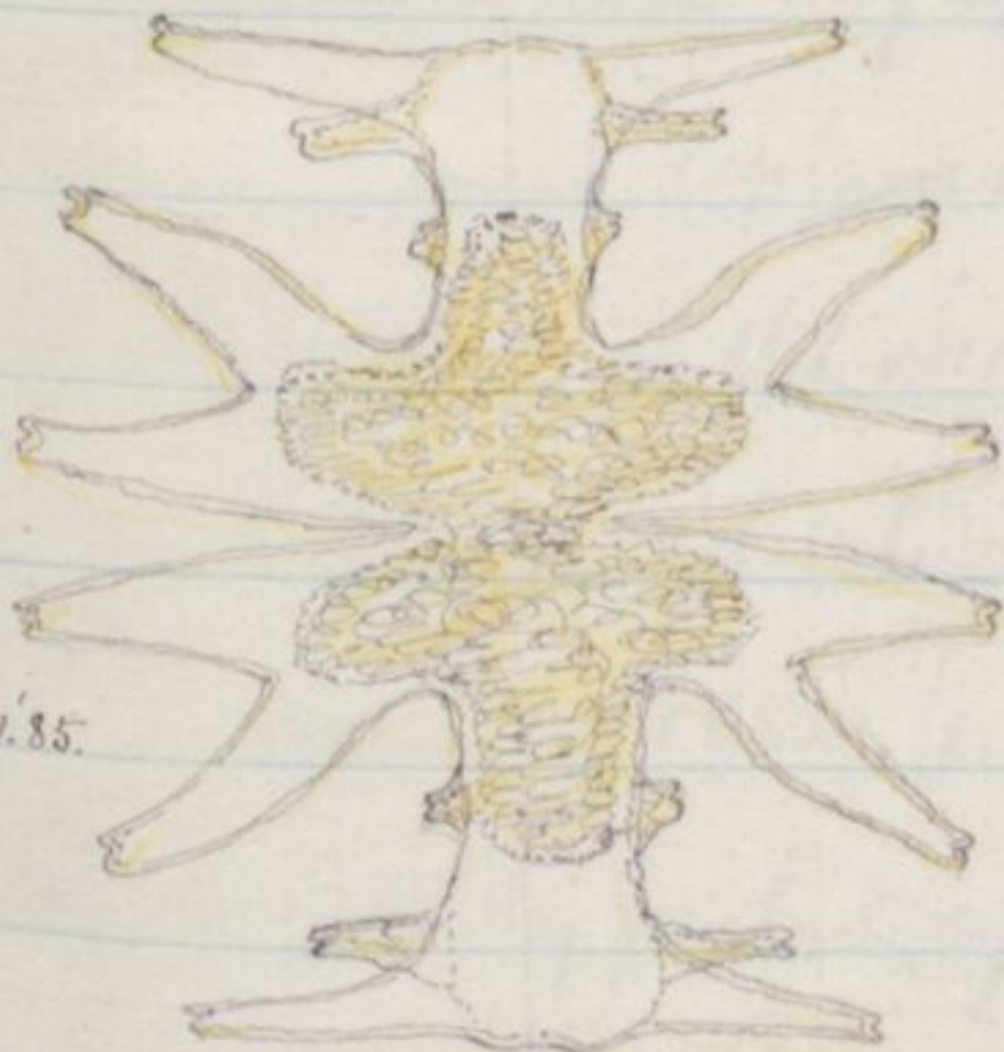
.008" l. .0069" w. .0036" polar.



M. triangularis.

Pool near Horicon Lake, N. J.

.0053" l. .0052" w. .0035" polar



M. Nordstedtiana.

From Hawry's Lake, Penn.

Dec. 19 '85.

.00126" l. + w.

.00168" w.

col. Ch.



col. Ch.



.0042" l. .0017" w. .00077" pol.

Hawry's Lake.

Dec. 23 '85

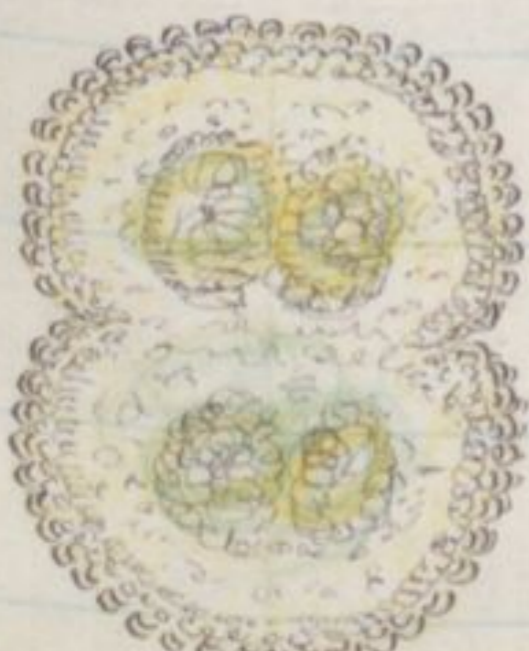


Euastrum curvatum.

.003" l. .00225" w.

Hawry's Lake.

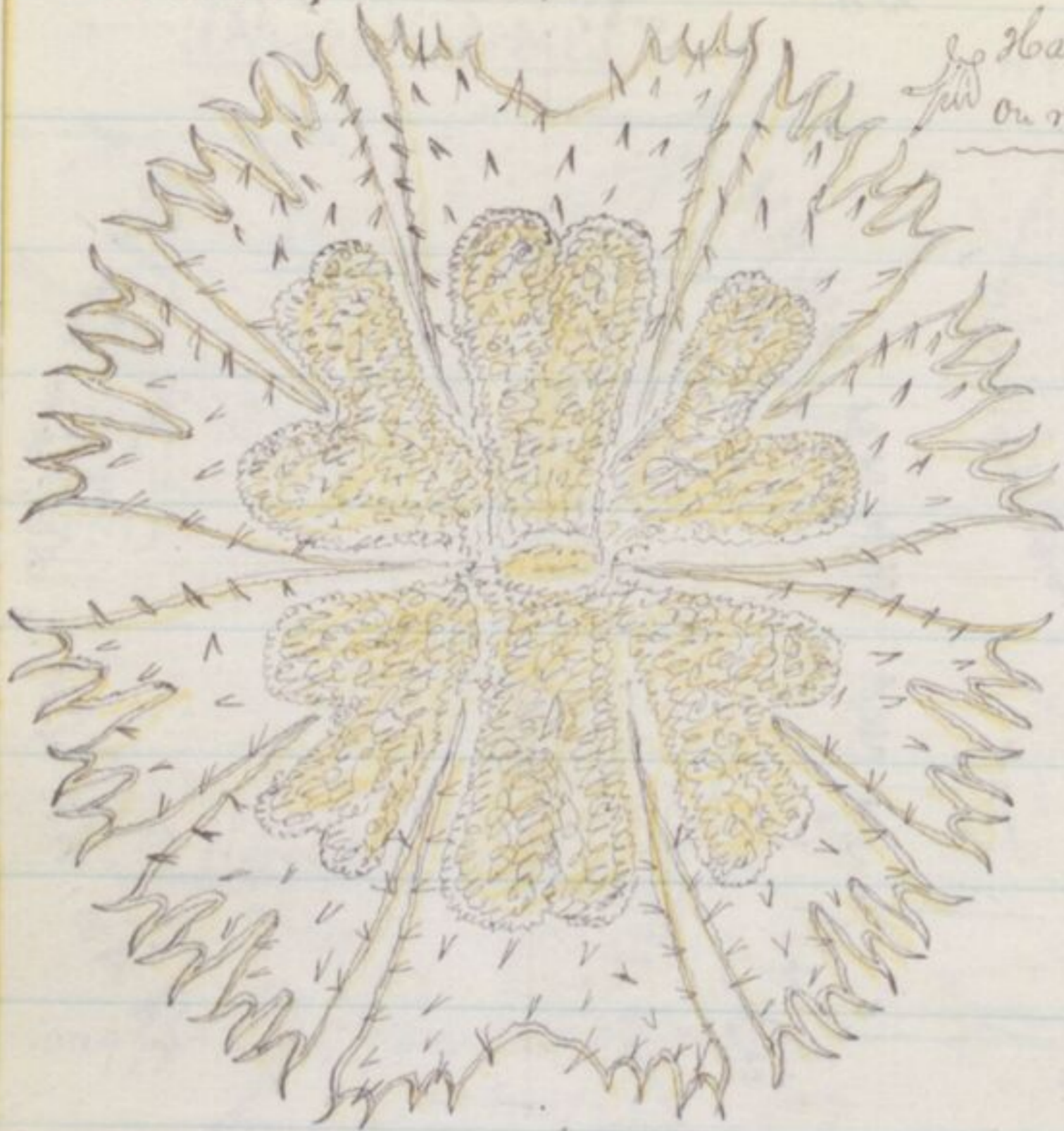
Dec. 28 '85.



