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About the Institute

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

Netrium digitus (Ehrbg.) Itzig & Roth

L 184

Wmax 60

L 202

Wmax 65

L 187

Wmax 66

7/2x44



Brazil 32

Aug 25/56

L 57
W 20

N. digitus v. *parvum* Borge
Krieger p. 216



Per. 14

Brazil 2

Aug 12/59

L 178
W center 30
W pole 16 ±

Cl. libellula var *intermedium* (Roy + Bies.) GSWest
B7



72x44

83.0
97.8

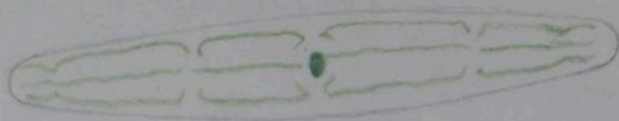
Brazil 16

Apr 22/54

L 139
W 24

Cl. libellula Focke v. *interruptum* (W+W) Donat

10x44

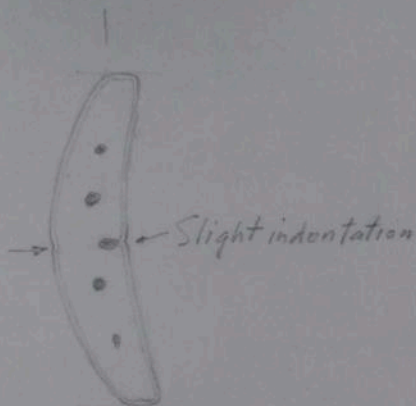


Brazil 32

Aug 25/56

L 40
W max 11
W pole 5

20 x 40



Too big for *Cl. infractum*, and 2 pyrenoids
Too small for *Cl. compactum* v. *subcompactum*

Only 1 seen

Brazil 32

Aug 23/56

L 166
W center 16
W pole 7

Cl. abruptum W. West

B 1.



10 x 44

Sutures, if any, not visible

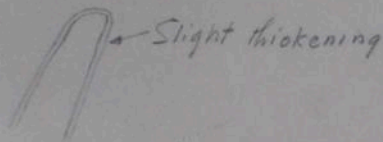
Brazil 14

Oct 5/53

L 211
W center 28
W pole 9 ±

Cl. Archerianum ~~?~~

B4



7 1/2 x 44

Wall brownish, about 24 striae visible
at center.

Pole slightly flattened

Brazil 52

May 3/54

L 322

Docidium baculum Breb

W base 12

W pole 9



Brazil 10+11

Aug 17/59

L 93

W center 11

W pole 6-7±

Pleurotaenium minutum (Ralfs) Delp.

B10



10 x 44

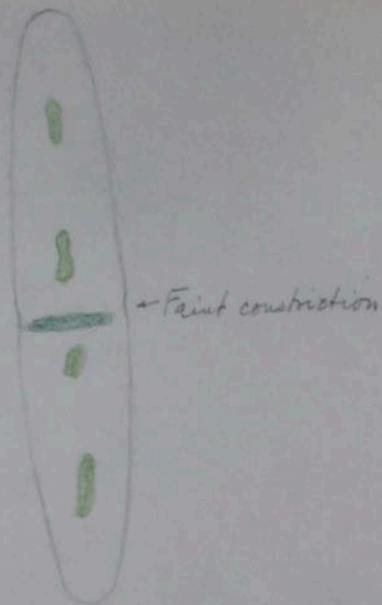


15 x 44

Brazil 16

Apr 26/54

L 68
W 14
I 13?



15x60

Top view circular

Chloroplast decayed; it may be stelloid
Wall seems to be porose, pattern not visible

Many seen

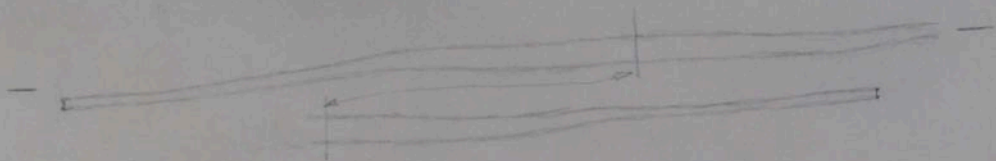
Brazil 20

Digitized by the Hunt Institute for Botanical Documentation

Sept 15/16

| | | | | | | |
|----------|-----|-----|-----|-----|-----|-----|
| L | 258 | 199 | 303 | 272 | 327 | 253 |
| W center | 7 | 6 | 7 | 7 | 7 | 6.5 |
| W pole | 2.5 | 2.5 | 2.5 | 2.5 | 3.0 | 2.5 |

23-54



Brazil 20

Sept 15/56

W center 7.5 - 8
W pole 2.5

10 x 44

Brazil 20

Digitized by the Hunt Institute for Botanical Documentation

Sept 15/56

L 81
W 23
I 21

T. granulatus (Bréb) Ralfo.



20 x 44

Brazil 8

RRR

Aug 10/59

L 62
W 18
I 16

T. laevis (Kütz) Ralfo
? var. *minutus* (ex Bary) Krieg.



20x44

Markings not visible

Brazil 32

Aug 24/56

L 42

W 18

I 7

T 15-16!

E. politum Krieg

= *E. holoscherum* (W. W.) forma Borge

20x22



Groove



Approx



Wall very delicately punctate

Brazil 32

Aug 23/56

B34

L semicell 21

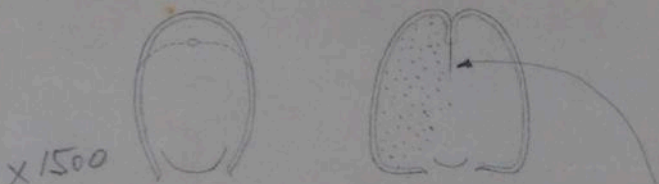
W 20

I 7±

T 15

Euastrum ~~cosmactiforme~~ ^{politum} Krieger sp. nov.cf. E. politum Krieger OK

A new species cannot be founded upon one semicell only!



x 1500

Wall faintly punctate

The apical notch continues as a groove on the exterior surface of the wall

WATCH FOR THIS! Only ² semicells seen so far.

Brazil 32

Sept 13/53

L 84
W 41
I 13
T 30

Euastrum brasiliense Borge

B26

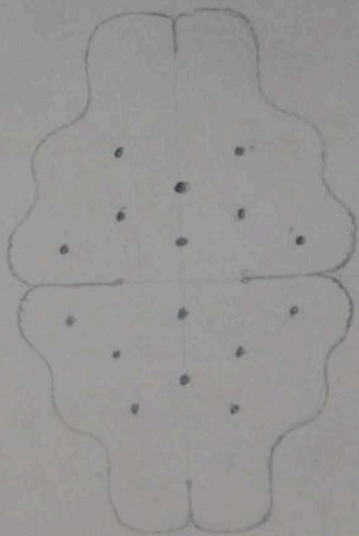


Brazil 16

APR 25/54

L 66
W 43
I 15

E. sinuosum var. *brasiliense* B27
v. nov



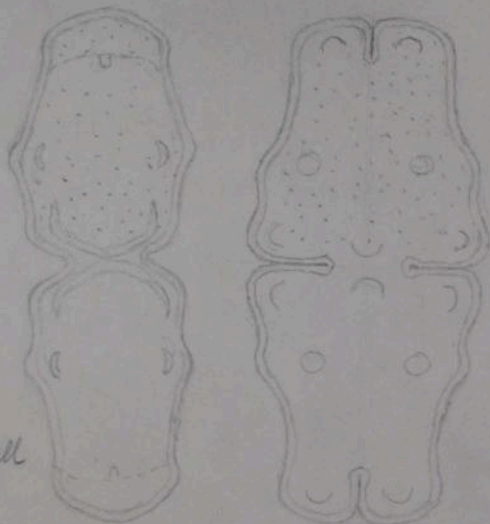
Brazil 16

Sept 26/54

L 63
W 30
I 10
T 24

E. sinuata ~~var~~ securiformiceps Borge

B23



20 x 44
Empty cell

Wall punctate all over
No mucos pore.

Brazil 16

Apr 29/57

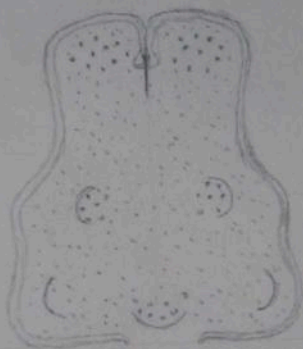
L semicell 42

W 36

I 12±

E. sinuatum var securiformiceps (~~Borzi~~) ~~King~~

B25 fa.



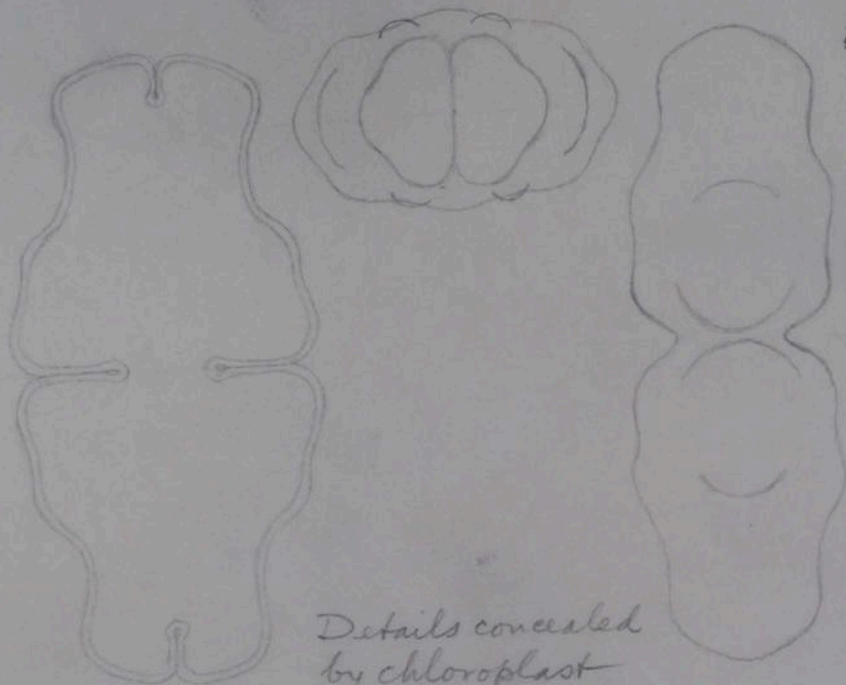
Brazil 32

Apr 19/54

L 77
W 39
I 12
T 28

E. sinuosum var. *securiformiceps* (Borg.) ~~Kneq~~

B24



Details concealed
by chloroplast

Brazil 32

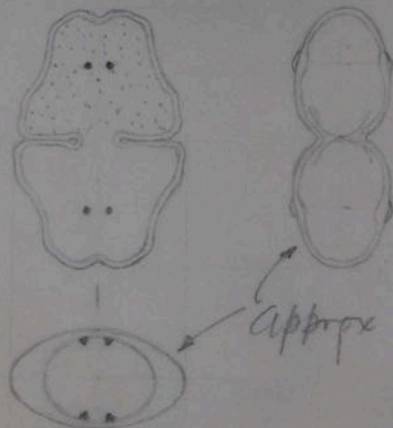
Apr 20/54

L 32
W 21
F 6
T 12 ±

E. bioculatum sp. nov

B21

Shape similar to
E. sublobatum v. *obtusatum* in Krieger 74:9-11



Slight swellings?
Not apparent in vertical view

Approx

Wall faintly punctate.

Brazil 59

Apr 17/54

L 68

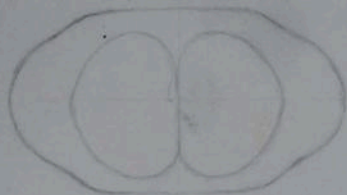
E. intermedium Gleve var. *corpulentum* var. nov.

W 42

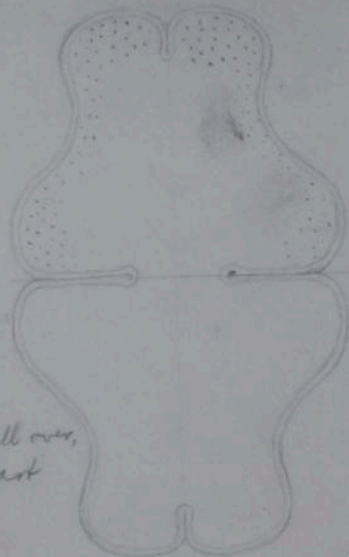
I 13

T 24

Wapex 26



20x44



Wall probably
reticulate all over,
but central part
not visible.

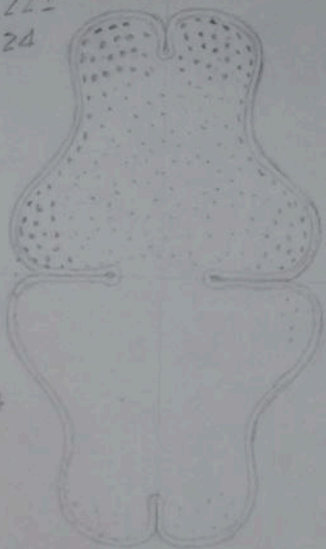
Only 1 seen



Brazil 32

Aug 26/56

L 67
W 39
I 12
T 22±
apex 24



20x44

2nd seen

Brazil 32

Aug 28/56

L 22
W 13
I



15x60

Brazil 32

Aug 23/56

L semicell 11

W 13

I 4±

T 9±

E. validum W+W var. *glabrum* Krieg. forma

20x60



Brasil 32

Digitized by the Hunt Institute for Botanical Documentation

Aug 27/56

L 20
W 13
I 5

E. validum v. tuberculatum
v nov

B22



Brazil 32

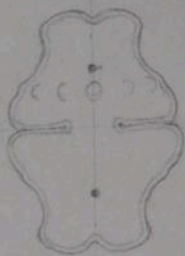
Apr 18/54

L 30
W 22
I 6

Sp. nov.

B32

x1600
20x40



L semi-cell 16

W 23 →
I 6 ±
T 13



Top view of another spec.
15x60, x1700

Brazil 16

Apl 28/57

L 36

W 25.26

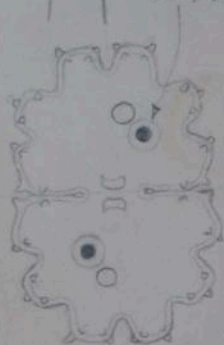
I 7

T 17



15x60

Deep pit



63 4

57 1

62 3

49 2

55 1

74 1

cf drawing B37
E. paulense var. nov.



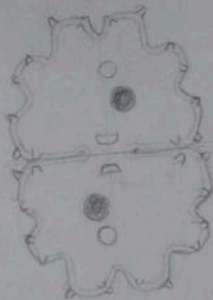
← Approx.

Fairly common

Brazil 32

Aug 21/56

L 30
W 25
I 7
T 16



15x60

OK.

The first empty cell seen

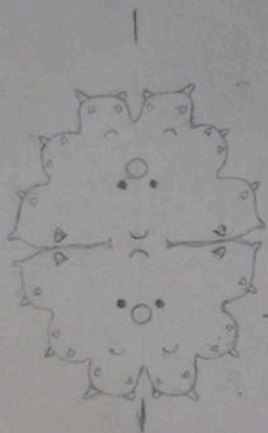
Brazil 32

Aug 28/56

L 37
W 32
I 7
T 16

E. paulense var. nov. ~~sp. nov.~~ ?

B37



Details obscured
by chloroplast



Approx

To G 4/5



Approx

Brazil 16

Oct 10/53

L semicell ssp 22
osp 24

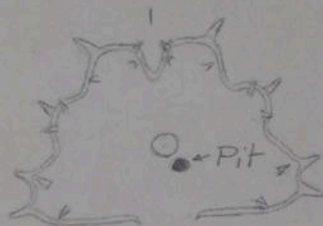
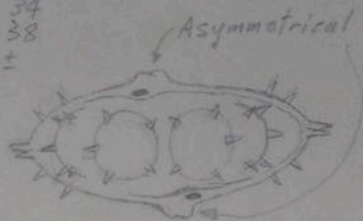
E. paulense VNOX

B36

Wssp 34
osp 38

I 8-9±

T21



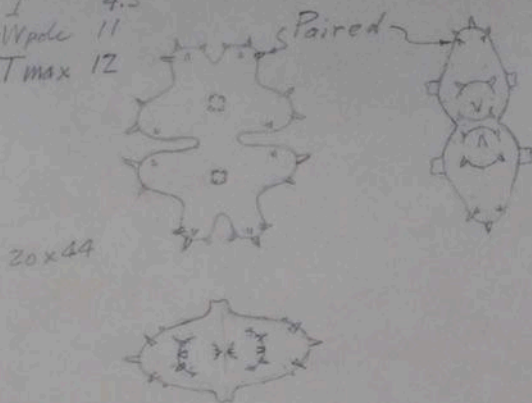
To G 4/5/52

Brazil 14

Sept 16/52

L ssp 24
W ssp 21
csp 24
I 4.5
W pole 11
T max 12

B40



This agrees with *E. subtile* Borge, except for the open sinus which was present in all of the three specimens so far seen. But *E. subtile*, in my opinion, does not differ sufficiently from *E. cuspidatum* Wolle to justify anything more than a varietal distinction. Therefore I propose that *E. subtile* be transferred to *E. cuspidatum*, under the name *E. cuspidatum* var. *subtile* (Borge) comb. nov. The plant sketched above would be described as a forma of var. *subtile*. Note that the spines at the ~~upper~~ angles of the polar lobe are paired, not single. outer

Brazil 16 To G 4/1/77 Ok pl.