Coscinodiscus tetraophthalmum.

.00812"l..0076"w..003"holax. 26.

Harveys Lake. Penn.
on review Dec. 28/1885.



Microsterias apiculata.

Eua
va

Cladocium ditaceum. .00987l..00042"w.

N.B. I did not visit Florida in the winter of 1885-6, & had little opportunity to make any collections.

In the winter & early spring of 1886-7 I was again in Florida & made some limited search & collections, chiefly in waters which I had examined before. In these some very curious changes appeared

1. The clay-pit on the shore of S. Jessie, which was so remarkably productive when Cornelius & I first found it March 10th 1884, (see Notes Vol. VII. pp. 444 et seq.) and which utterly failed of desmids when I visited it with Messrs. Wolle & Rau, Mar. 27, 1885; now, on visiting it with Sheldon Mar. 2^d 1887, was found to have quite regained its fruitfulness, yielding nearly all the forms it yielded at first.

2. Quite as remarkably the marshy water by the Colored Ch^{ch}. at Winter Park has changed. Now

rich that was in new & rare forms may be seen in Notes Vol. VII. pp. 115 & ow. Here I then found the new Microsterias furcata-simples, & the secret of the Conjugation of the Bambusina, & a great variety of rare forms; and I came to it this year (1886-7.) Expecting great things, & met almost entire disappointment. Abundance of the Zygnema purpurum was still there, with now & then fine Siroisiphon Ocellatus; but nothing rare with the single Exception of Staurastrum longispinum; that very plenty & fine. The water was a foot or more higher than two years ago & a plentiful growth of Sphagnum was green along the shore, but nearly fruitless of Desmids.

3. Dec. 15 '86 Made an Excursion to Oakland on Lake Apopka by the just opened Orange Belt R.R. As we crossed the small Trout Lake on the way and stopped a few moments to take up water, I fished up some weeds & Algae with my cane, & found in them the Microsterias foliacea - the first, I think, ever

Paper VI.

cells 56 wdt
 .00038" w. least
 .00074" l

14
 12
 68
 8
 2 1/2
 14
 28



in R, ditch

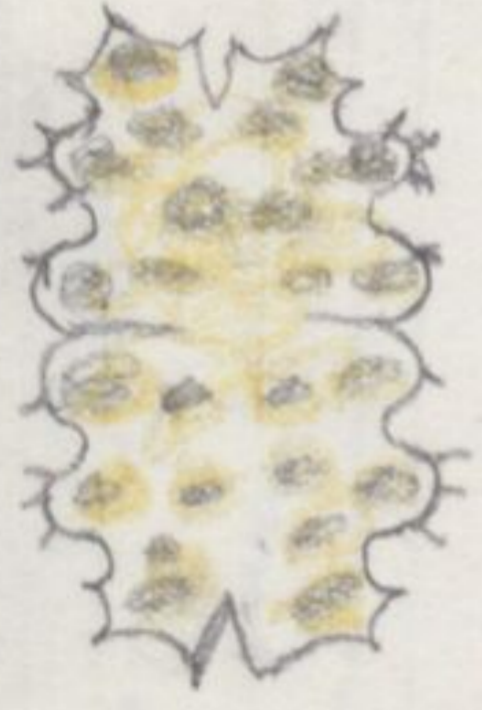
.00098" arms
 .00042" across center



Rollins Ditch

.00168" w
 .00084" polar
 .00112" polar
 .00252" l

Rollins Ditch



8
 12
 12 1/2
 14
 48
 127

.00175" l
 .00182" w
 .00112" w polar
 Rollins Ditch



.00084" l + w arms
 .00042" diam of center



Rollins Ditch

.00091" w
 .00042" w hol
 .00108" l

Rs. Ditch



5 arms in a circle of
 .00154" diam



4 another

Rs Ditch

longer

32	29	21
14	14	14
128	116	84
827	29	21
<hr/>		
55	406	

455" L
 406" W
 294" pol M. Ketchumii
 Clay pit



13	24
14	14
52	96
13	247
<hr/>	
	343

100343" L
 100188" W
 70" pol
 Clay pit
 Didelta?



15 wells
 0.0144" End
 0.0084" End
 0.0012" width on 1/2

as usual
 as usual
 Vermineum
 Clay pit

See
 the
 Co
 ety
 6-7
 app
 still
 but
 stru
 ter
 lent
 1000
 ow
 t R
 y au
 isha
 in th
 ever

Paper II.

No. 13.

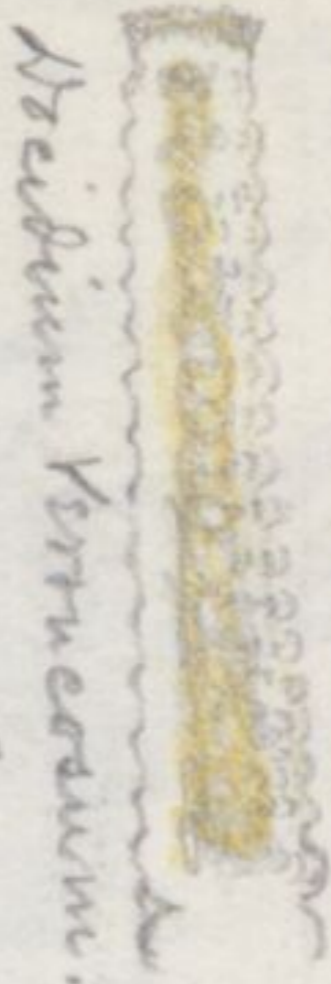
.0045" l.
.0044" w
.224" pol

S. Osceola.
H. Americana. Jan 3. 87.



21
14
84 13x
21 14
27 52 9
108
27
15
14
60

No. 14
Front Lake
Jan 3. 87.



Mesidium Verticarium.

18 small on 1/2
+ ends -

.014" l.
.00126" w. at center
.001" at end

11 1/2
14
51
11

.00162" l
.00084" w



No. 15

18 or 20
errone on 1/2

Cos. Amanum
Var. tumidum.
Front Lake

.0021" w dist.
.00126" polar w.
.00378" l. No. 16



Deland Junction
Dec. 11. 86
Cm. fannatum

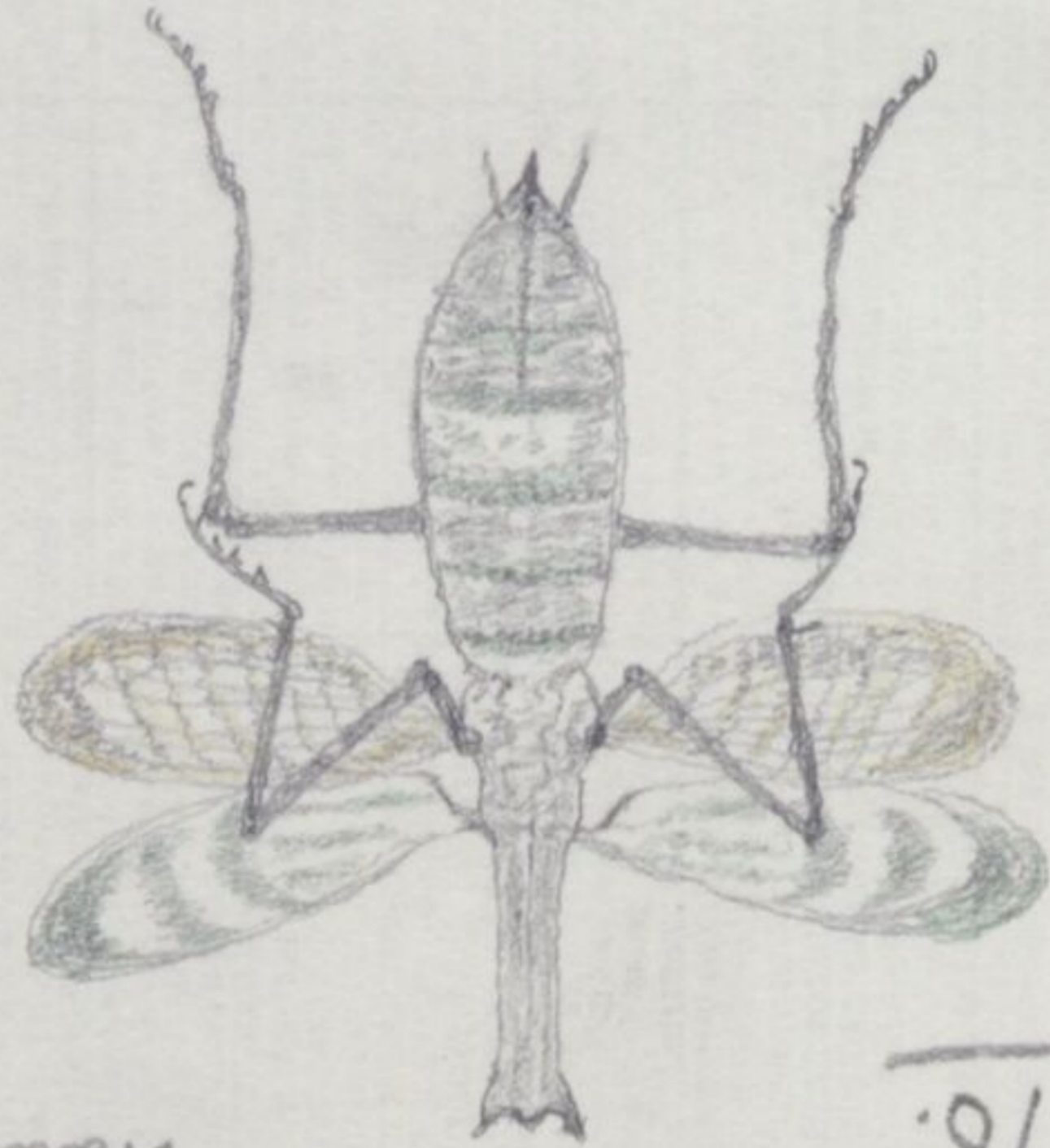
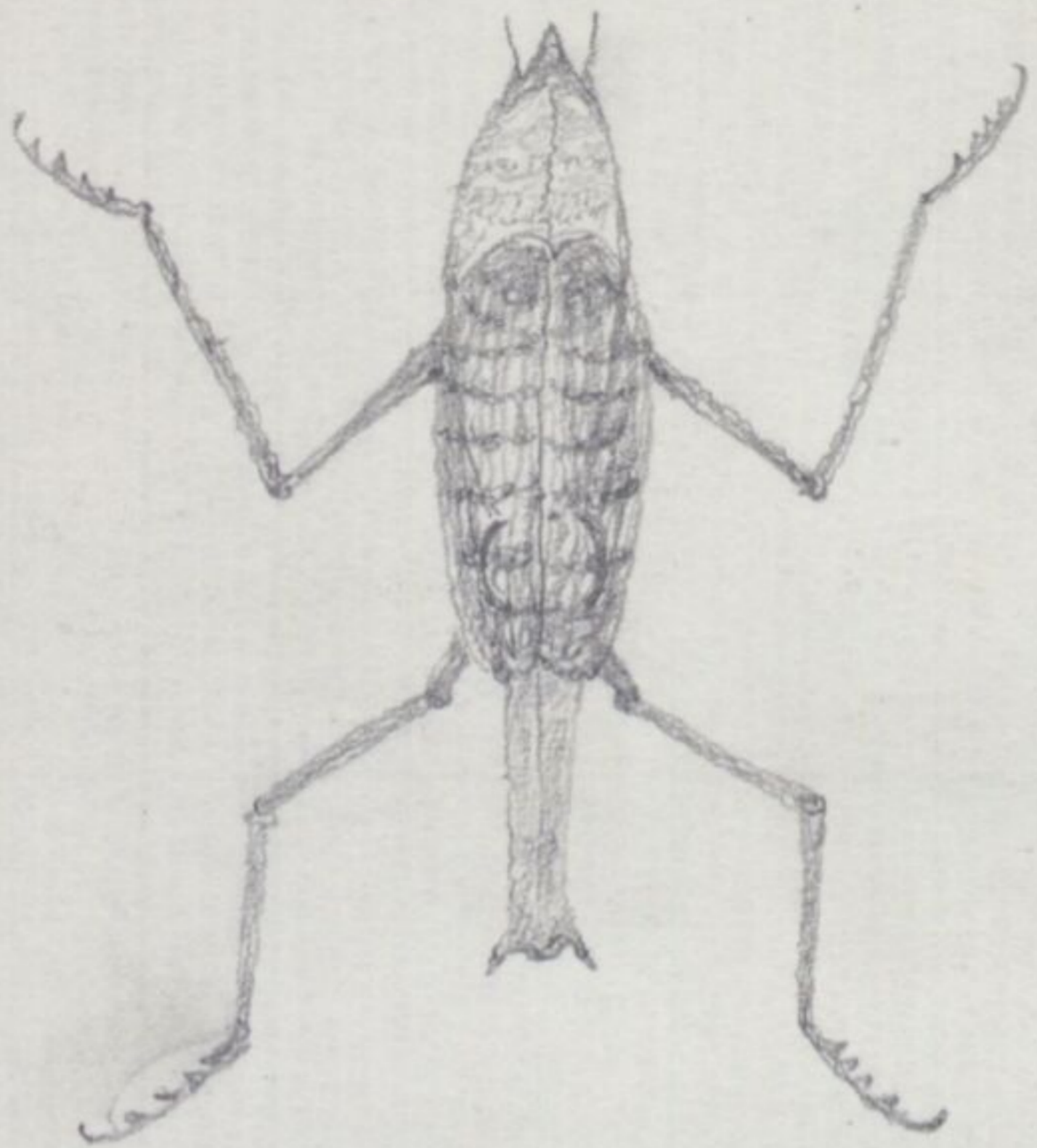
.00294" l cum Sps
.00189" l body
.002" w. cum Sps
.0018" w body.

No. 17



Deland Junction

longispum



No. 18.

No head shown, but the long projection
 hollow, as if a head extracted in it.
 Color fuscous with dark mottled
 Drawn to measure -
 Natural size.
 Jan. 11. 87.

No. 7. .003" l
 .0028" w
 .002" pol.

No. 8. .0045" l
 .00518" west
 .0035" polar $\frac{14}{14}$
 106

$\frac{14}{12}$
 28

M. truncata. Many.



No. 9. .00168" w + l arms.
 .00062" body



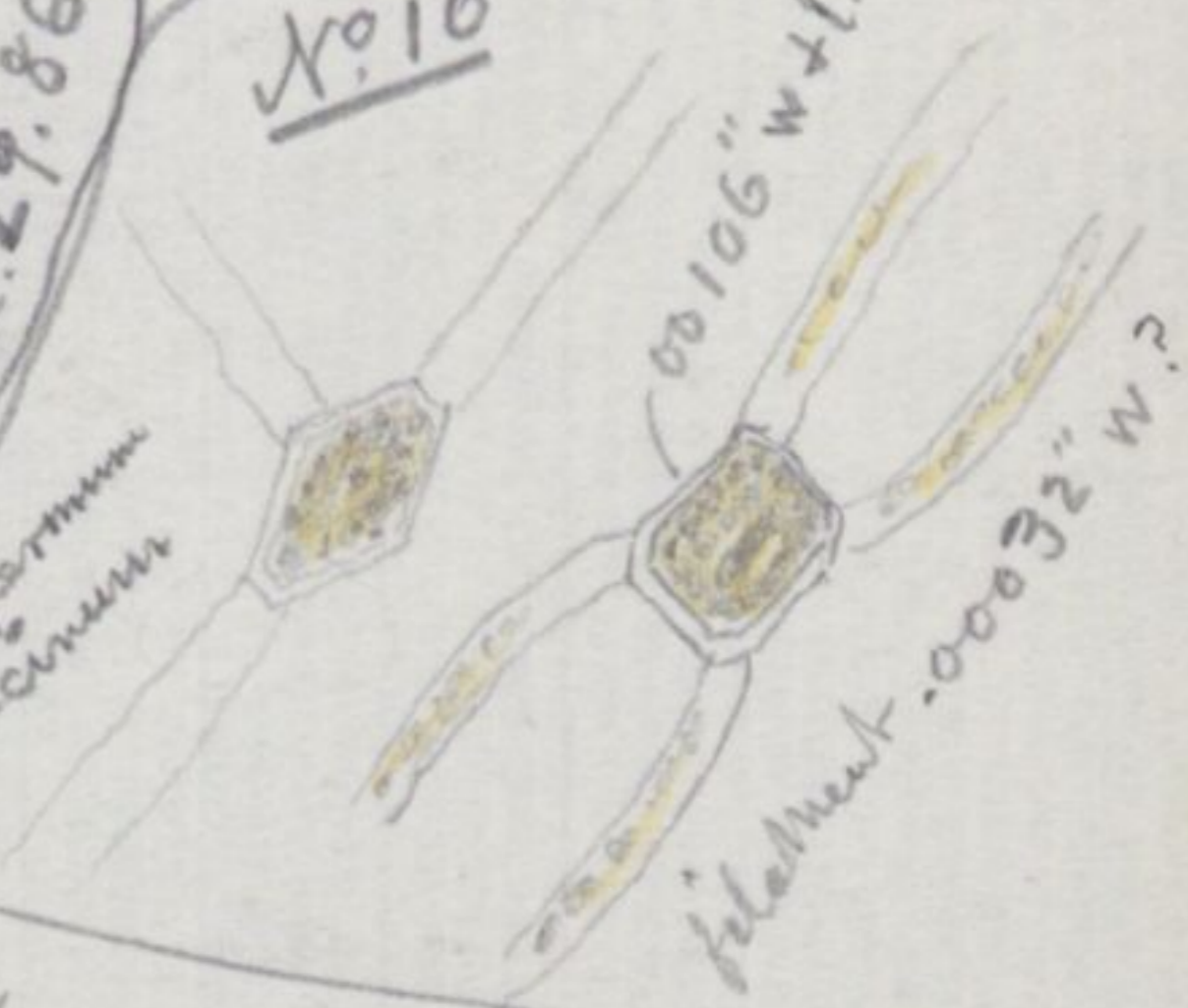
Look another
 See Vol. VII p 14

St. Margaritaceum?