Sept 26/53.

L to depressed apex 18

L CSP 36

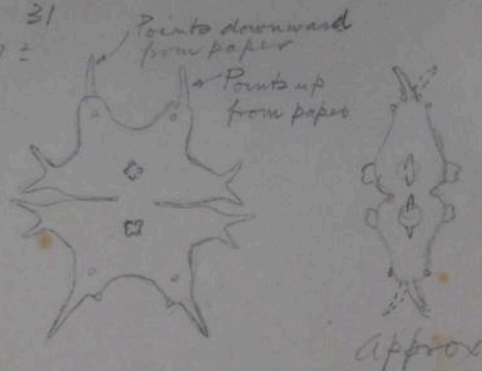
W SSP 24

CSP 31

I 6-7 ±

E. sp. nov

B39



Semicells twisted
at isthmus

The central vein may be
asymmetrically placed
on the front + rear faces
of semicell.

To G 4564

Brazil 10, also #16

Sept 12/53

L ssp 16.5
osp 17.5
W ssp 16
osp 18.5
I 6

Sp. nov

B29



15x60

Brazil 16, also in 52, slightly different

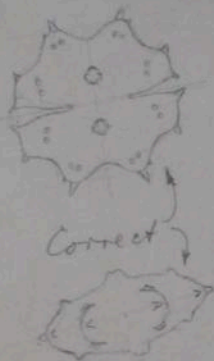
Apr 28/52

L ssp 18
 csp 21
W ssp 18
 csp 20
I 6
T 11

Sp. nov

B28

cf F. Gayanum



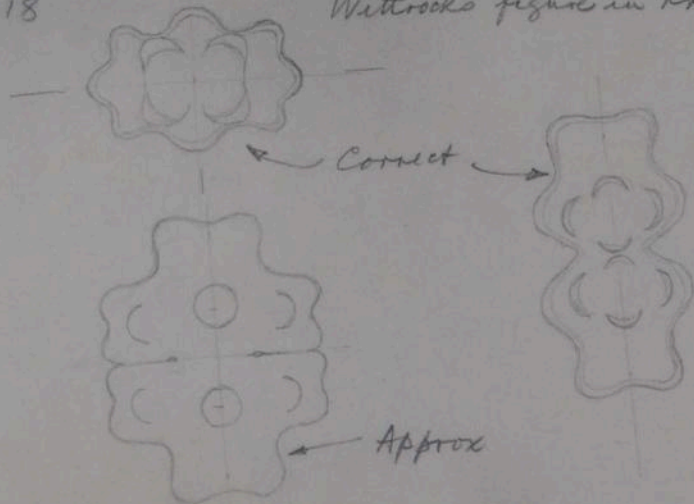
Brazil 16

APC 24/57

L 36
W 27
I 9
T 18

E. pectinatum var. brasiliense v. nov B30

cf var. brachylobum in Presc. & Scott 1945
which is not exactly the same as
Wittrock's figure in Krieger FE 72, figs 8, 9.



Wall scrobiculate
but details not visible

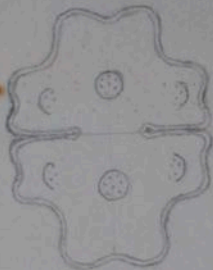
Brazil 16

Apr 25/54

L 33
W 26
I 9

E. pectinatum, ~~ad var brachylebum~~
var

B31



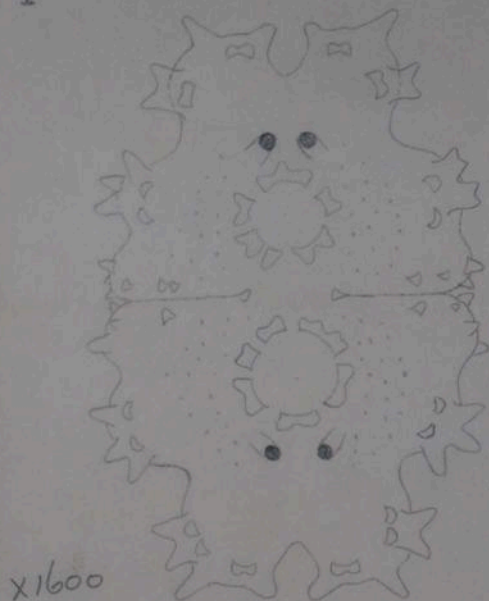
Brazil 16

APL 30/54

L csp 73
W csp 50
I 12

Euastrum evolutum var. *perornatum* var. nov.

OK B35



Brazil 11, also in 17 very rare

Sept 15/53

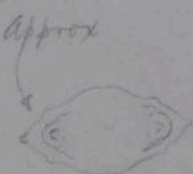
L semicell 15

W 20

I 4.5 ±

T 11

New species! But only 1 semicell seen



15.8
98.2

15.0
97.0

Brazil 32

Aug 29/56

L 32
W 24
I 9

B33



20 x 24

Get more views

Incomplete.

Get details of pith & granules
+ punctae

Brazil 16

Apr 22/57

L 32
W 24
I 7
T 15-16 ±



15x60



Not sure of
this detail

Wall faintly porose
pattern not visible

Several seen, but no empty ones.

Brazil 32

Aug 26/56

L 59
W max 58
W polar lobe 51
I 9

1 M. arcuata Bail, typical form

B59



To G 4/5/54

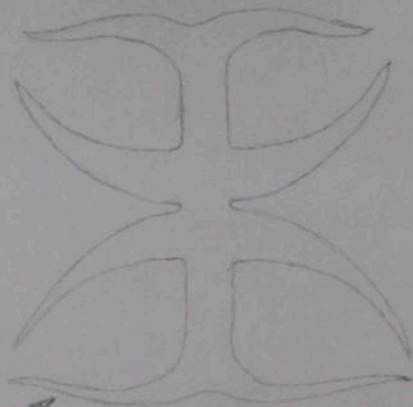
Brazil 19

Sept 23/53

L 64
W 62
I 9

M. arcuata, type.

B58



Young semicell, not fully developed

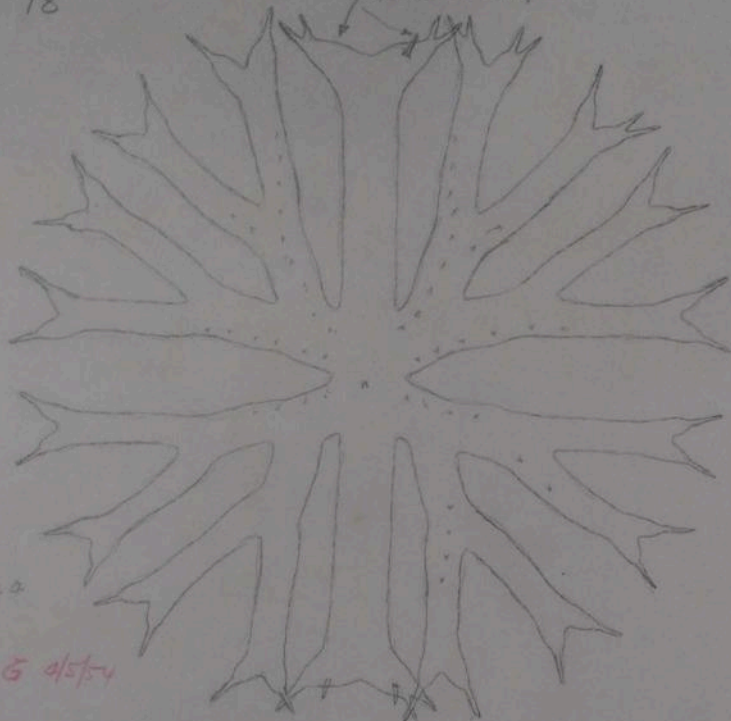
Brazil 16

Apr 25/54

L 167
W 168
I 18

~~M. Sol var. Murrayi~~ ~~fa. longispina~~ ~~fa. nov.~~
Probably M. subaequalis Grönblad
SPINE MISSING

B38



Number and arrangement of small surface spines not clear, because of chloroplast and adherent epiphytes. Apparently there were no spines along the lateral margins of the polar lobes.

10 x 44

To G 4/5/54

Brazil 20

Sept 27/53

L 136
W 118
I 21 ±
T 36

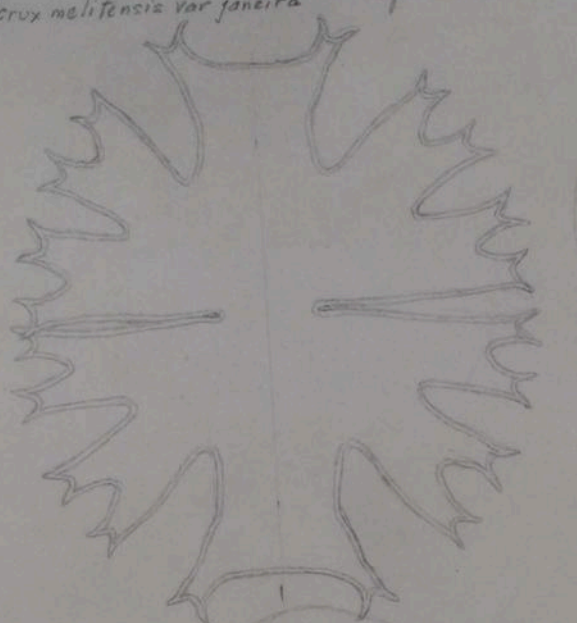
M. radiata var. ?

B65

lf also
M. crux melitensis var. *janeira*

lf. var. *pseudocrux* Gbld.

10 x 20

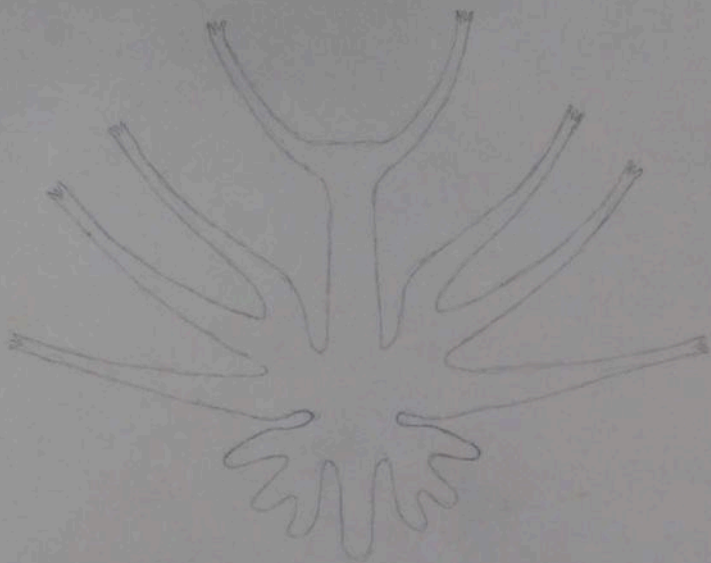


Brazil 52

approx

May 3/54

W 228

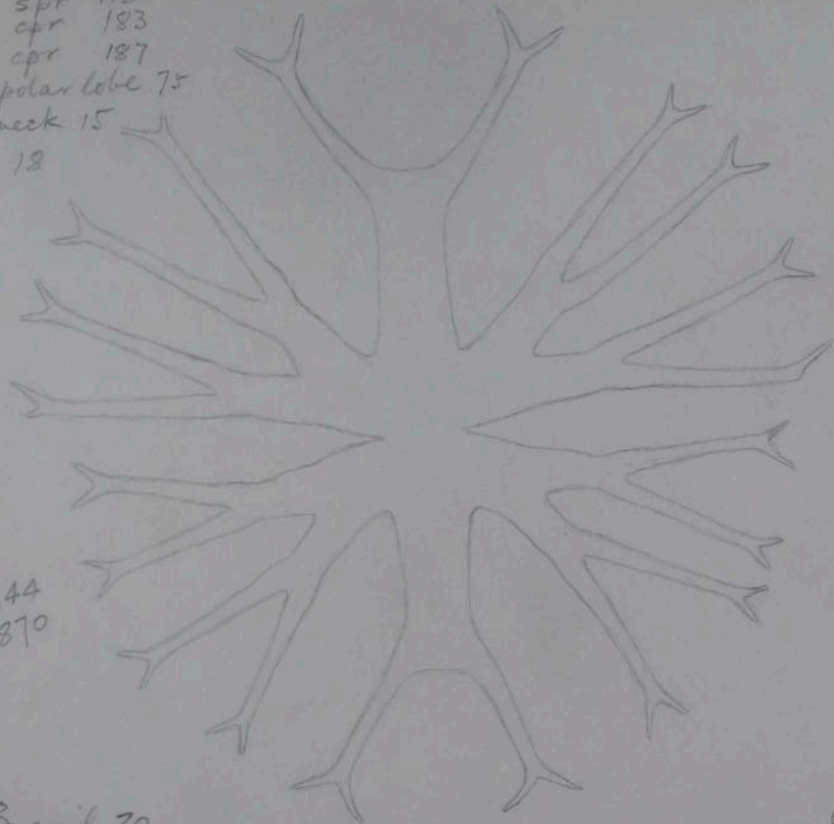


$\frac{7}{2} \times 44$

Brazil 20

Sept 8/56

L spr 115
cpr 183
W cpr 187
W polar lobe 75
W neck 15
I 12



h x 44
x 870

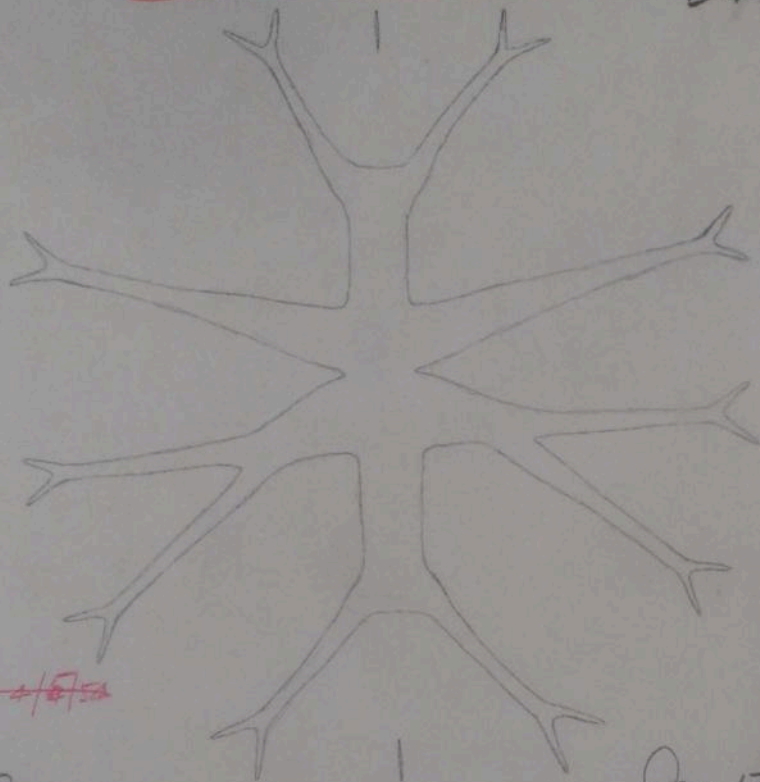
Brasil. 20

Aug 18/56

L opr 174
W opr 163
I 16

M. radiata v. gracillima Smith

B44

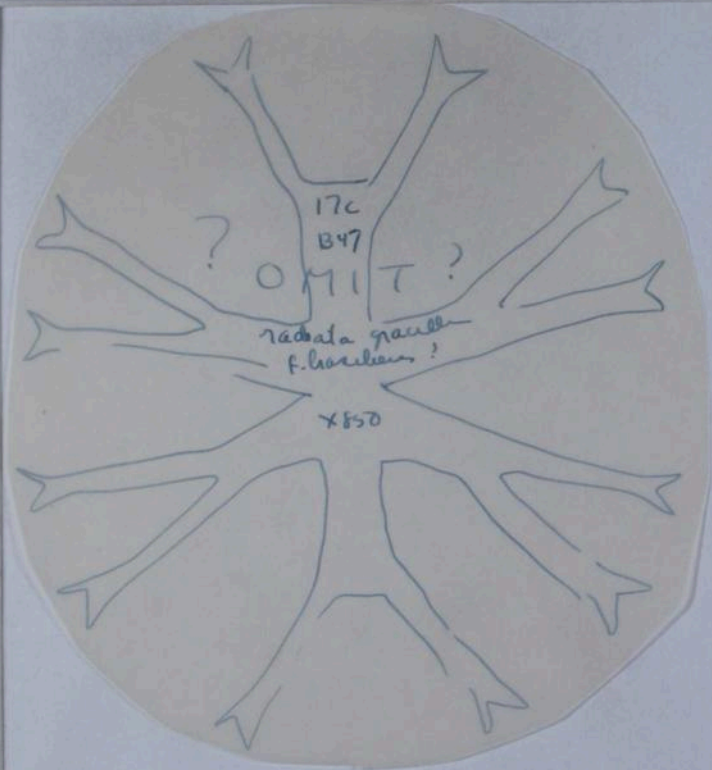


x875

~~FG 4/17/54~~

Brazil 20

Jan 17/54



17c

B47

? OMIT ?