These 8 on 2 slide
 Dec. 29. 86

Staurispermum
 Capucinum

No. 10



$\frac{19}{14}$ $\frac{17}{14}$.00238" w arms
 $\frac{76}{19}$ $\frac{68}{19}$.00266" l "

No. 11.

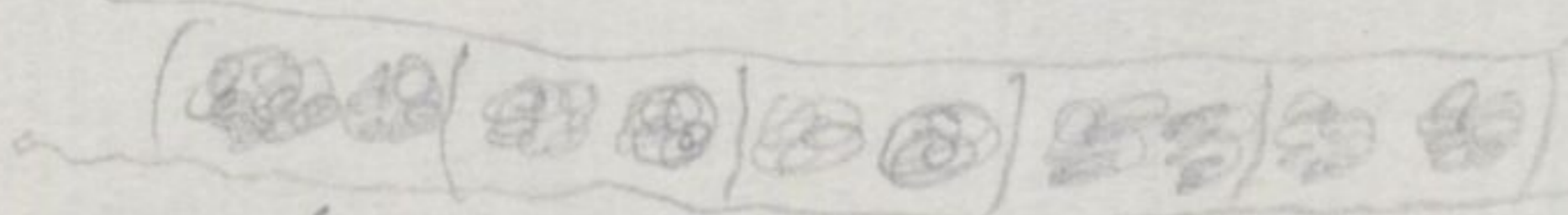


$\frac{14}{14}$
 56

No. 12.

Cells .00196 to .0023 or 4 l
 .00126 w.

The Zygnema purpurum of
 Col. Ch. only measuring more
 See p. 117 Vol. VII. — not many.



fucous twin packs of xanthochrome

$\frac{16}{14}$
 $\frac{164}{22}$
 $\frac{13}{52}$

$\frac{58}{14}$
 $\frac{232}{58}$
 $\frac{812}{14}$

$\frac{48}{14}$
 $\frac{192}{48}$
 $\frac{672}{14}$

$\frac{54}{14}$
 $\frac{216}{54}$
 $\frac{756}{3}$ "W.
 3" hol
 812" L

$\frac{21}{14}$
 $\frac{84}{14}$
 $\frac{14}{56}$

$\frac{23}{14}$
 $\frac{92}{23}$
 $\frac{19}{76}$
 19

Vol. VII. p. 83
 $\frac{32}{14}$
 $\frac{128}{32}$

$\frac{14}{9}$
 $\frac{14}{13}$

Paper I.

near S. Pokka.

Trout-Lake.
Dec. 15. 86.

9 1/2 sp. w

The 3 24 sp. l. tip to tip.

Mic. foliacea

each 00140

$\frac{9}{14}$
 $\frac{126}{133}$

$\frac{24}{14}$
 $\frac{24}{336}$

23 sp. l.

24" each w lapping

59 60" w all 3 to tips

19" w

00322" long. e. s. w p & down
00336" w.

No. 1.

on 1st slide
Dec 28 86

No. 2

.00154" w. e. s.
.00154" l. e. s.



No. 3.

.00672" l
.00043" w. at end
.00054" w widest
7 swells + 2 tail ends

Doecidium dilatatum



No. 4.

.0013" w"
.00126" l



No. 5

.0022" l
.00245" w. basal lobes
.00182" w polar




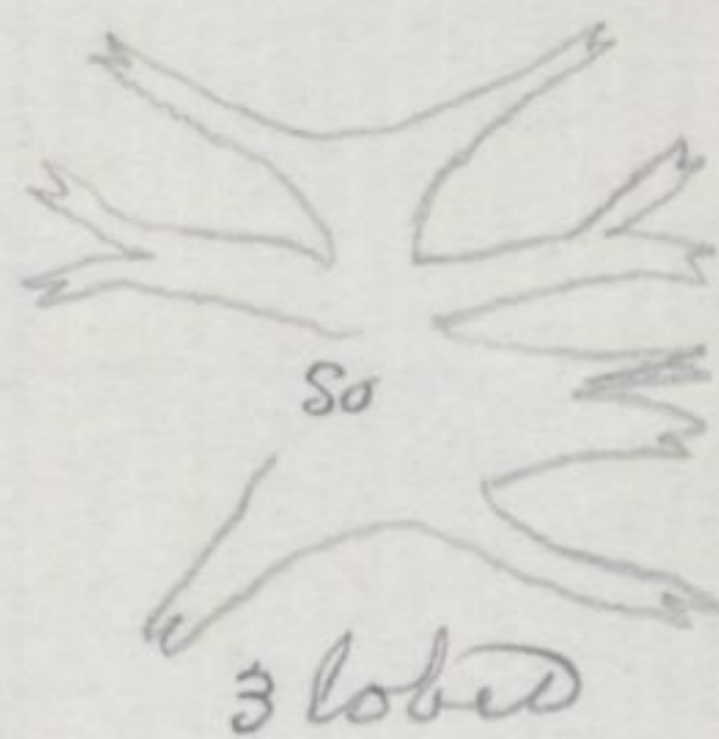
M. pinnatifida

No. 6. *Doec. d. mobile*.

Also in Robin's Ditch found *M. furcata* simplex

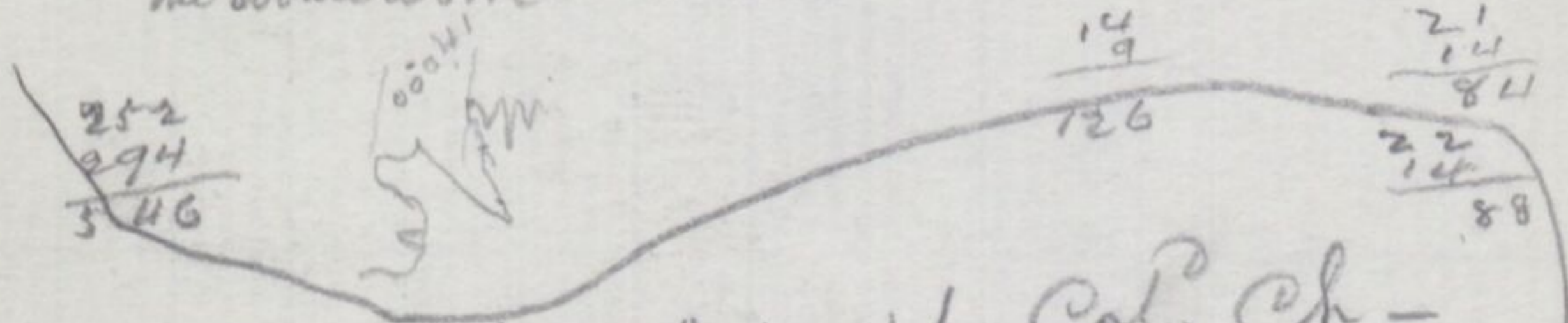
Also *St. longispinum* -

 $\frac{27}{14}$ w a string of
 $\frac{88}{22}$ 12 *M. foliacea*
 & another of 5
 .00308" w
 .0021" from centre to centre
 in length.



the end-half of exterior one is .00145" l, making whole cell to extremities of end lappets .00292" l. .00041" l.

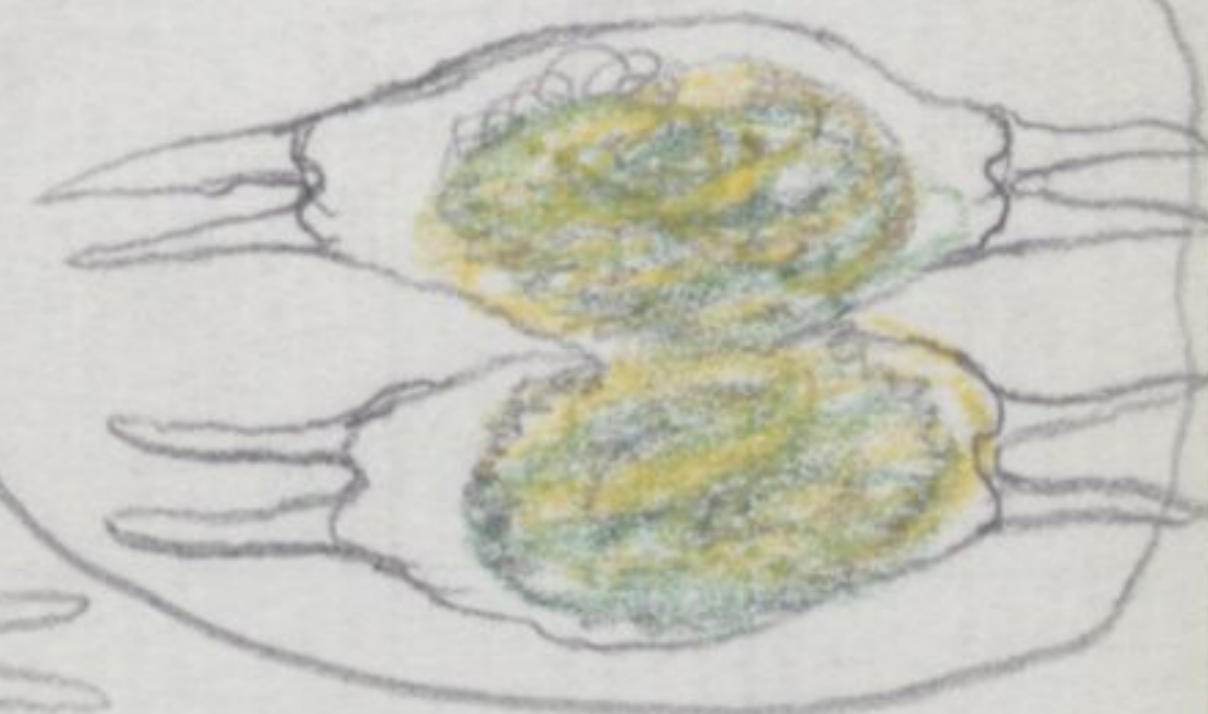
Lappets extend on each side of a cell ~~1~~ " beyond the bobule work on the side



Mar. 8. 87 In pool by Col. Ch -

$\frac{138}{152}$
 $\frac{38}{592}$

- .00308" l.
- .00294" w. body
- .00126" arms, on each side
- .00546" wide, arms + all



.00532" w. c. sps

a view of another *St. longispinum*

56
14
224
56

60
12
84

Paper III. Jan 5" 87.

67
268
67

No. 19 S. Osceola

.0078" w
.0014" w hel
.0084" l

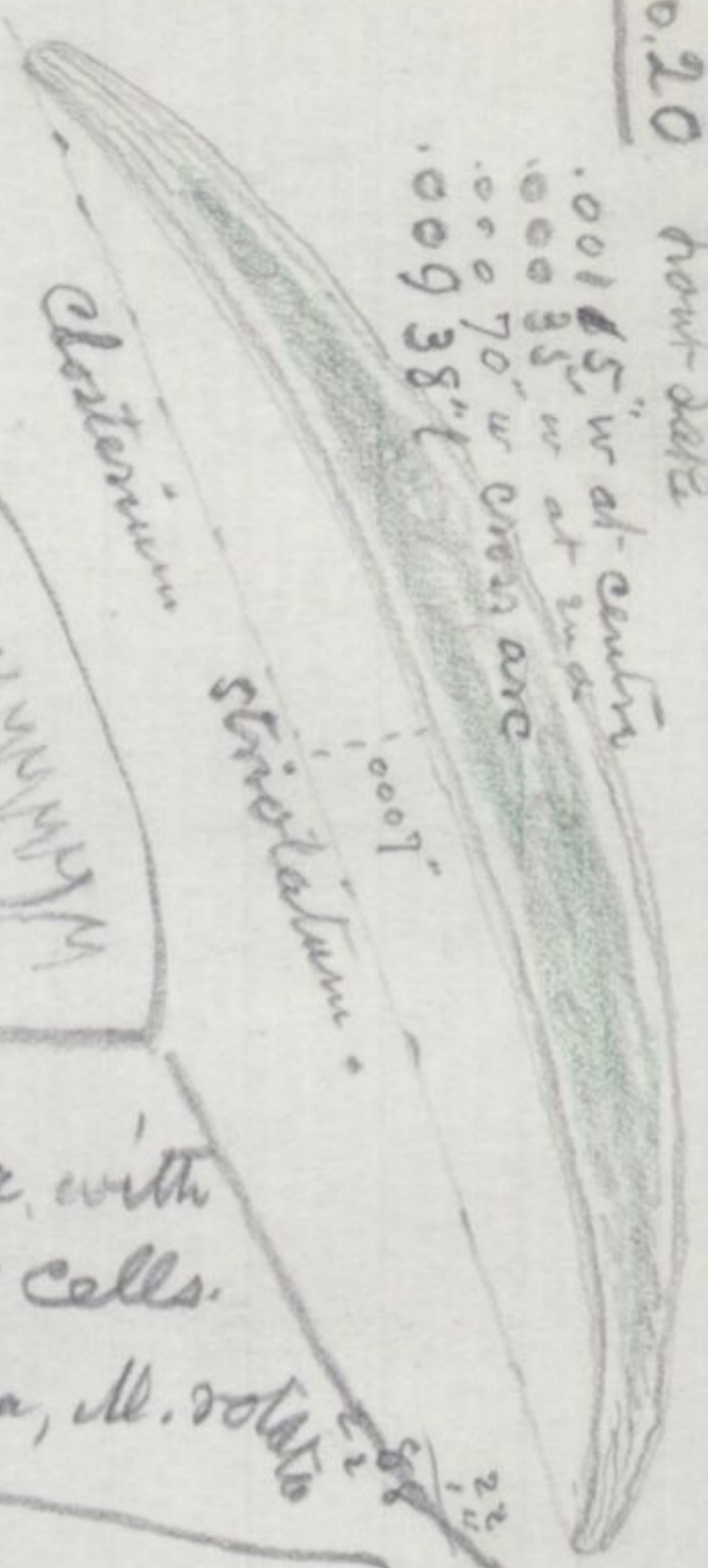
M. rotata.



Chloronium

Strobilium

No. 20
Foot-Sale
.00165" w at center
.00035" w at ends
.00070" w cross arc
.000938" l



March 3rd 87
Shell in found M. foliacea, string of 7 cells.
Also a Hydra viridis, M. Americana, M. rotata

Stentor

The M. foliacea was
.00308" l. i.e. up & down or across
the ribbon
.00336" w. to extremes of laplets

But across ribbon is width

Also in same slide another string of 4
Shell in made length & breadth the same
viz. .00308"

Find M. foliacea - 3 more strings of
4 cells another of 3
in Rollins ditch

Also in same the Staurastrum Osce.
- dense, clear, fresh, distinct - like
those of 2 yrs ago - & radically
unlike St. paradocum, as Woll
claims.
Mar. 5" 87