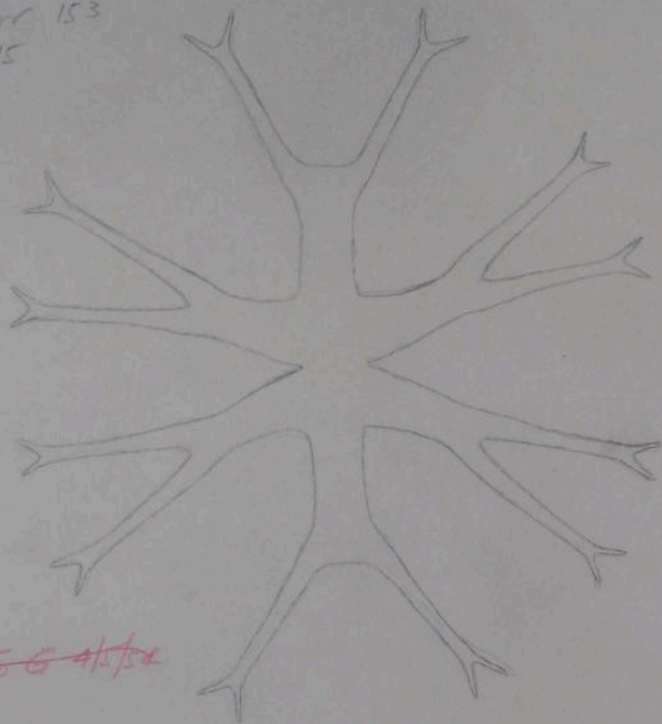
radata gracile
f. floribunda?

x850

L apr 163
W apr 153
I 15

M. radiata var. *gracillima* fa. *brasiliensis* fa. nov.

B47



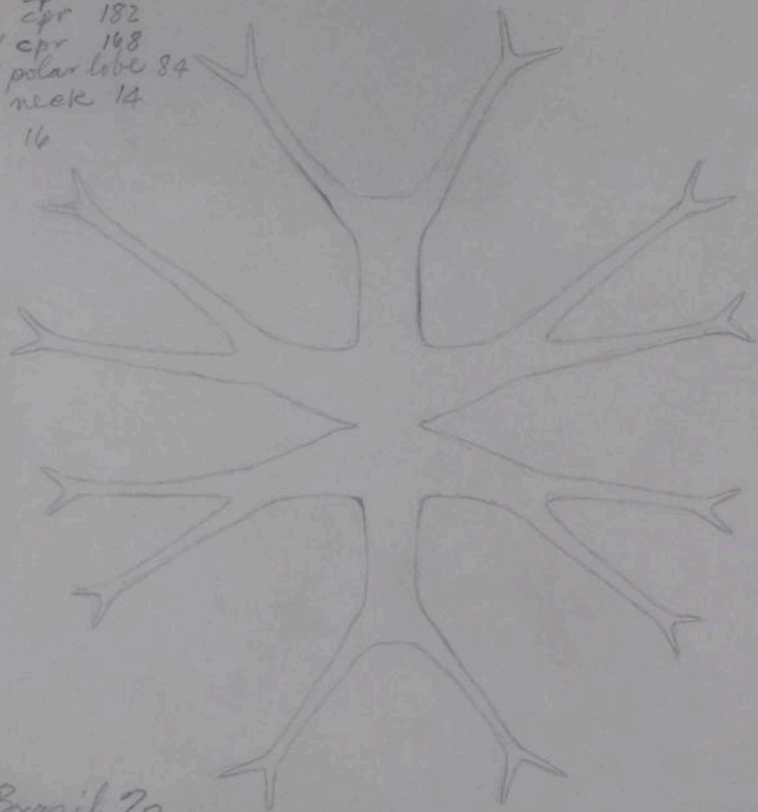
~~To G 4/1/52~~

Brazil 20

61.3
925

Sept 28/53

L spr 103
cpr 182
W cpr 168
W polar lobe 84
W neck 14
I 16



Brazil 20

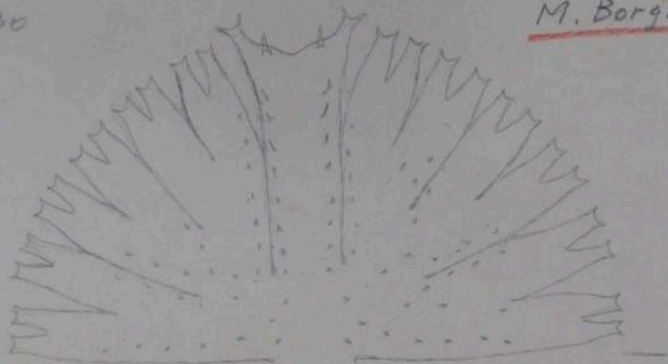
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Aug 18/56

L semicell III
W 195
I 30

~~M. fimbriata var spmosa ?~~
~~M. sul var conata ?~~
M. Borgei fa ?

B41



$7\frac{1}{2} \times 44$
 $\times 620$

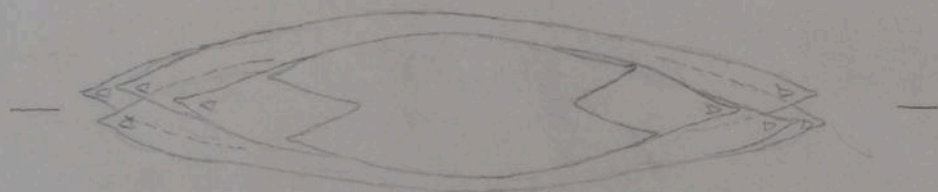
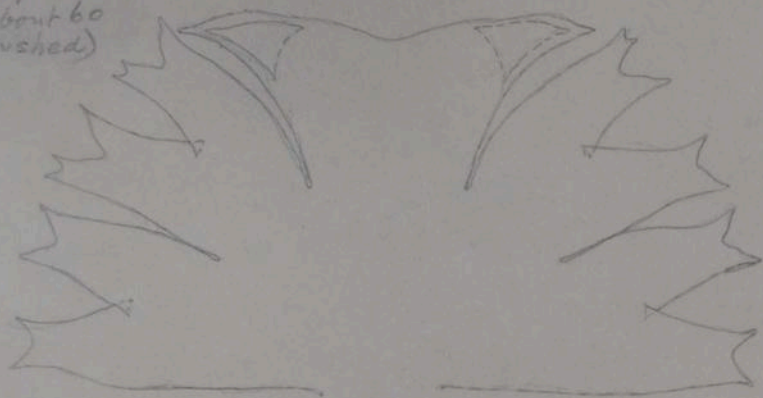
T. G 4/5/77

Brazil 14

Oct 3/53

L semicell 120
W 236
I 39 ±
T about 60
(crushed)

B51



Brazil 14

T.G. 3/9/54

Nov 8/53

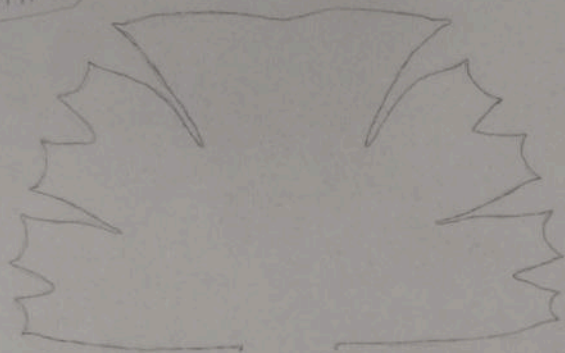
L semicell 105

W 117 (=171 MC)

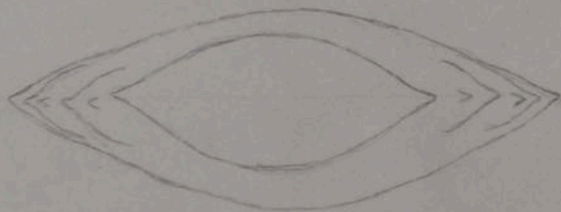
I 33

T 63

B50



$7\frac{1}{2} \times 44$

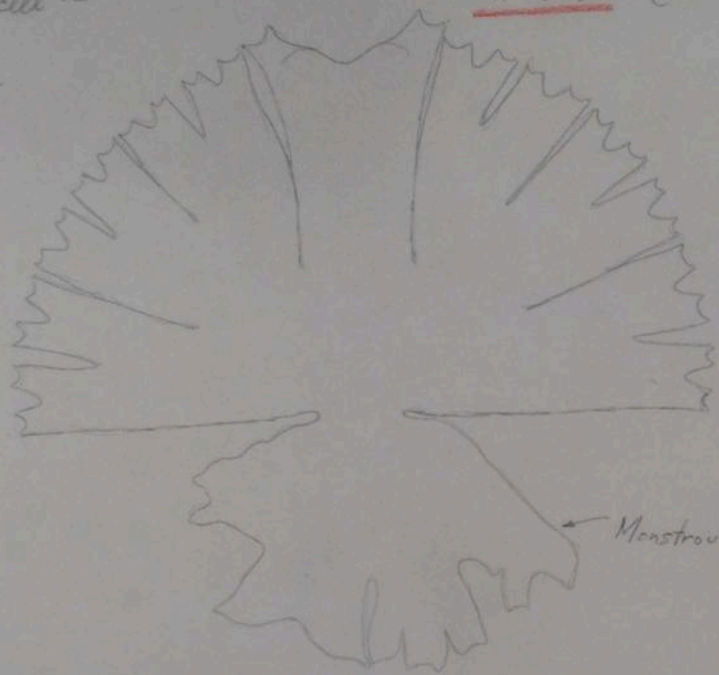


Brazil 14

Nov 7/53

L senicell 128
W 222
I 32

M. rotata (Greene) Ralfe
B 55



$7\frac{1}{2} \times 44$

← Monstrous

Brazil 14

Oct 4/53

L 31
W 23
I 8
T 10

Microsterias simplex Byrges var. *minor* n. var.



15 x 60
x 1800

Wall minutely porose



Tilted



$\frac{1}{2}$
Only \times seen

Brazil 32

Aug 16/56



CK

L semicell 17.5
W 20
I 8
T 9.5



15x60

Brazil 32

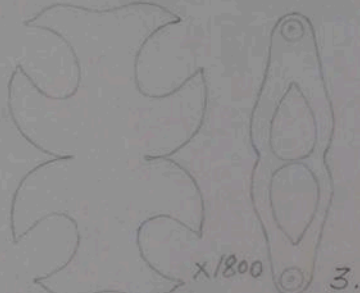
Aug 20/56

M. Ledouxii
sp. nov.
L 34
W 21
I 7



L 31
W 23
I 18
T 10

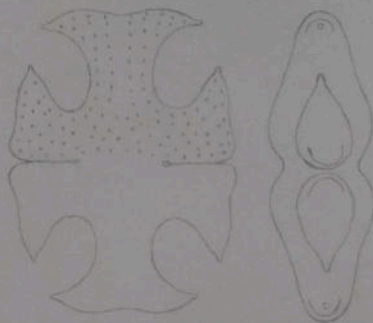
M. simplex Børges.
v. *minor* var. nov.
cf. Krieger, Brasil 1950



Markings not seen

?

L 33
W 25
I 9
T ca. 11-12



PUZZLE: What is the relationship, if any, between these three forms?

All of them are from Brazil No. 32, and all are extremely rare. About 6 specimens have been seen of Nos. 1 and 2, but only 1½ cells each of Nos. 3 and 4. Sketch No. 4 is 'constructed', from approximate measurements and visual examination while the specimen was drifting uncontrollably for several hours. My efforts to stop the drifting finally caused the loss of the specimen.

L 37
W max 26
W pole 8
I 9

Microasterias Ledouxii sp. nov. B62



x 1570

Brazil 32

APL 9/54

L 34
W 21
I 7

M. Ledouxii sp nov



To G 3/9/54

Brazil 32

Sept 13/53

L 37
W 25
I 8

L 36
W 23
I 8

L semicell 17
W 22
I 8

15x60



Brazil 32

Aug 26/56

L 73
W 25
I 9
T 11-12 1

15 x 60
x 1800

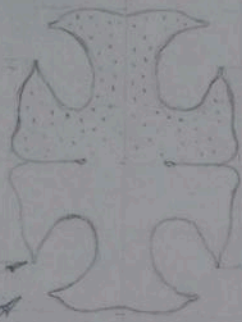
53.8 Diam
95.6

61.2 Mean
101.1

52.4 Mean
95.0



Spines longer than usual



"Constructed" sketch
Specimen lost

1/2 cells seen like this

Brazil 32

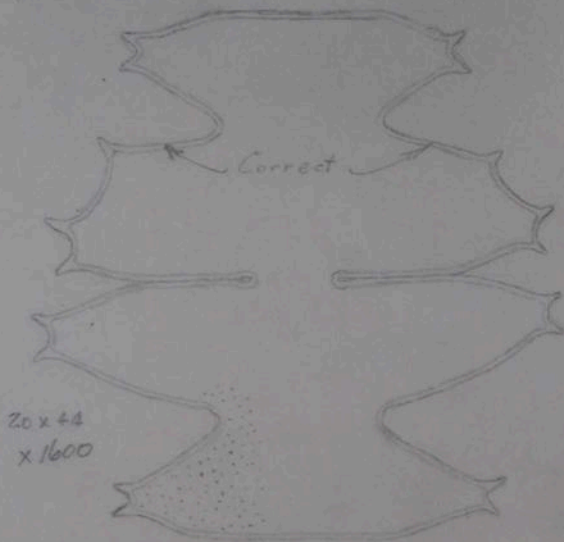
Aug 23/56

L 65
Wmax 66
I 13

M. pinnatifida fa

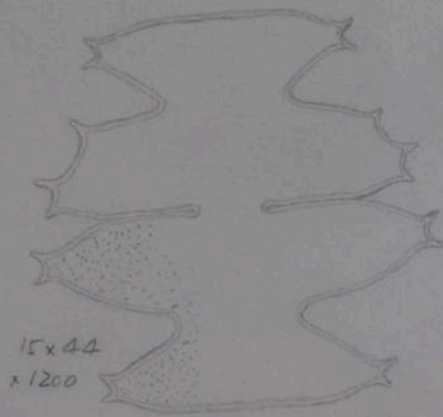
B64

6f var. *tridentata* Krieger, *IZ* 100, fig 9.