No. 21
Foot-Sale

Cyathostellum
Leaves .00308" w only
.0057" l
.006" l stem



22
14
88
22
308

39
14
156
39
526

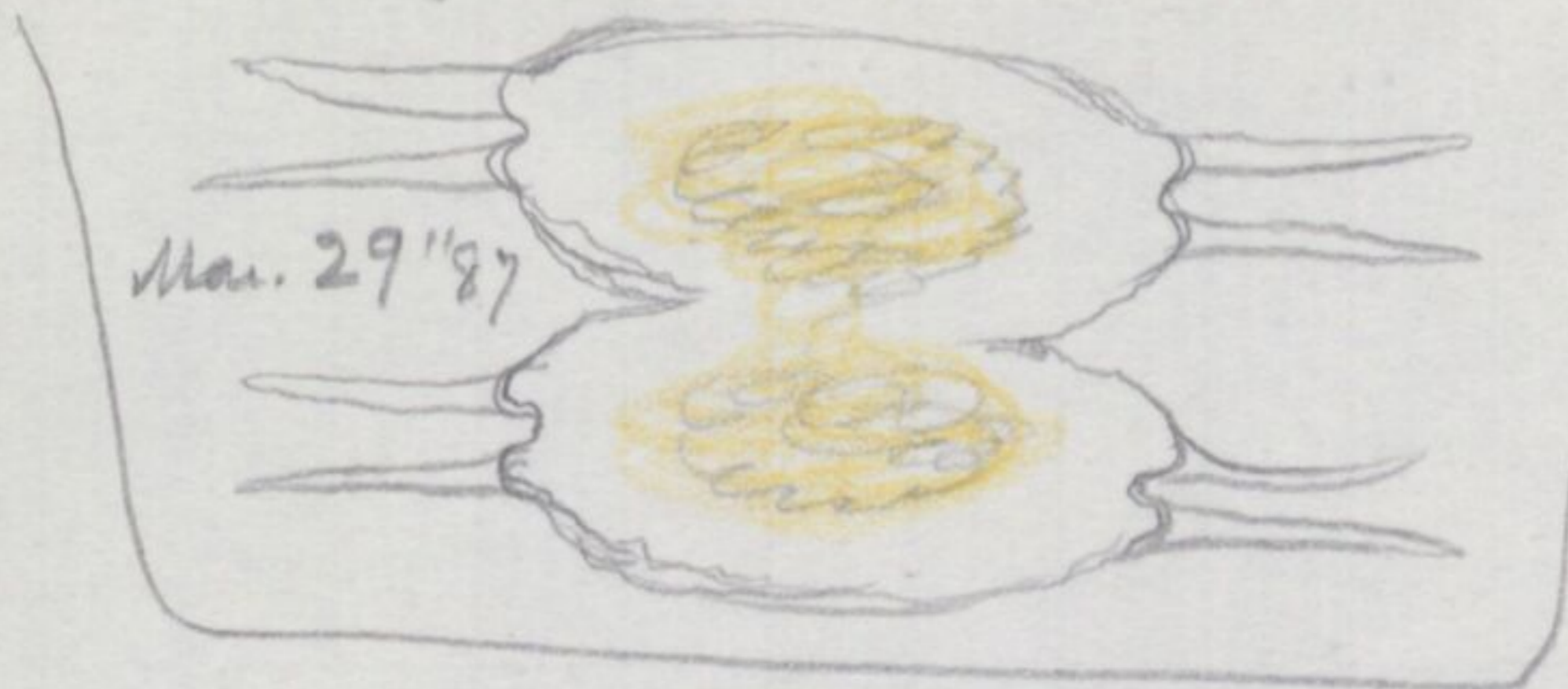
.00308" l
.00308" w. body
.00546 w. arms

22
14
88
22

St. longispinum

col Ch.

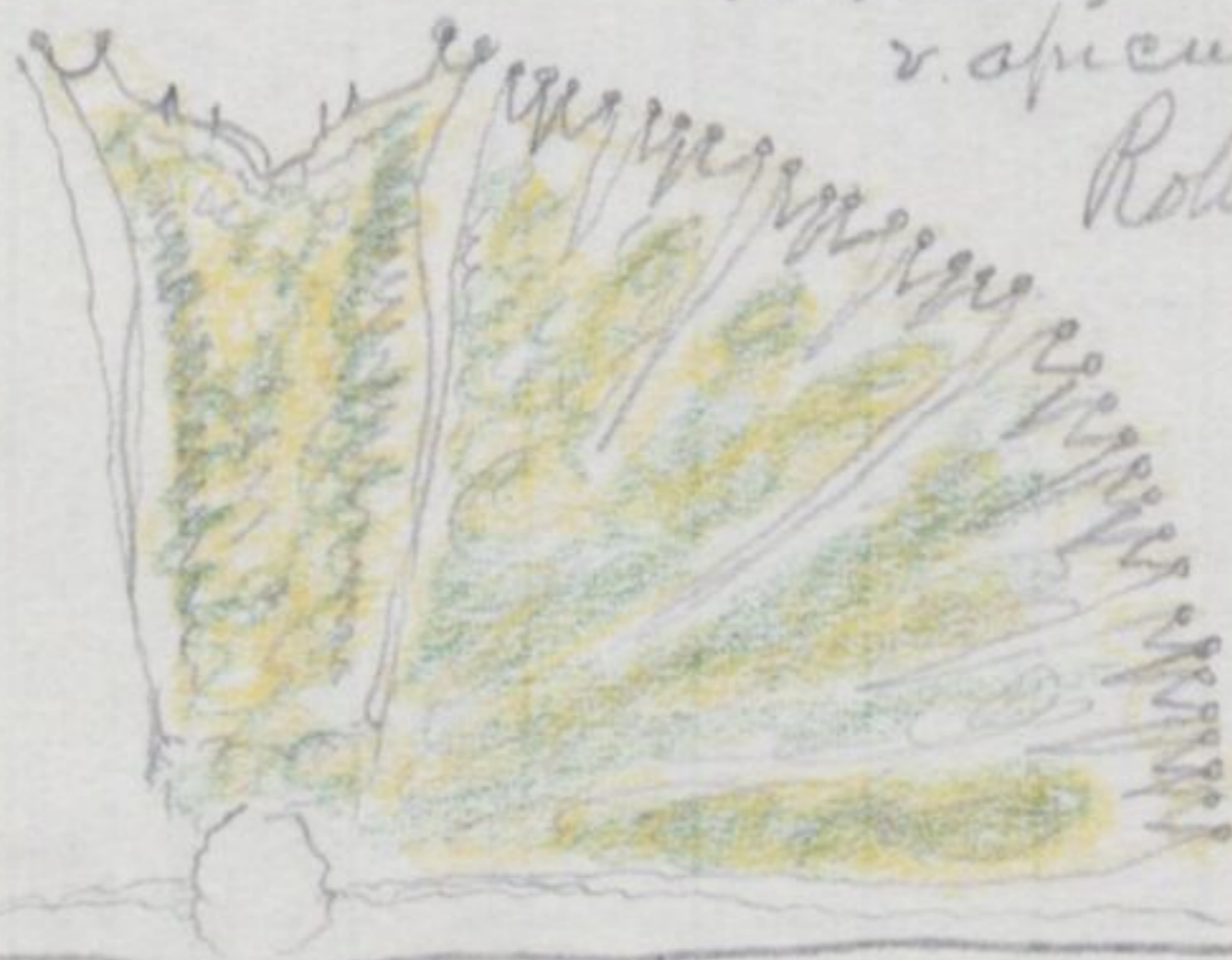
Mar. 29 '87



53
14
53

.00742" l + w
.0014" w polar

M. radiosa
v. apiculata
Rollins Ditch



13
4
268

.00238" w arms
.001" w body
.001" b.

Rollins Ditch



$$\begin{array}{r} 34 \\ 114 \\ \hline 136 \\ 34 \end{array}$$

$$\begin{array}{r} 24 \\ 14 \\ \hline 96 \\ 24 \end{array}$$

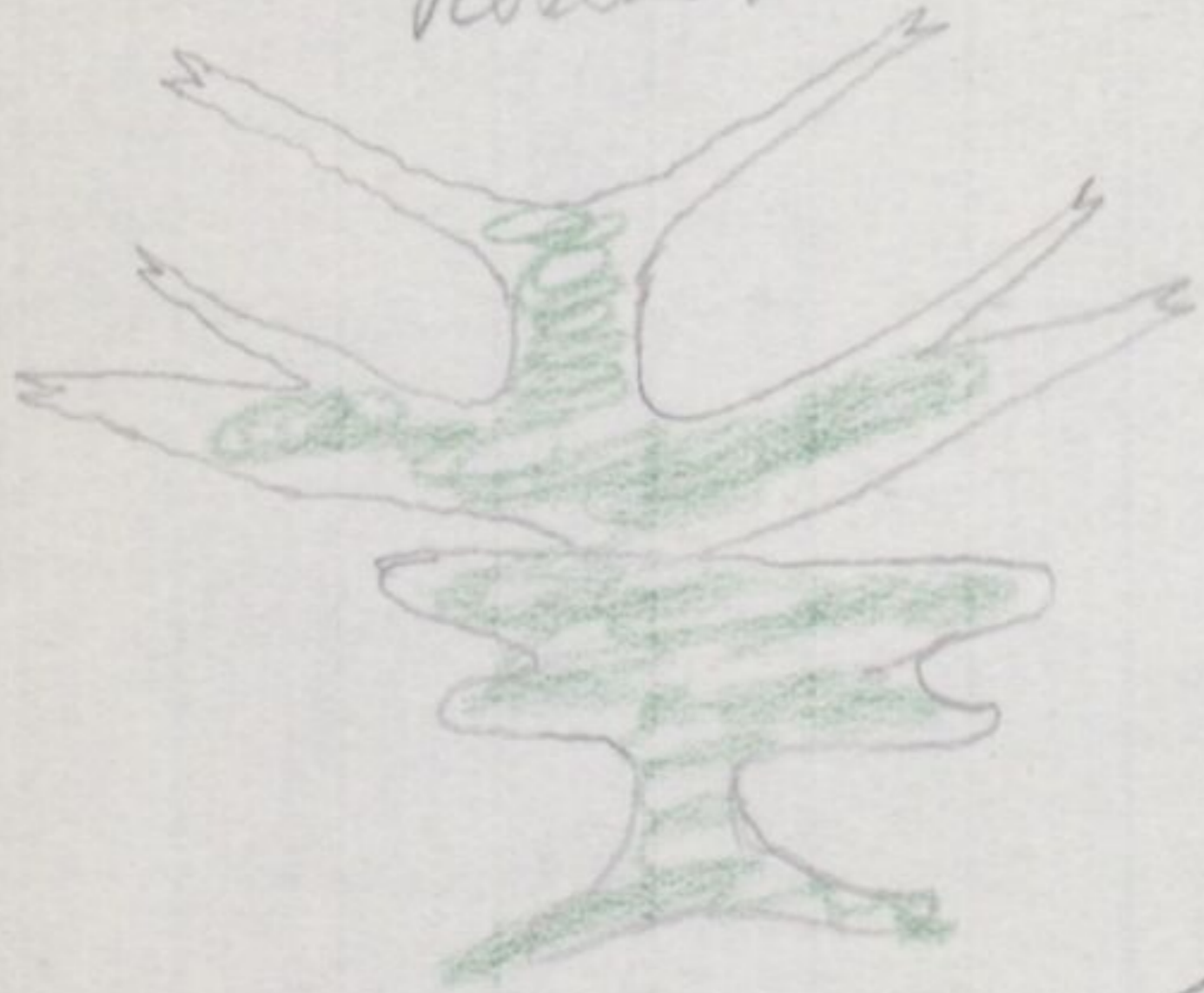
Paper Vth

$$\begin{array}{r} 14 \\ 11 \\ \hline 14 \end{array}$$

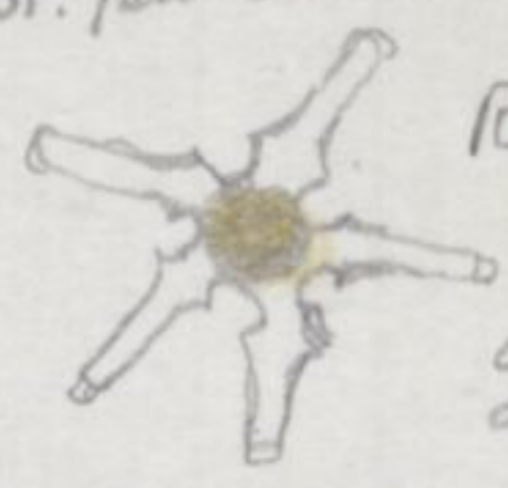
$$\begin{array}{r} 14 \\ 12 \\ \hline 168 \end{array}$$

old part .00168" l
 new " .00126" l
 old " .00476" w
 old " .00336" w. pedar
 new " .00126" w
 new " .00084" w hol

Rollins Ditch



.00154" diam of arms
 .00056" " across centre
 St. pulchrum



Rollins Ditch

and double



so

said on behind.

.00154" l
 .00077" w

Rollins Ditch



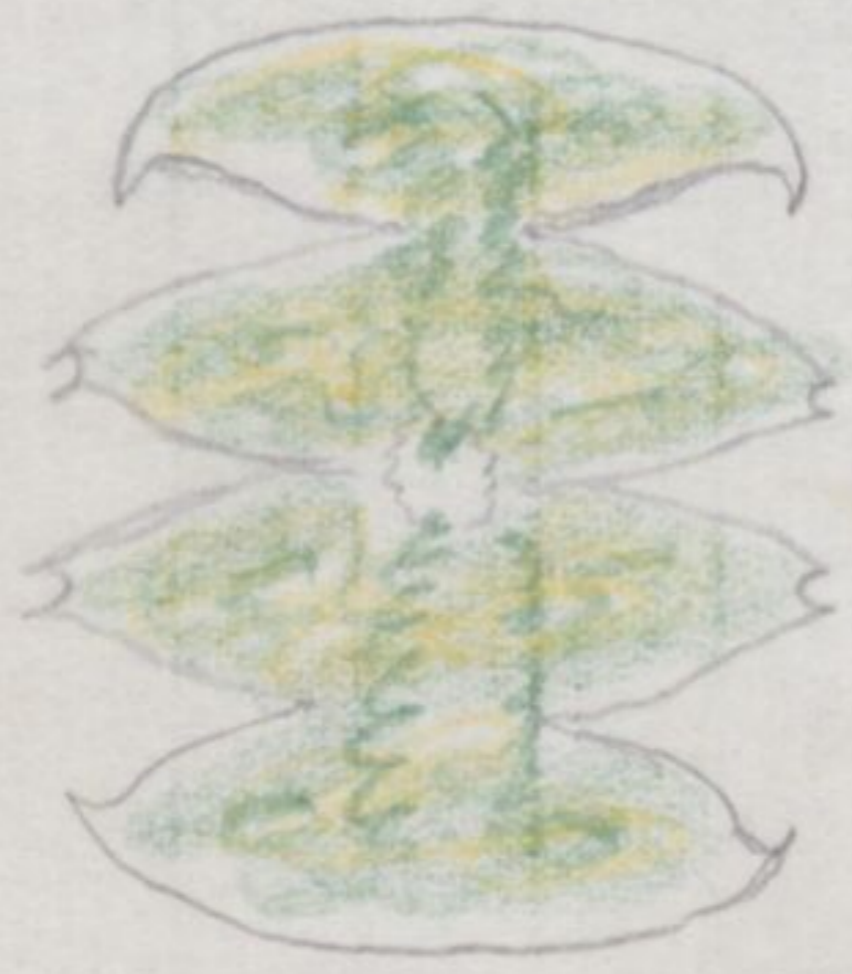
Cos.
 Anomura?
 ?

$$\begin{array}{r} 29 \\ 14 \\ \hline 116 \\ 29 \end{array}$$

$$\begin{array}{r} 25 \\ 14 \\ \hline 500 \end{array}$$

.004" w
 .0038" w hol
 .0042" l

Rollins Ditch



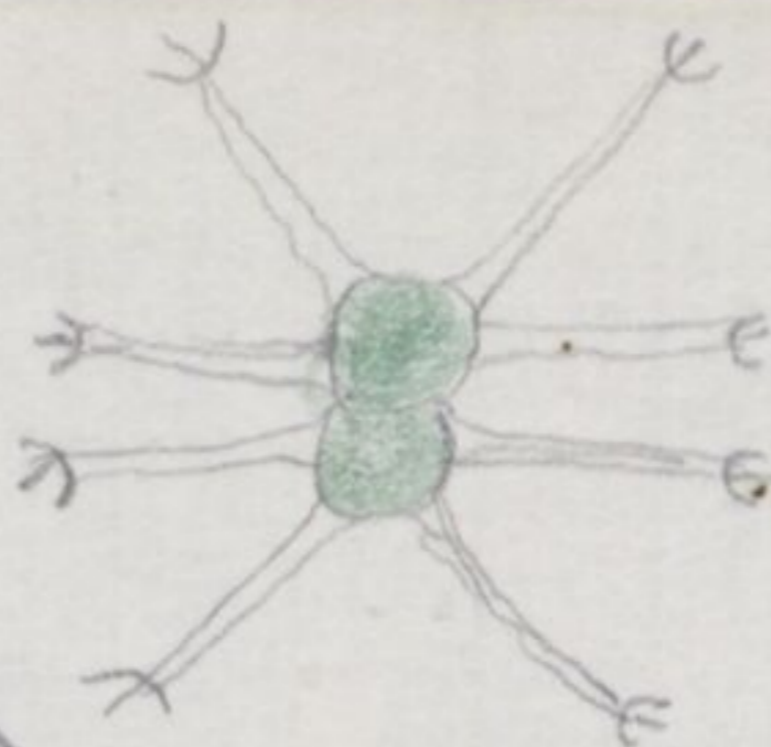
Body .00084" l
 .00042" w

Arm .0014" l
 .00084" w



Rollins Ditch

St. Cecelense.
Rollins Ditch



measurements as
in No. 8 on page 9

Vol. VIII.

body
fresh & full of
chrome -

54	17
14	14
216	68
594	1725
736	14
476	100
280	25
	17

clearly 3 lobed

.00 56" wdst
.00 42" w polar
.00 756" l. whole
.00 238" l each old semicell
.00 476" l. both " "
.00 28" l both new semicells
.00 35" wdst new semicells
.00 238" w new polars