20x44
x1600

Wall conspicuously punctate



15x44
x1200

Only 1 seen so far

Brazil 52

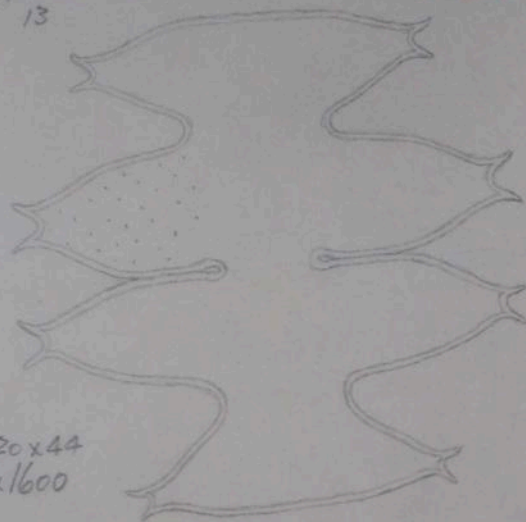
May 5/54

L 62
W max 63
W polar lobe 42
I 13

M. pinnatifida var.

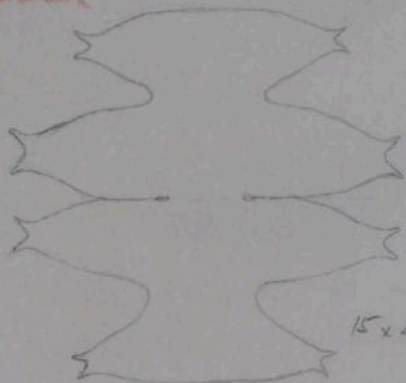
Lf var. pseudoscitans Gbd |
var. inflata Walde

B63



20 x 44
x 1600

Wall sparsely punctate



15 x 44

x 1200

Brazil 59

Apr 17/54

L 40
W 35
Vr pole 17
I 9

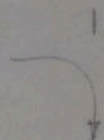
M. subincisa var brasiliensis var nov B56



Brazil 8

Sept 27/53

L 22
W 25
I 7



L 23
W 25
I 6

L 36
W 33
I 7

B57



L 36
W 33
I 8



M. subincisa var brasiliensis
var. minima

L 21
W 25
I 6

To G 3/9/54

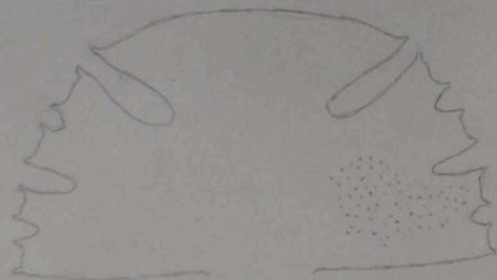
Brazil 8

Jan 19/54

L semicell 62 |
W 112
I 22 ±

truncata?

B48



10x44

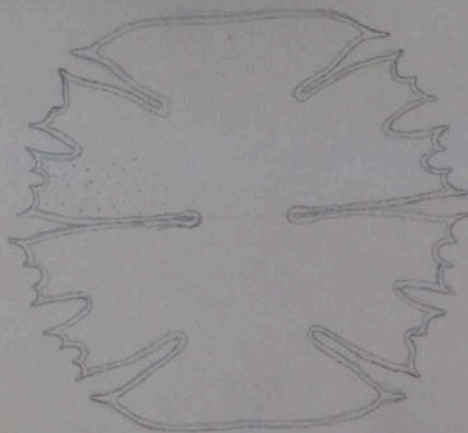
Brazil 19

Sept 22/53

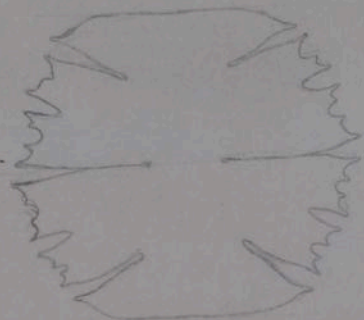
L 52
W 57
I 12

M. truncata v. pusilla Fa

B66



20x44
x1580



15x44
x1150

Same specimen
Two magnifications

Brazil 52

May 4/54

L 32
W 14

C. curtum ?

15 x 60



Top view circular
Chloroplast structure
not recognizable.

Wall seems to be porous
but pattern not visible

Several seen but
no empty ones

Brazil 20

Sept 14/56

L 75
W 30
I 28

C. cucurbitinum

20x44



Brazil 32

Digitized by the Hunt Institute for Botanical Documentation

Sept 7/56

L 68
W 25
I 22

C. cucurbitinum ⁴²

B76



Margin faintly crenulate
indicating large pores, but markings not visible

Brazil 53

May 6/54

L 33
W 16
I 15?

Penium?

15x60



Wall closely porous but
pattern not visible

Brazil 32

Aug 29/56

L 73
W 33
I 30

C. corcurbitum v. subpolymorphum B75
Nordst



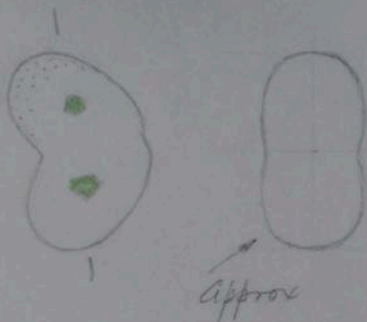
Top view circular

Brazil 52

May 4/54

L 18
W center 9

20x60
x2200



Chloroplast disorganized
structure unrecognizable.

Abnormal Cosmarium?

Only 1 seen

Brazil 20

Sept 14/56

L 66
W center 29
W pole 15

B74



Brazil 16

Apl 22/57

L 66
W max 27
W pole 16
I 26

Cos. floridanum var
fu

B73



Brazil 8, also 14

Apr 13/54

L semicell 21 = 42 whole cell.

W 24

I 21

15x60



Top view circular

Wall closely scrobiculate

Arrangement of pits not quite so regular as shown

Only 1 seen

Brazil 32

Aug 6/59

L 26
W 11
I 9



20x60

Top view circular

Brazil 32

Aug 27/56

L 28

W 13

I 11

15x60



Top view circular

Not sure if markings
are granules or pits.

Brazil 32

Sept 8/56

L 75
W 47
I 15
T 30±

C. pyramidatum

B83



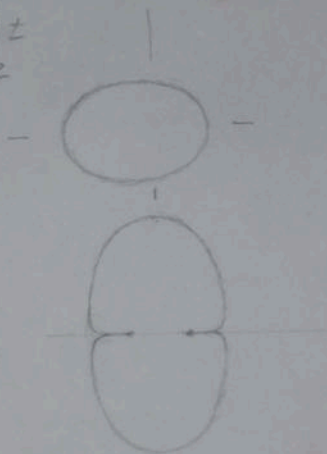
Wall seems to be punctate

Brazil 52

Digitized by the Hunt Institute for Botanical Documentation

May 3/54

L 29
W 18
I 9±
T 12



20x44

Wall apparently
smooth

Brazil 2

Aug 12/59

L 27
W
I
T-13

B78



?



15x60



↑ approx



↑ accurate

Wall scrobiculate
Margins crenulate

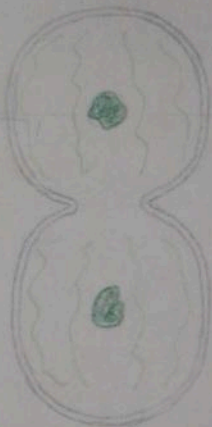
Markings resemble those of *C. variolatum*

Brazil 16

Apr 27/54

L 52
W 26
I 9

C. moniliforme v. *pulcherrimum* fa B82
Steinecke 1915



Top view circular
Wall markings, if any,
not visible

Brazil 52

May 3/54

L 60
W 42
I 40

*C. ~~connatum~~
pseudocannatum?*

B79



Chloroplast partly decayed + disorganized
Wall markings not visible

Brazil 16

Apr 28/54

L 64
W 42
I 40

C. pseudoconnatum, fa.

B80



4 quadrantal chloroplasts
in each semicell

Brazil 53

May 6/54

L 72
W 43
I 32

C. pseudoconnatum

B81



Top view circular.
Central part obscured by
remnant of chloroplast, whose
structure was unrecognizable.

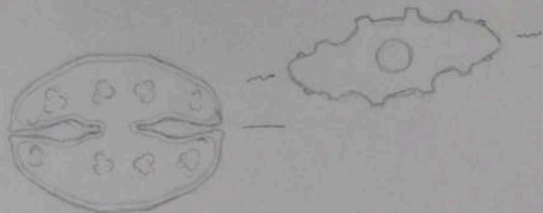
To G 4/5/54

Brazil 14

Nov 8/53

L 20
W 27
I 5
T 13

20x44 —



Brazil 10 + 11

Aug 20/59

L 20
W 27
I 5
T 14-15 ±

C. pseudotaxichondrum var. (*floridense*?) B71
W+W

Cf. my drawings 1425-6-7 from Florida
& Mississippi.

Cf. also *C. Longii* Taylor
C. naviculare Borge

I think that *C. Longii* is
simply a variety of
C. pseudotaxichondrum



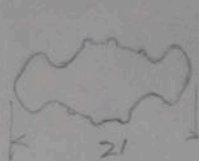
Brazil 16

Apr 26/54

L 16
W 22
I 5
T 10.5

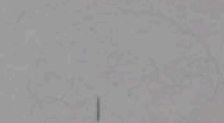
Cosmarium pseudotaxichondrum
V. nov.

B67



Lower semicell, drawn
through the upper one

15x60



First one seen.

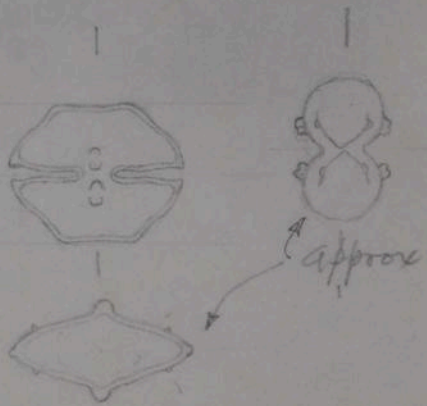
Details very much obscured by chloroplast.

Brazil 6

Apr 30/57

L 18
W 21
I 6
Tmax 13

B70



20x44

of my drawings ^{USA.} 1427-8.
~~C.~~ C. Kanitzii v. brasiliense
fa Grönb.

Brazil 16

Apr 27/54

L 19
W 23
I 6
T max 13

B69

20x44



Brazil 16
~~AP~~

Apr 30/54

L 17
W 21
I 6

B68



20x60

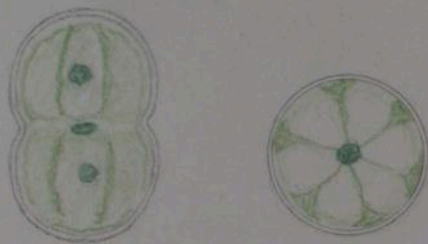
Brazil 32 also in 16

Apr 20/52

L 29
W 19
I 16

Cosmarium globosum Bulow. fa.
B77

20x44



Top view circular
Margin minutely crenulate
indicating wall is scrobiculate.

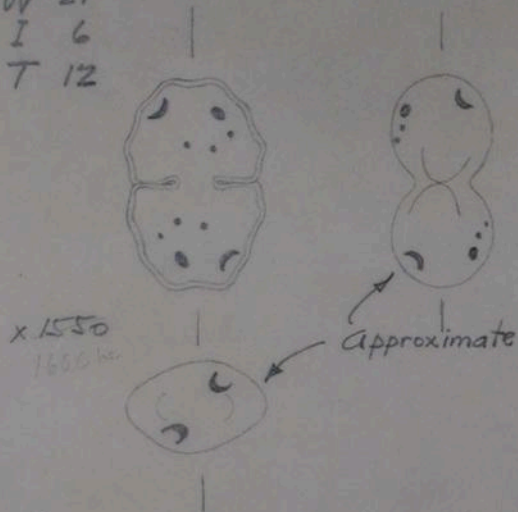
Brazil 16

Apr 27/57

L 27
W 21 17K
I 6
T 12

Euastrum sp. nov. OK

B20



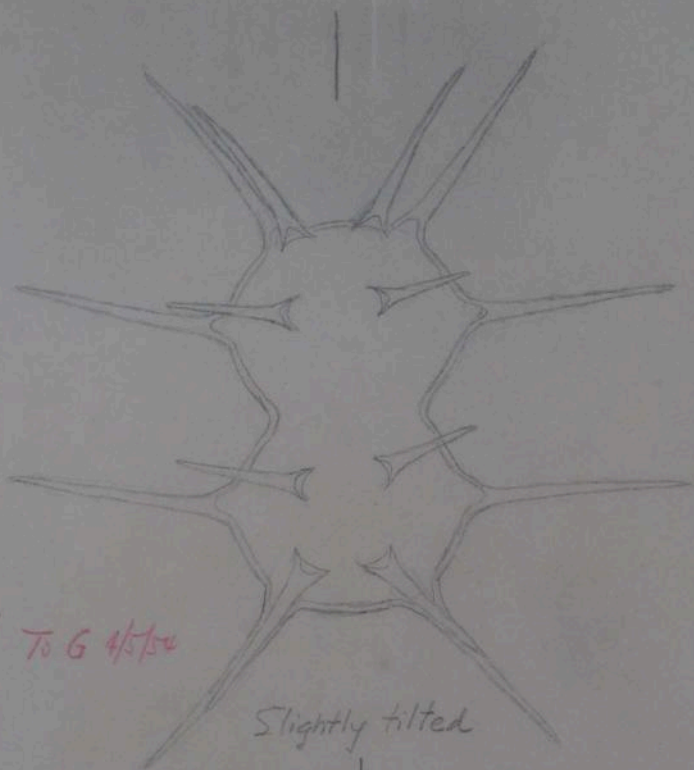
See my drawings 1677-78-79 for something similar but different

Only ²/~~X~~ seen so far

Brazil 32

Sept 22/53

B90



To G 4/5/50

Slightly tilted

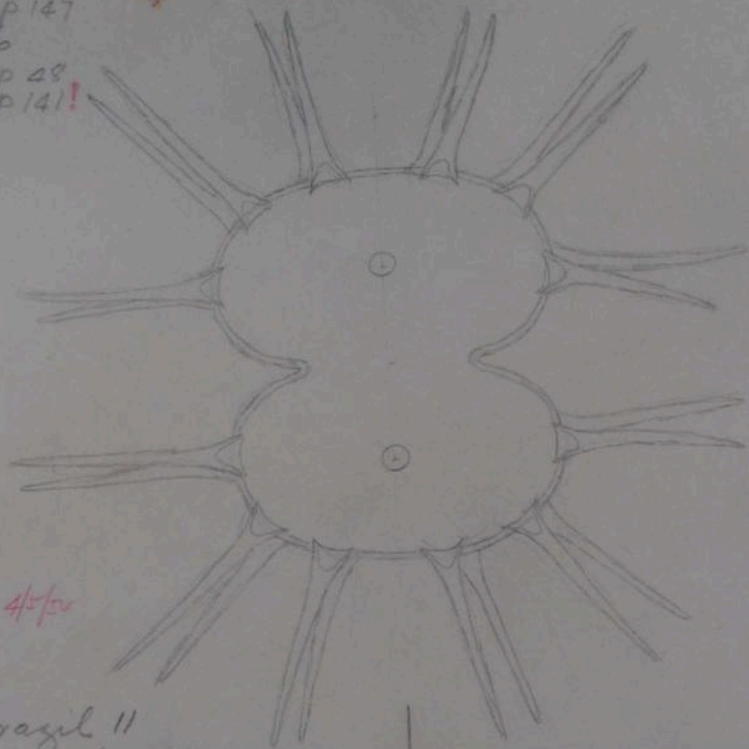
Brazil II

Oct 4/53

L ssp 78
csp 123
W ssp 68
csp 147
I 36
T ssp 28
csp 141!

X. amazoniense sp. nov

B89



T. G 4/50

Brazil 11

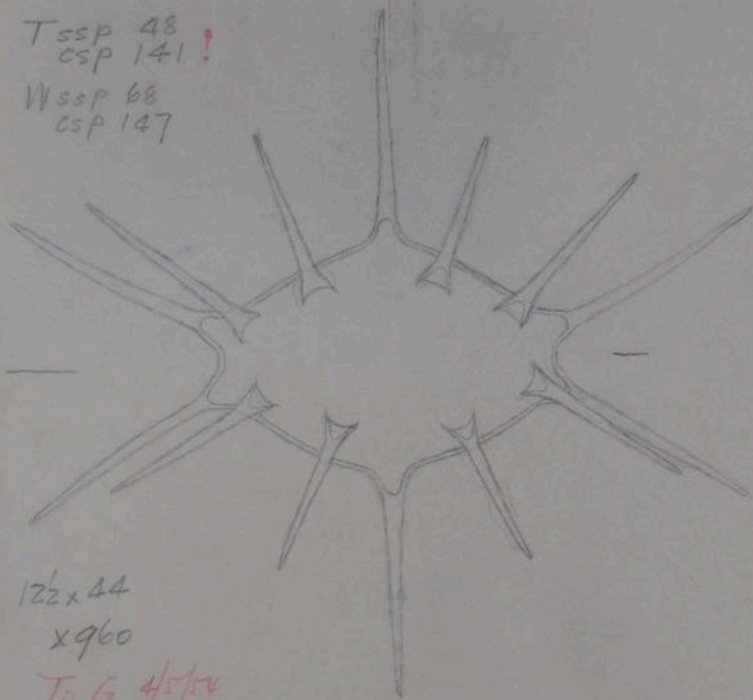
also 14

Oct 4/53

Tssp 48
CSP 141 !

Wssp 68
CSP 147

B91



12 1/2 x 44

x 960

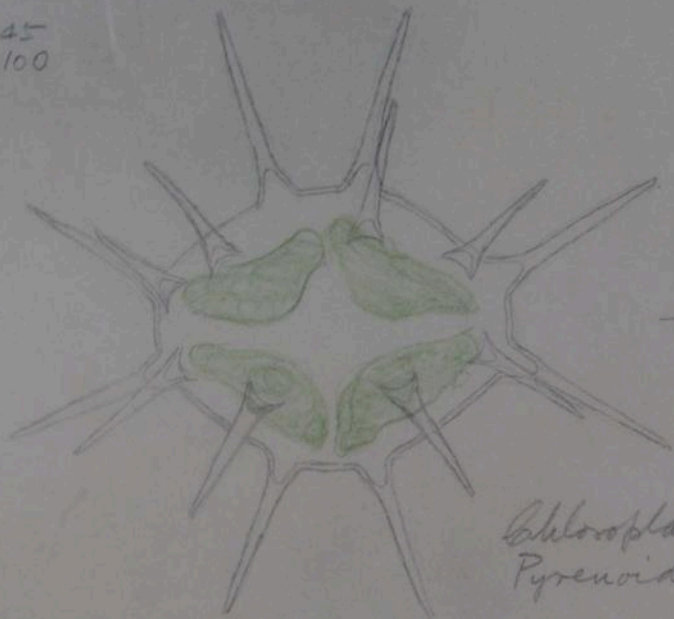
To G 4/5/50

Brazil II

Oct 4/53

B86

Tssp 45
osp 100



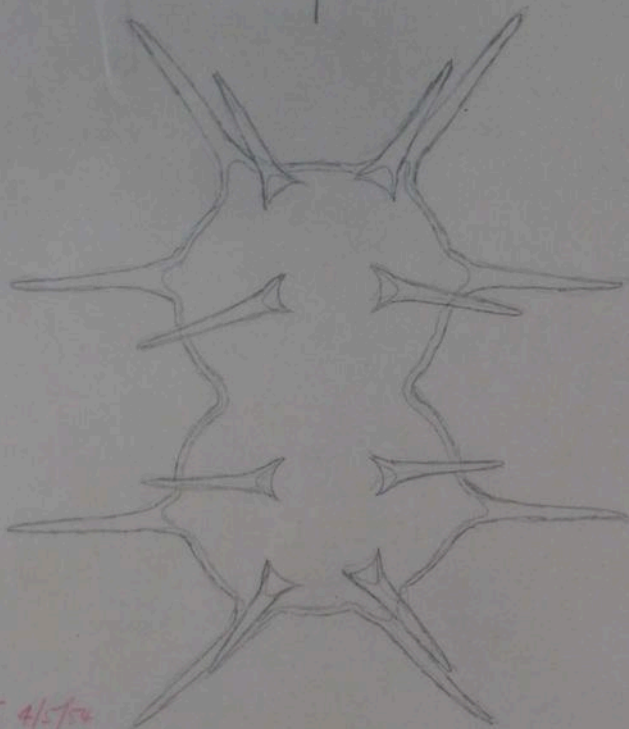
Chloroplast shrunken.
Pyrenoids not visible

To G 4/130

Brazil 19

Sept 25/52

B87



To G 4/5/54

Brazil 19

Sept 25/52

L ssp
csp
W ssp 66
csp 76
I
T ssp 48
csp 91

X. amazoniense var dicentrotum
v. nov

B85

15 x 44

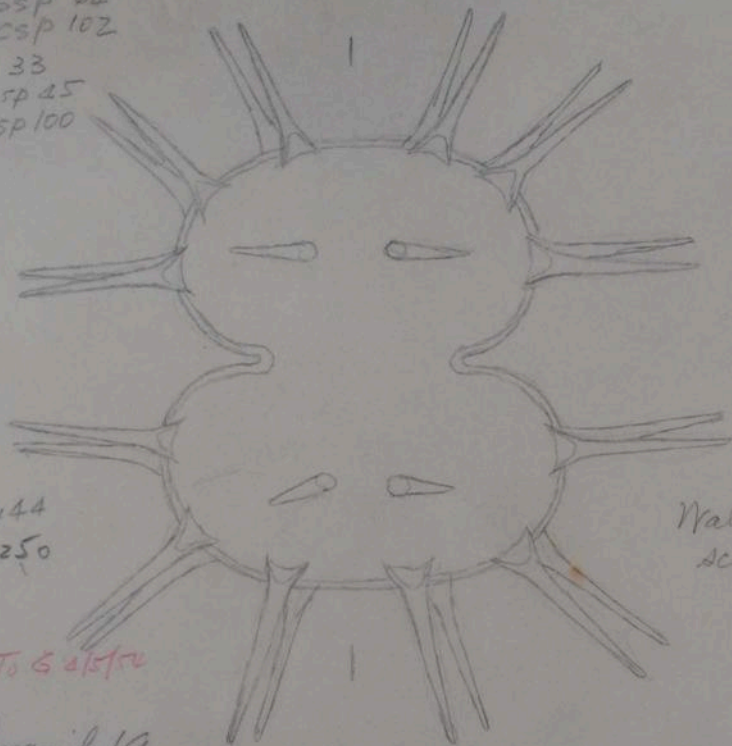


Brazil 19

May 2/54

Lssp 75
CSP 117
Wssp 62
CSP 102
I 33
Tssp 25
CSP 100

B88



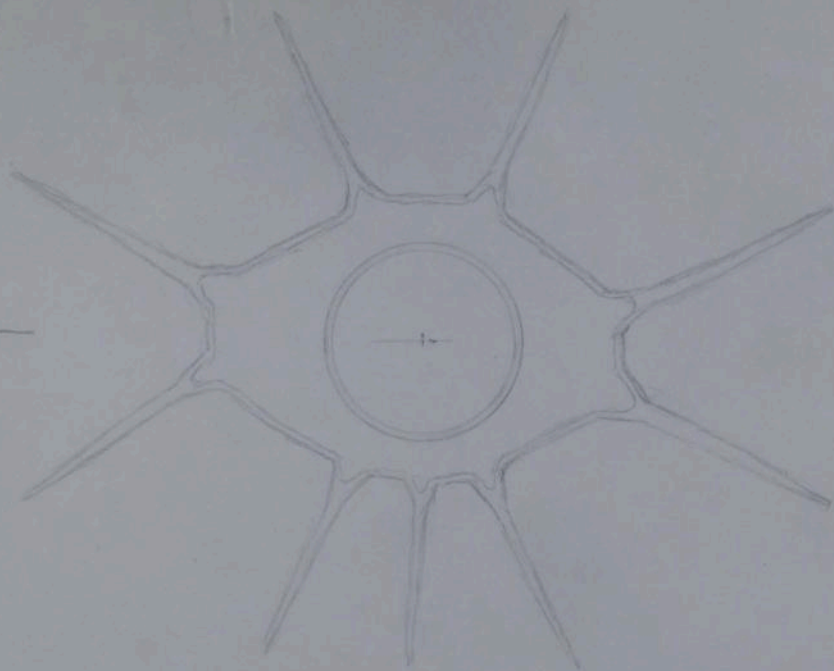
15x44
x1250

Wall closely
scrobiculate

To G 21570

Brazil 19

Sept 25/53



Brazil 10+11

Aug 17/59

L ssp 90
csp 144

Wssp 87
csp 162

I 42

Tssp
csp

12 1/2 x 44

Brazil 10+11

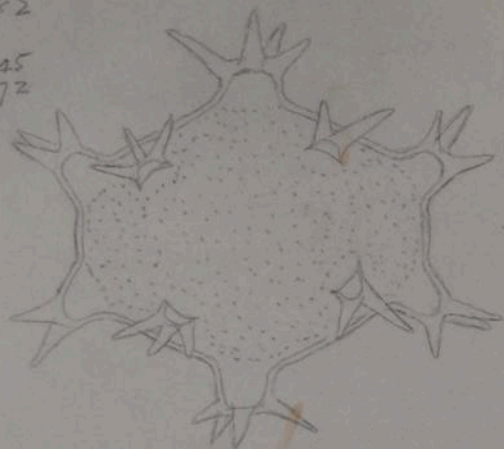
Aug 17/59

L spr
cpr
W spr 57
cpr 82

I
T spr 45
cpr 72

X fragile var depauperatum Borgl

B94



15 x 44

To G 4/1/54

Brazil 19

Apr 3/54

L spr 81
cpr 109
W spr 54
cpr 85
I 25
T spr 45±
cpr 81

X. fragile var depauperatum Borges

B93

15x44

To G 4/5/50

Brazil 19

This looks robust rather than fragile.

Apr 2/54

~~X. regulare Nordst~~

B95

X. fragile var depauperatum

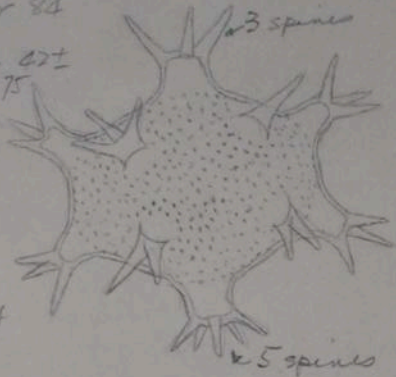
Borge

W spr 52
cpr 84

T spr 67±
cpr 75

I 24±

12½ x 44



Wall closely scrobiculate
except on hollow processes.