Rollins Ditch



$\frac{14}{56}$
.00 40" l
.00 70" w



Raphidium?

and this:



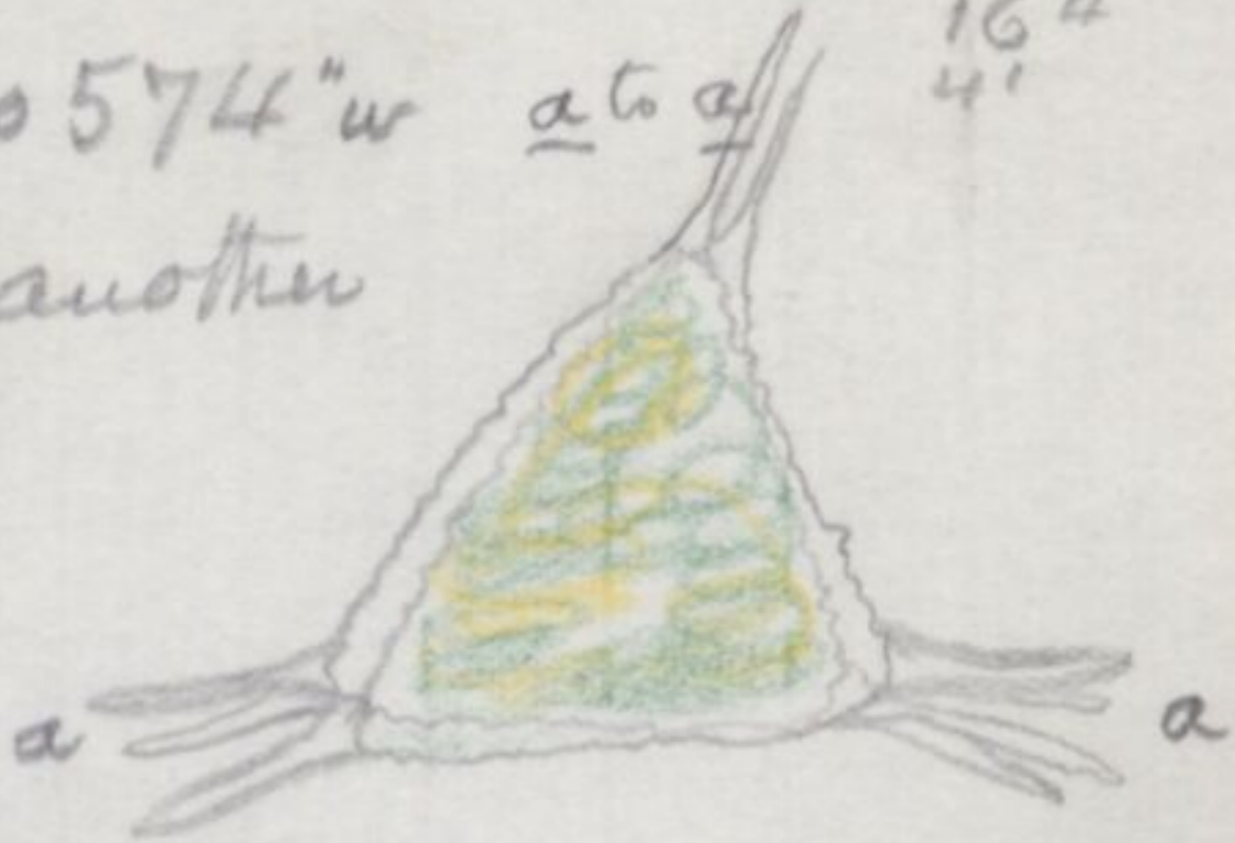
and clusters of
any number of such
crescents

Paper IV.

41
14
164
41

.00574" w a to a

Another form of another



I find in the
Col. Ch. matter now.

almost wholly Zygnema purpurum, with no fruit.

Often fine Siroseiphon ocellatus, + Desmidiium
frequent St. longispinum, M. Kitchellii, C. pyramidata

26
14
104
26

18
104
72
18

.00364" l
.00196" w

Cosmarium
Pyramidatum



15
14
60

$\frac{2}{14}$
.00028" diam

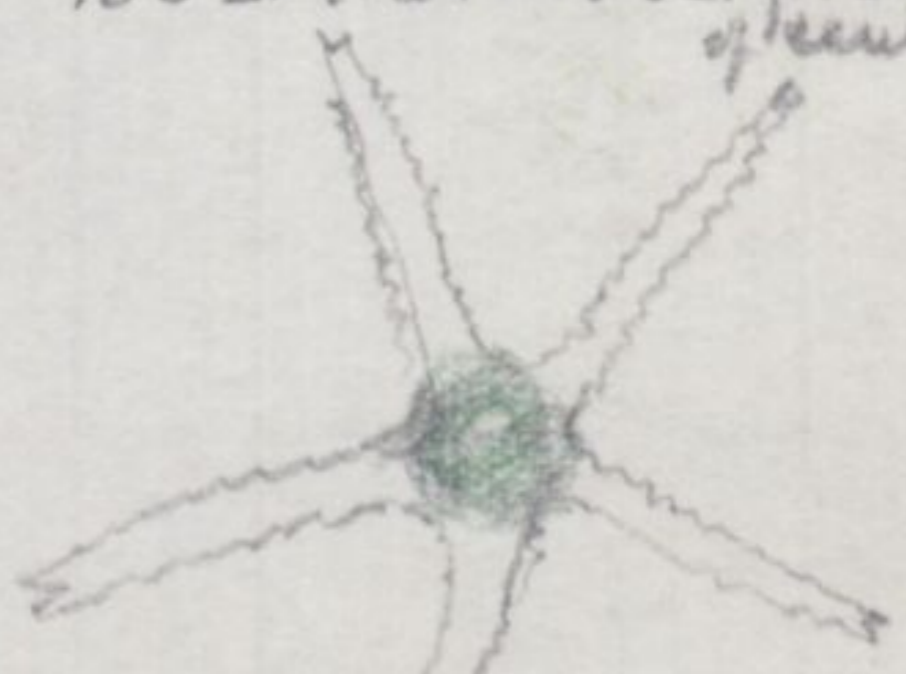
In Rollins Ditch

Central .00072" diam.

.0021" l. arms out fr. margin of center

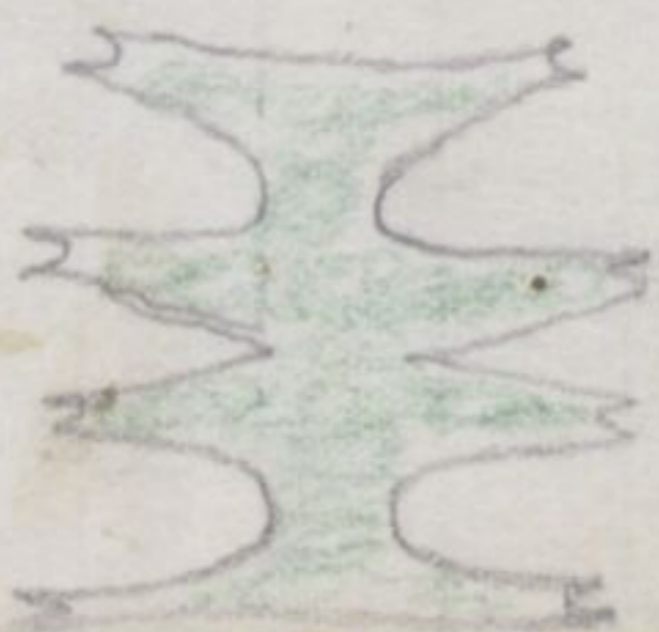
also M. foliacea, 3 cells

.00252" w
.0021" End lobe
.0021" l.



St. Opheimia
var pentacera

M. pinnatifida



29.
reported found in Florida. A few other common
Desmids were also found with it.

4. Lakes Virginia & Osceola yielded about the same
forms this season (1886-7) as formerly, but more
scarcely, perhaps from the changes in their shore-lines,
the waters rising & falling in the Experiments to open
the canal between them for the passage of a steamer.

Only one novelty occurred, the discovery of abun-
dant Microsterias foliacea in the drain-ditch at
the foot of the Rollins, or College, grove, where it was
found in frequent chains of four, six, nine cells.

This ditch also yielded the Microsterias furcata-simplex,
the Staurastrum Osceolense in fine form, the Staurastrum
longispinum, and a fine specimen of Bambusina
in fruitful conjugation. (For these see sketches herewith.)

Charte . sat

|| 33

[Faint, illegible handwriting on lined paper]