Get front view

Brazil 19

Sept 23/53

L ssp 81
csp 119

X. armatum var.

W ssp 69
csp 93

I 27
T ssp 61
csp 81



Brazil 10 + 11

Aug 17/59

L 27 I
18 dss
csp 81
63 ssp T

Lssp 81
CSP 114
Wssp 57±
CSP 96
I 27
T



15x44

Not true front view

Brazil 1954

Cruz 17/57

L ssp 48
csp 75

W ssp 34
csp 90

I 12

T ssp 29
csp 51

~~X. antilopacum~~ var Nordstedtii (~~Nordst~~) Grönblad

most probably not antilopacum ??? ok Sp. nov

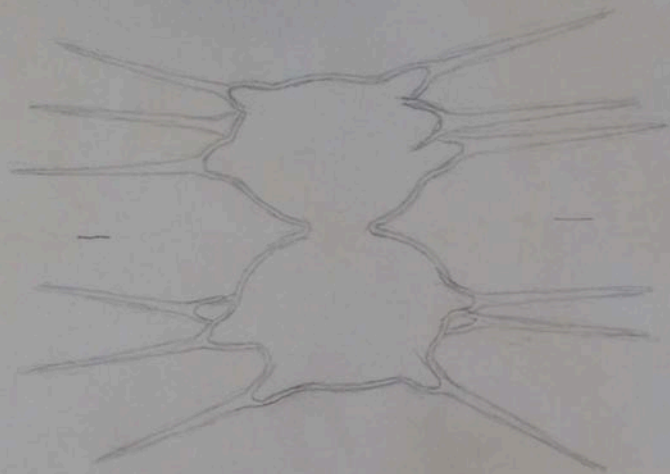
OK
B84

Syn.
X. ant. v. Nordstedtii 51
Gold
Brazil

x 1550

Brazil 20

Sept 27/53



Brazil 20

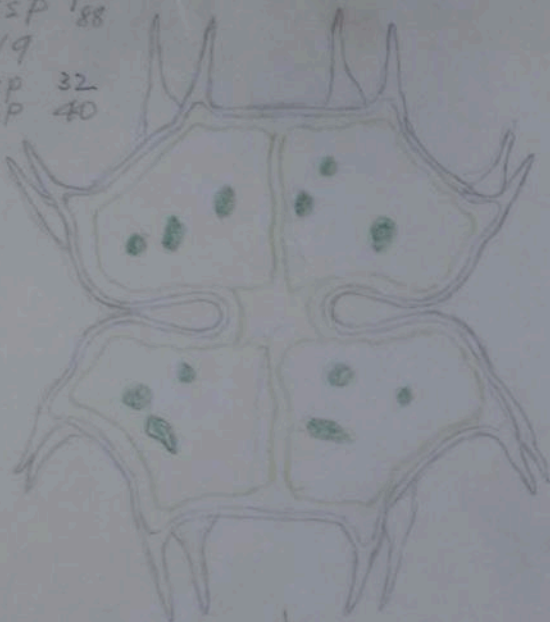
4/25/62

L ssp 67
CSP 96

W ssp 72
CSP 88

I 19

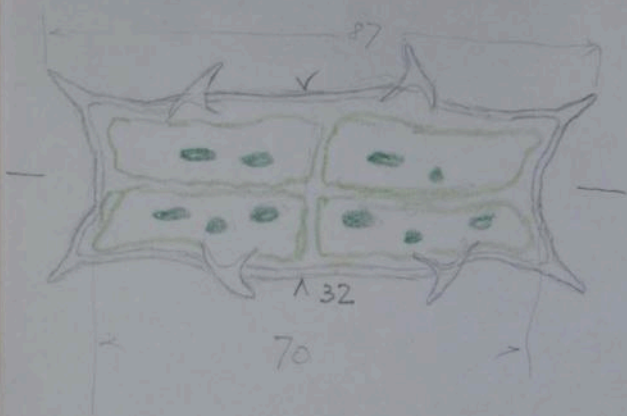
T ssp 32
CSP 40



3 piperoids in
each quadrant

Brazil 9

Aug 16/59



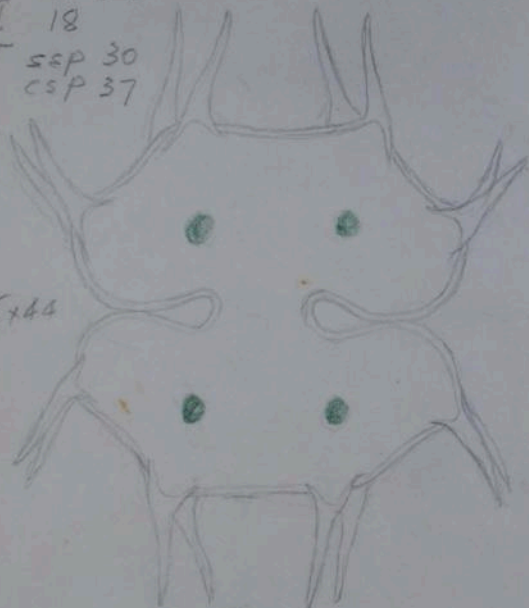
Brazil 9

Aug 6/57

Lssp 63
CSP 97
Wssp 63
CSP 82
I 18
Tssp 30
CSP 37

X. siolii sp. nov.

15x44



? (4) pyrenoids
per semicell

Brazil 9

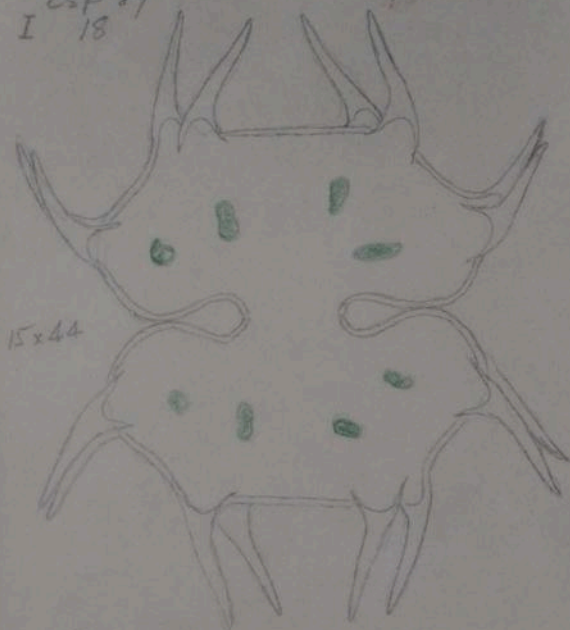
Aug 14/57

X. siolii sp. nov

B96

L ssp 61
csp 101
W ssp 85
csp 87
I 18

Check pyrenoids
4 or ~~8~~ per semicell



15x44

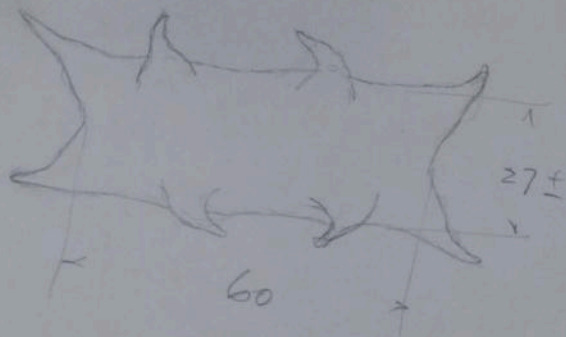
8 pyrenoids per semicell
To G 3/9/54

Brazil II

Sept 19/53

X. Siolii

15 x 44



60.8
96.2

Brazil 9

Aug 16/59

L semicell ssp 30
csp 54 ±

X. sidii sp. nov

B97

W ssp 63 ±
csp 84

I 15 ±

36 μ

30 μ

Basal view

20x44
Too large

Grönblad says
one empty cell
with many serbicular
check

76

Brazil 14

Tilted

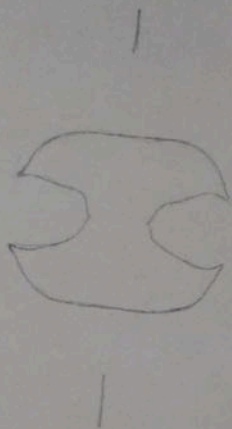
Sept 18/53

L 21
W 27
I 7

Arthrodesmus apertus sp nov

L 21
W 29
I 7

B102



To G 2/1/54

Brazil 8

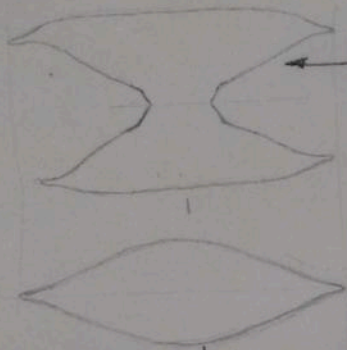
Sept 18/53

L 22
W 31
I 7

Arthrodesmus apertus sp. nov. 23

W 42
I 8

B101



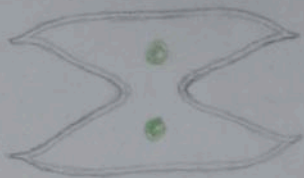
← fa. latior

↑ approx

Brazil 8

Apr 14/54

L 21
W 36
I 8
T 10±



20x44

Cosmarium lunatum
var. *depressum* W + W,
in Schumacher + Whitford
Add. to FWAlg. N. Carolina III
Journ. Elisha Mitchell Soc
73 (1): 29-32, 1959, which
has convex dorsal ^{apical} margin,
otherwise similar
L 24, W 40, I 7.5, T 12

2 seen

Brazil 8

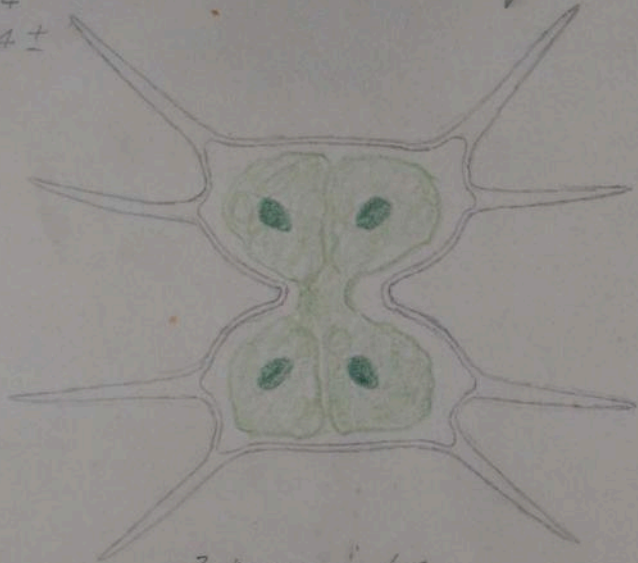
Aug 10/59

L SSP 39
CSP 66
W SSP 33
CSP 78
I 14
T 24 ±

~~X.~~ X. controversum in Borge (Hochne)

But this ought to be an *Arthrodesmus*
small form

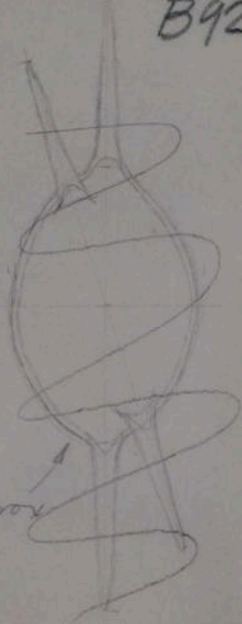
B92



2 pyrenoids
per semicell

To G 4/5/50

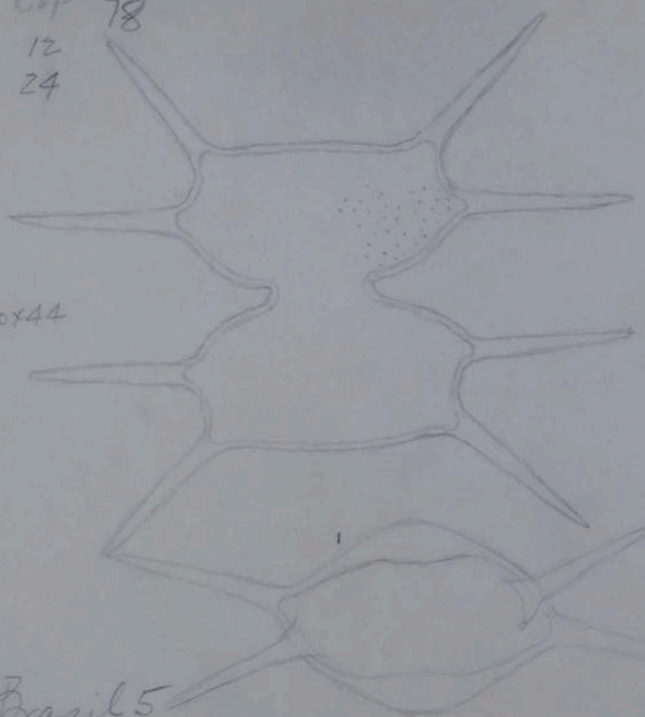
Brazil 11



approx

L ssp 39
 CSP 63
 W ssp 34
 CSP 78
 I 12
 T 24

X. controversum
 |



20x44



Chloroplast destroyed
 by parasite.

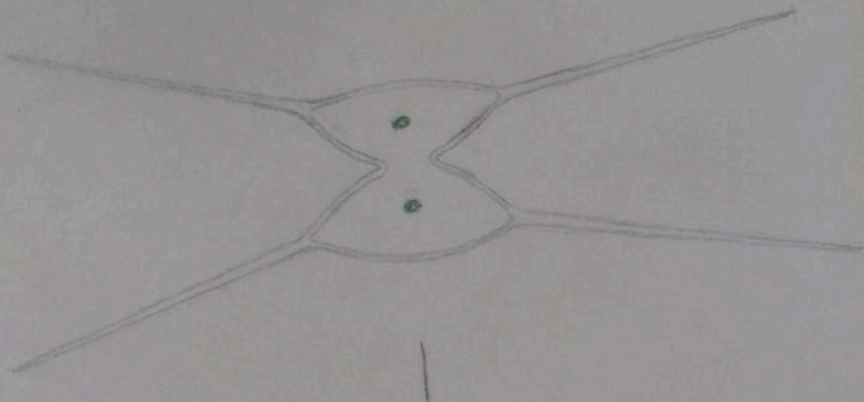
Brazil 5

Cing 13/59

L ssp 31
csp 54
W ssp 34
csp 142
I 9

A. triangularis var latissimus
v. nov

B100



cf. *A. fusiiformis* W & W

Brazil 20

ABC 18/54

L 42
W ssp 42
 esp 141
I 9
T 19

A. triangularis var inflatus W & W
Gribbad, Brazil

B99



Chloroplast partly disintegrated, structure unrecognizable.

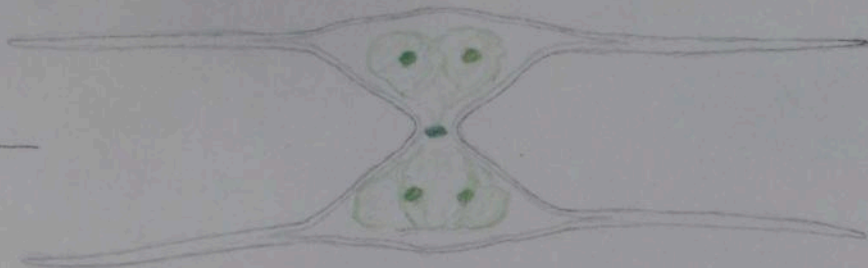
Brazil 20

Mo 31/54

L 39
Wssp 42 ±
CSP 136
I 9

(N-6)

15x44



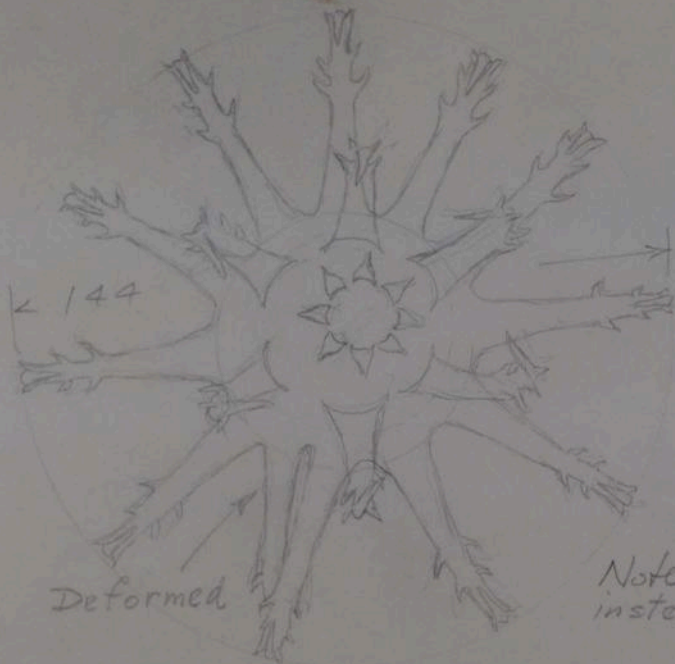
Note 2 pyrenoids per semicell.

Brazil 20

Sept 16/56

Wcpr 144

10x44



Deformed

Note 12 processes
instead of 10

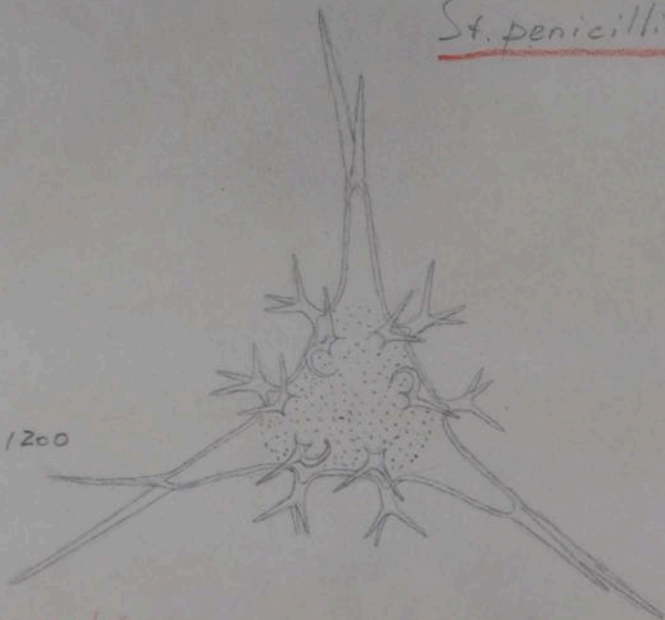
Detached upper semicell
Lower one not found.

Brasil 10

Aug 21/7

St. penicilliferum Grönbld
B111

X 1200



To G 4/5/54

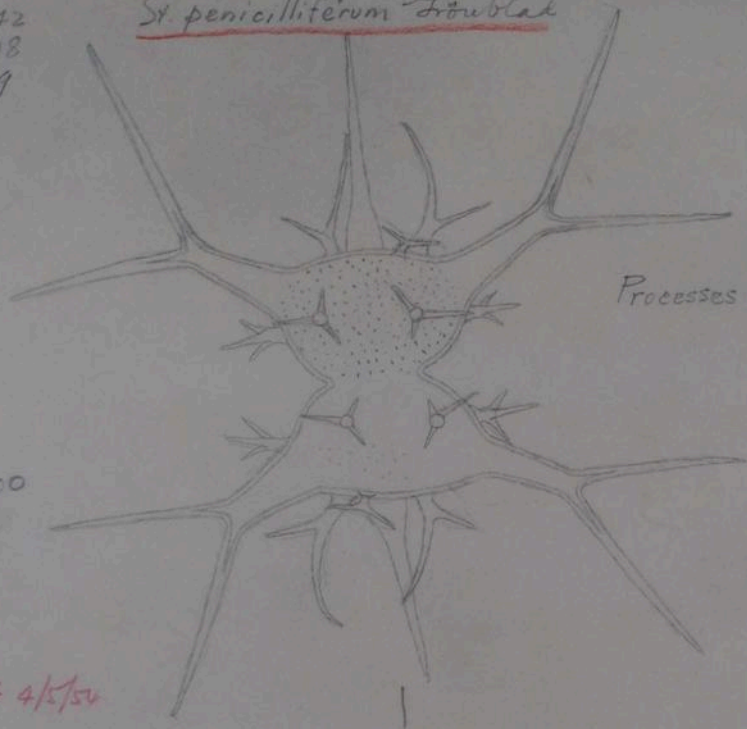
Brazil 20

Sept 27/53

L spr 42
cpr 108
W cpr 119
I 16

St. penicilliferum Grönbld

B110



Processes smooth, no
punctae

15v44
x 1200

To G 4/15/54

Brazil 20

Sept 27/53

L 25
W^{spr} 13
epr 27
I 8

St. polymorphum f.

B139

20x22



Probably more granules
on apical surface.
Obscured by chloroplast

Brazil 52

May 2/54

L ssp 19
CSP 45

W ssp
CSP 48

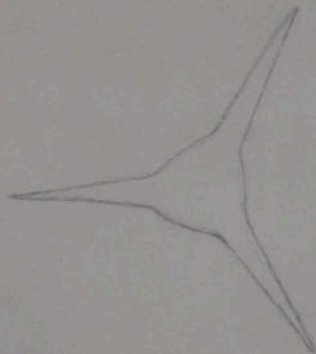
I 9

St. protractum Racib ~~New?~~

Tapakoome

B132

20x44



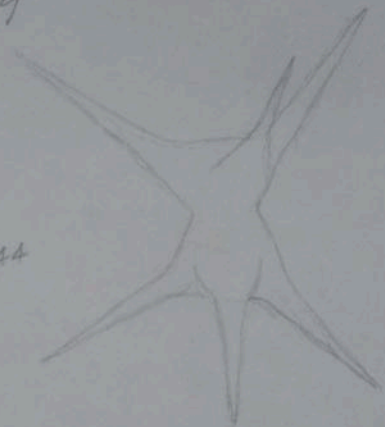
To G 4/5/54

Brazil 17

Sept 26/53

L spr 18
cpr 48
W cpr 45
I 9

20x44



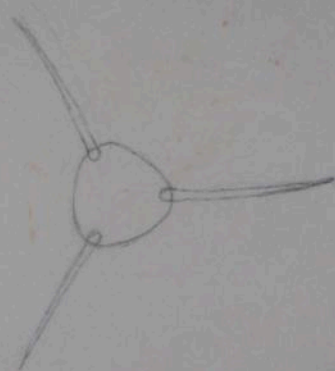
Brazil 10 + 11

Aug 19/59

L ssp 25
CSP 93
W ssp 13
CSP 45
I 8

B122

St. pseudoarthodesmus
Gröublad



20x44

To G 4/5/54

Brazil 20

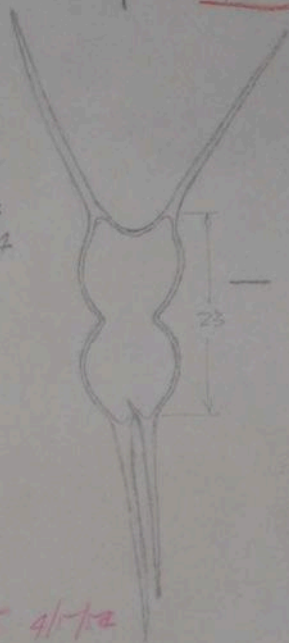
45

Sept 29/53

St. pseudoarthrodosmus var bifidum Grönb. & al.

B123

Lssp 23
CSP 75
Wssp 13
CSP 34
I 6



Top view approx.

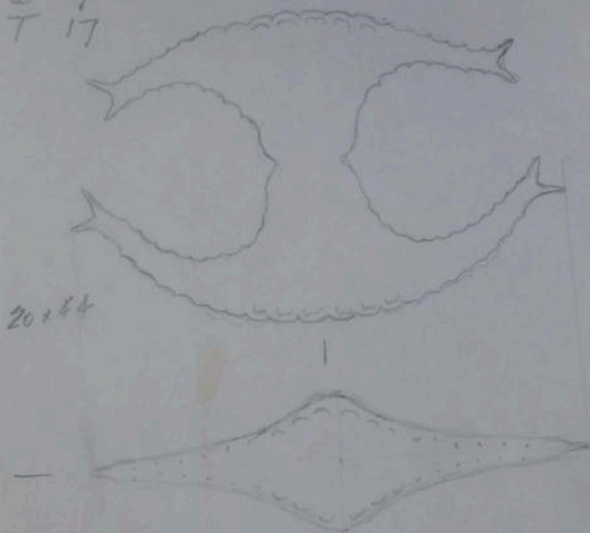
20x44

To G 4/1/12

Brazil 201

Sept 30/53

L 39
W base 12
W apr 60
I 9
T 17



20x44

Approx

Markings not clearly seen

Only 1 seen

Brazil 10+11

Aug 17/59

L spr 57
cpr 63

W body above with 14

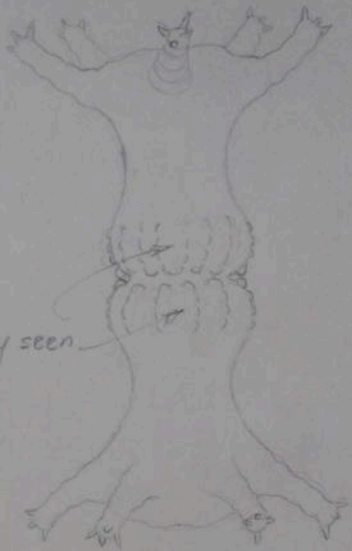
W epr 18 " 5 processes

I 11

W neck 12

15 x 60

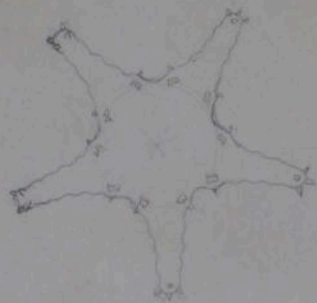
Not clearly seen.



6 processes

cf *St. pseudozonatum* Borge 1899

cf *St. elongatum*



Brazil 32

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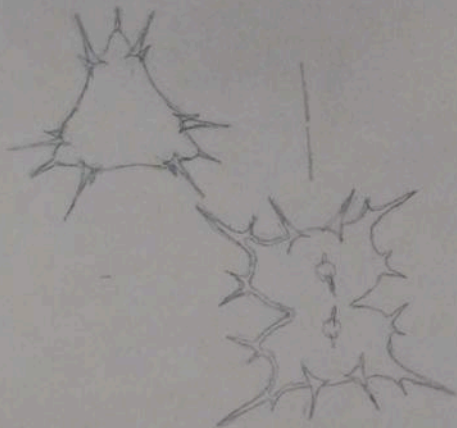
Aug 20/56

L ssp 21
csp 28
W ssp 18
csp 27
I 9

~~St. contectum Turm (var. ?)~~
~~St. quadrangulare v. contectum (Turm)~~
Hbld Brog

B134

20 x 44

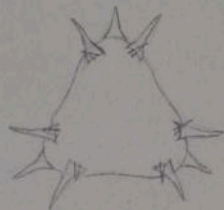


Brazil 16

Apr 24/54

L ssp 21
ESP 27
W ssp 18
ESP 28
I 9

leaf. St. quadrangulare ^{v. contectum}
(Turon) B133
Groubled, Brazil, figs 254-256
~~of St. contectum~~



To Galbraith

Brazil 16

Oct 11/53

L ssp 30
CSP 35
W ssp 24
CSP 30
I 12

Staurastrum ~~bystrix~~ (var.?) **B136**
octangulare var minus Krieg & Scott

leaf similar form from Peru
which Krieger assigned
to St. octangulare. check



Brazil 16

Apr 24/54

L SSP 27
CSP 30

I 12

St. octangulare var *minus*

B135

V. NOV Krieger & Seck

Zov 44

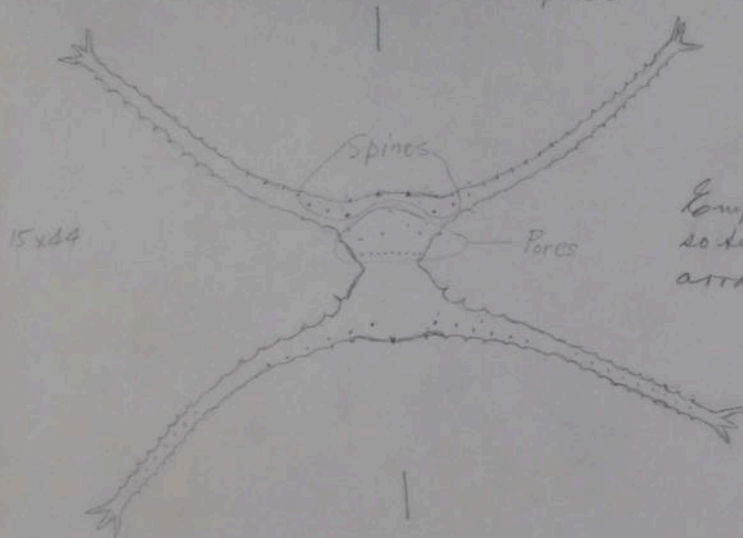
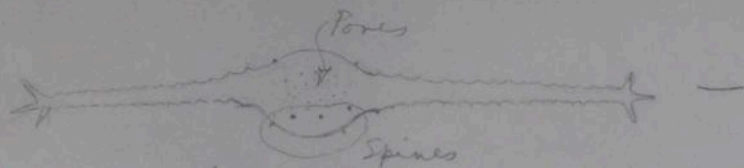


57.3
91.0

Brazil 52

May 4/54

L spr 25
 cpr 92
 W cpr 108
 I 10
 T 14



Empty cell, but spines are
 so tiny that their exact
 arrangement is uncertain

Brazil 20

Sept 16/56

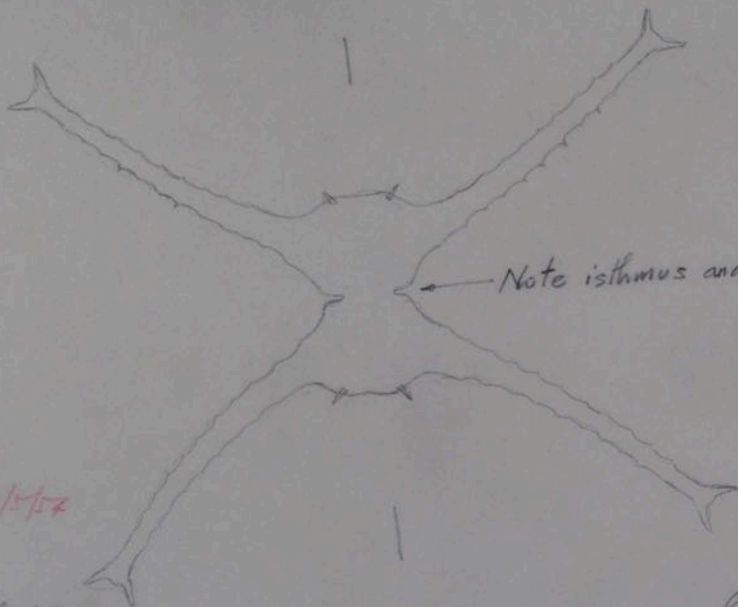
L spr 24
cpr 60

W spr
cpr 81

I 7

T 13

St. quadrinotatum Grönblad
var constrictum v. nov. B126



20x44

Note isthmus and sinus

T. G 4/5/54

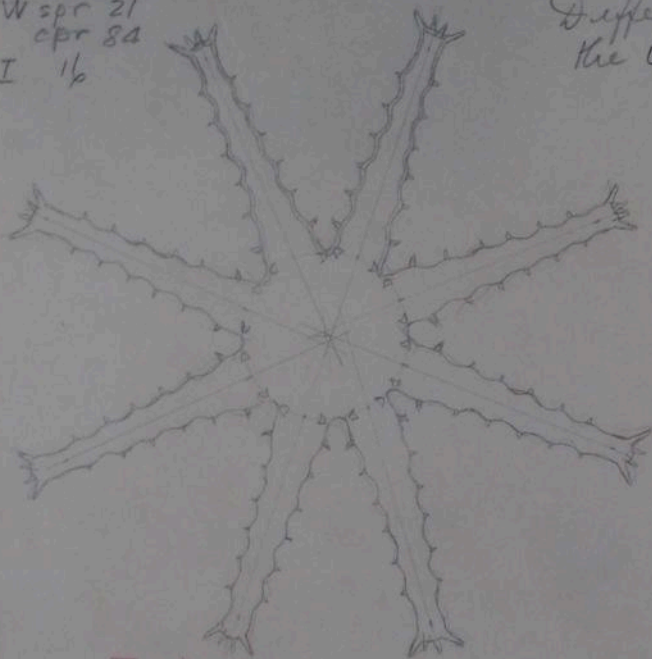
Brazil 14

Oct 5/53

St. radians var. brasiliense v. nov

W spr 21
Apr 84
I 16

Differs somewhat from
the USA form B112



To G 4/5/54

Brazil 11

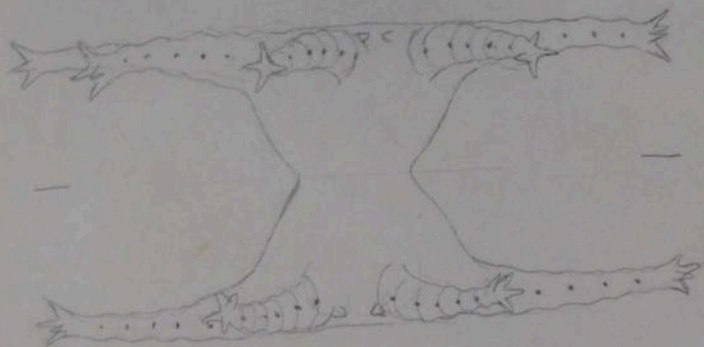
Sept 19/53

L 39

W spr 21
apr 84

I 16

St. radians var. brasiliense B113
v nov



Ti 5 4/5/53

Brazil 11

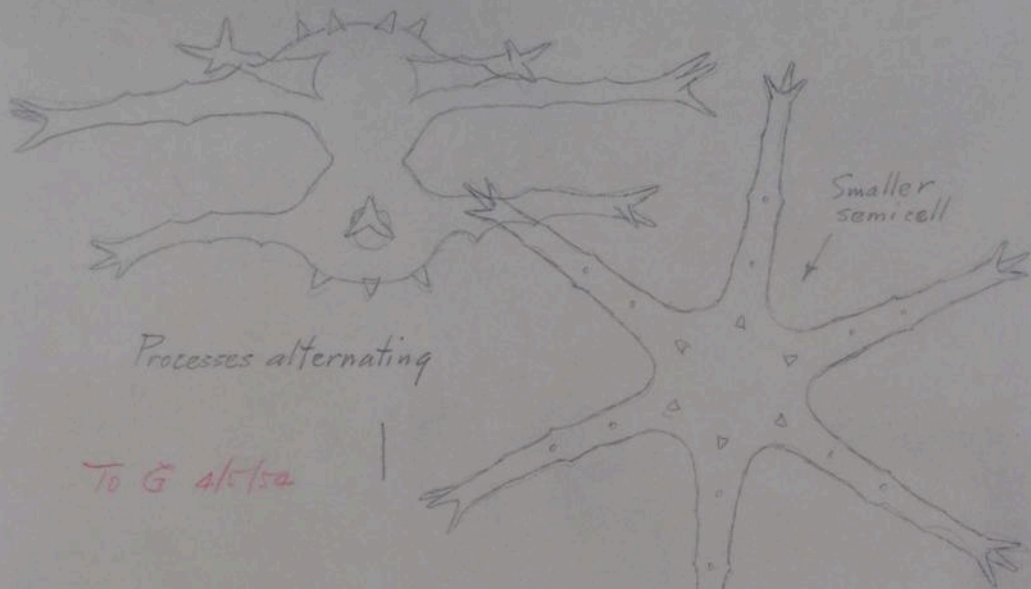
Sept 19/53

L 36
Wopr 86

I 10

ratula?
~~tiometicum?~~

B/25



Processes alternating

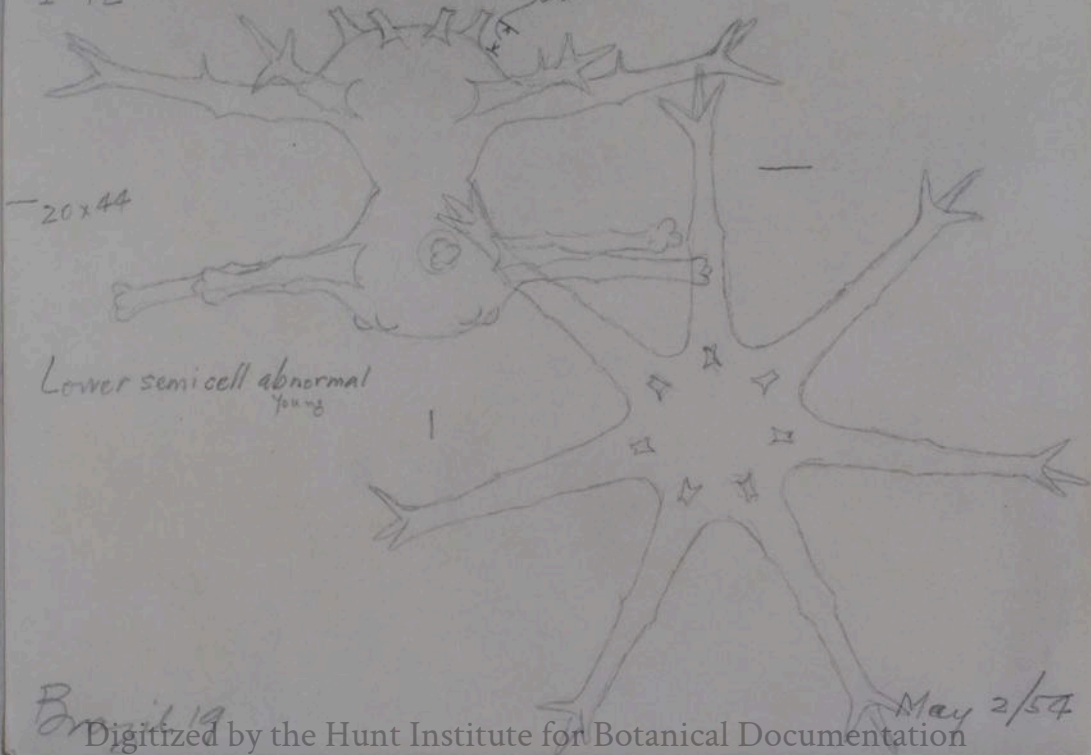
To G 4/1/52

Brazil 19

Oct 4/53

L spr 38
cpr 42
W spr 21
cpr 87
I 12

about 4 μ , much longer than usual



Lower semi cell abnormal
young

Brazill

May 2/54

L 48
W apr 64
W body above with 14
I 9

New ?
St. guianense sp. nov. B154
Sicilia



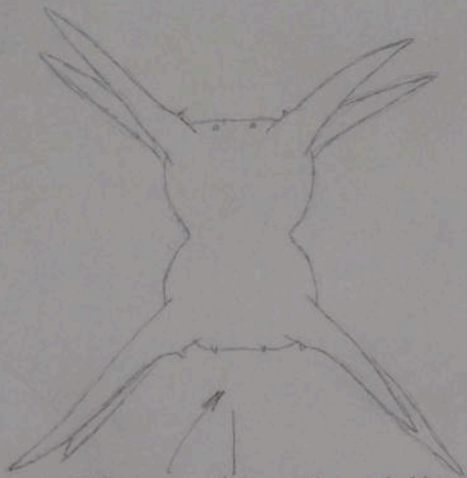
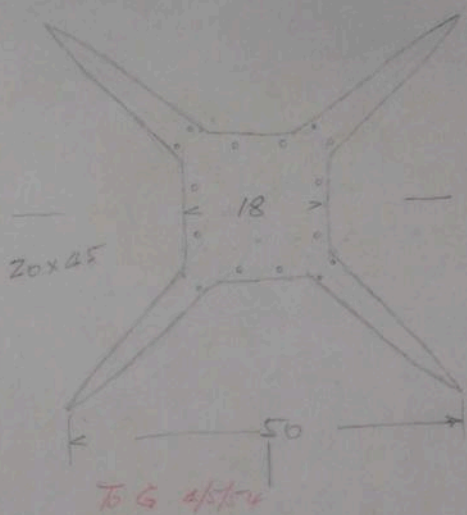
This occurs, very rarely, and in company with one or two other desmids, among a large quantity of marine diatoms. The collection comes from the Rio Guamá near Belém, about 90 miles from the Atlantic Ocean.

Brazil 54

Apr 15/54

L spr
 cpr
 W spr (on square) 18
 cpr " 50
 I |

St. spiculiferum Borge, fa. B129
reductum f. nov.



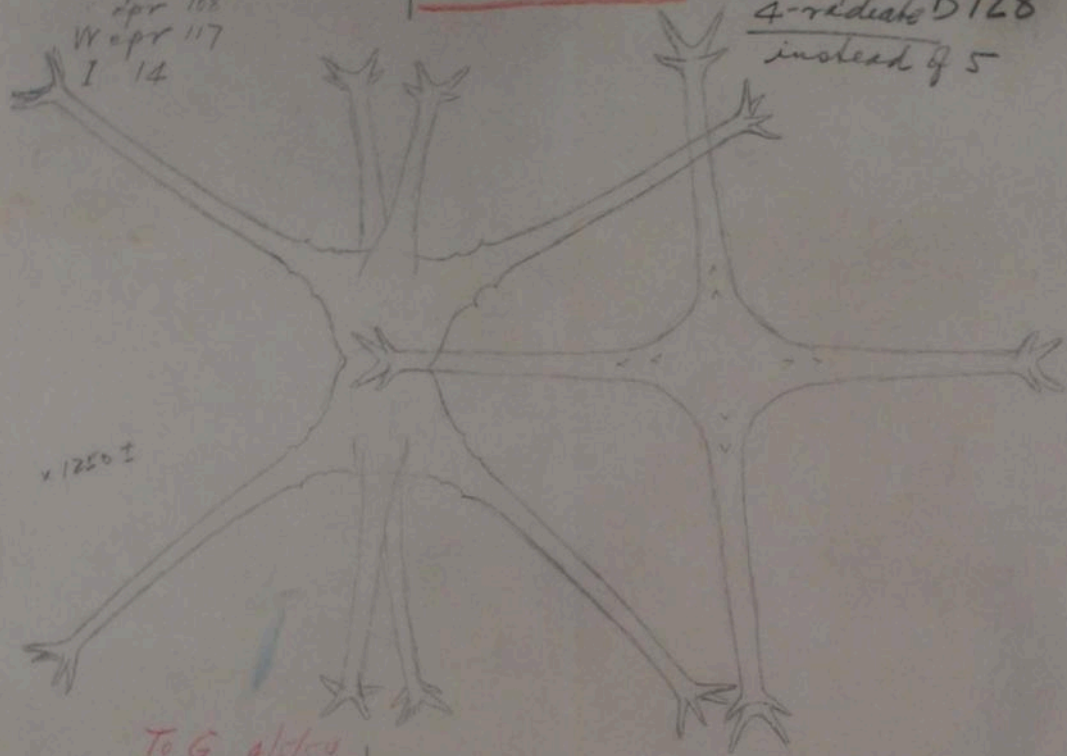
This must have been tilted

Brazil 20

Sept 27/53

" L spr 26
rpr 108
W spr 117
I 14

St. stelliferum Borg. f.
4-radiate B128
instead of 5



v. 1250 I

To G 4/1/54

Brazil 19

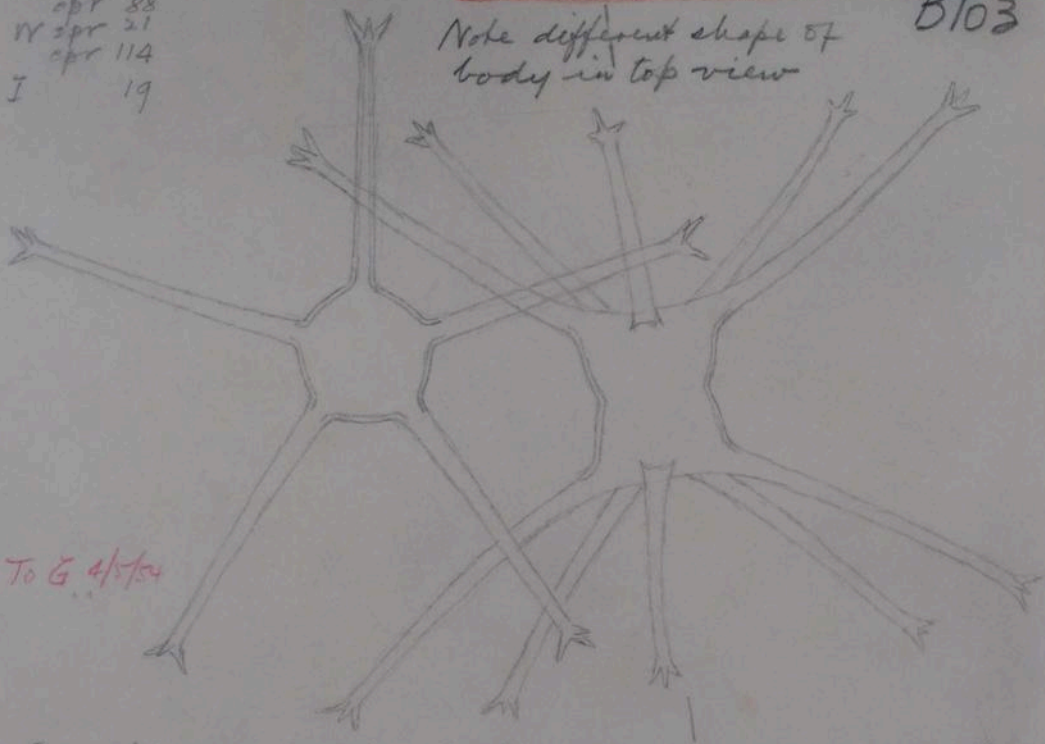
Nov 2/53

L spr 30
apr 88
W spr 21
apr 114
I 19

St stelliferum Boege, var. laeve v. nov

B103

Note different shape of
body in top view

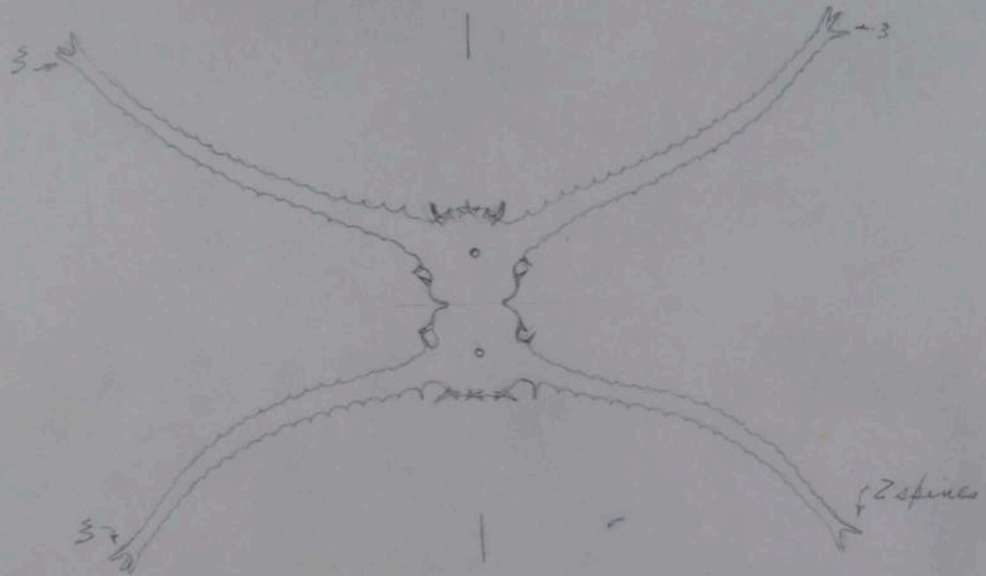


To G 4/5/54

Brazil 19, also 6, also 11

Apr 3/54

L spr 33
cpr 90
W spr 129
I 9
T ssp 14
csp 18



Brazil 20

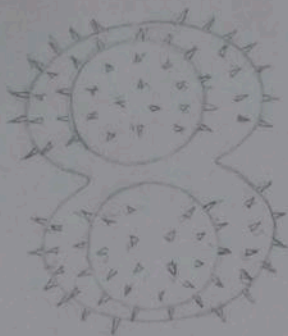
Sept 15/56

L ssp 38
csp 40
W ssp 30
csp 33

I 15



15x60



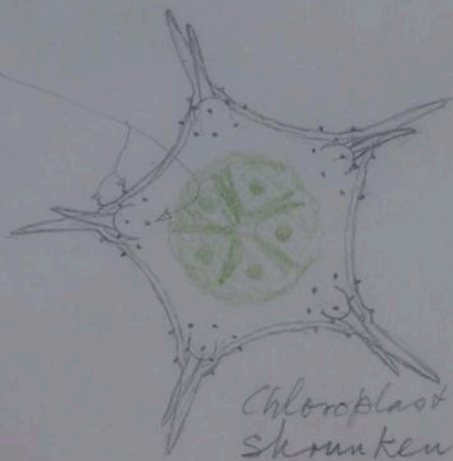
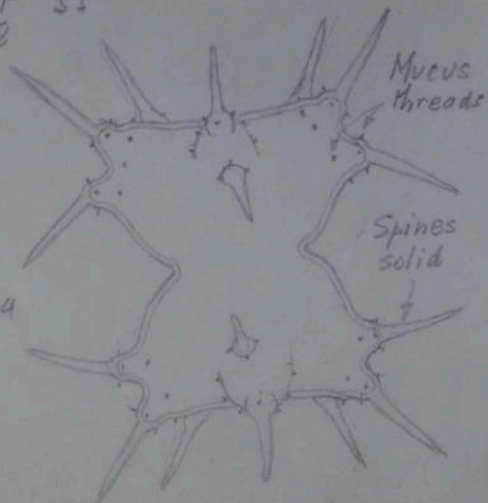
Only 1 seen so far

Brazil 32

Aug 28/56

L ssp 39
 CSP 54
 W ssp 36
 CSP 55
 I 18

20x44



Brazil 4, also 14

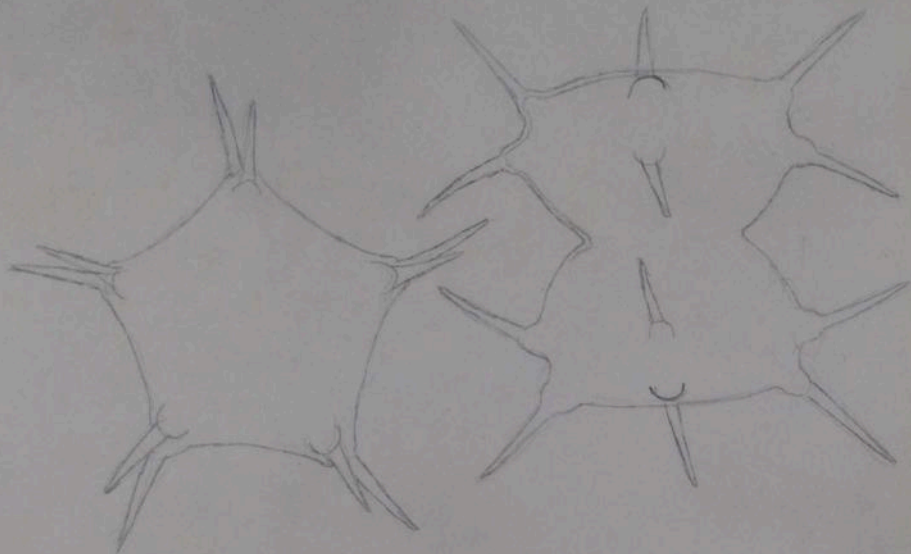
Aug 12/59

Lssp 42
CSP 60
Wssp 36
CSP 57
I 18

St. decacanthum sp. nov. New?

B131

This is similar to *St. tridens* - Neptuni W.W. Welwitsch



Brazil 14, also 4.

Sept 18/52

L semicell ssp 21 ±
csp 30 ±

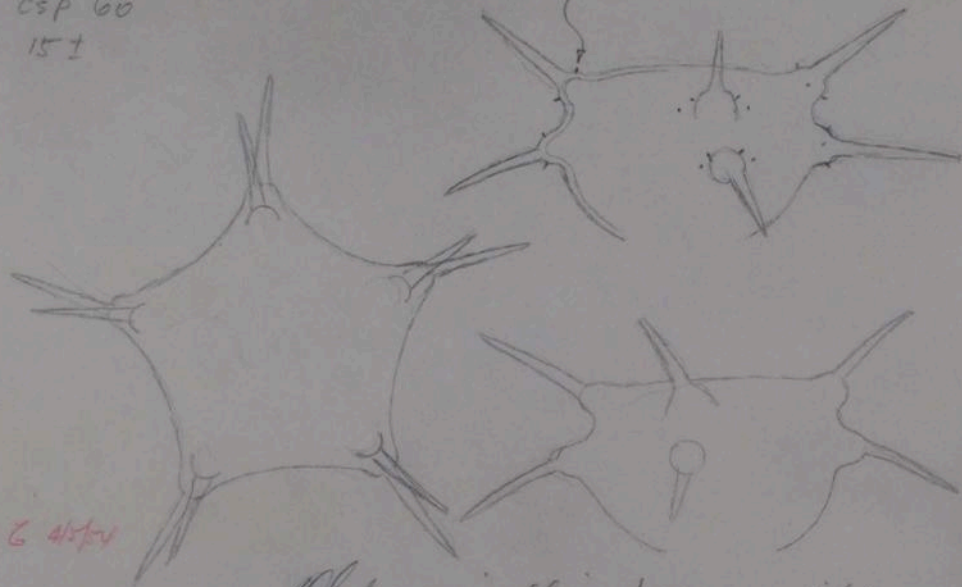
W ssp 37
csp 60

I 15 ±

St. decanthum sp. nov.

B130
5/9

Mucus threads?



To G 4/5/54

Brazil 14

Old semicell in poor condition

Sept 16/53

L ssp 27
CSP 34

W ssp 27
CSP 36

I 10



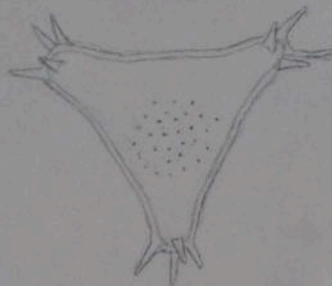
Brazil 20

XII-12
Sept 15/56

L ssp 27
csp 36 |
W ssp 30
csp 39
I 10

St. quadriaculeatum sp nov

B148



Semicells twisted
at isthmus

XII-13
Brazil 20

APC 18/57

L 35
W 21
I 10 ±

St. trihedrale
|

B152



Wall scrobiculate
Margin crenulate
|

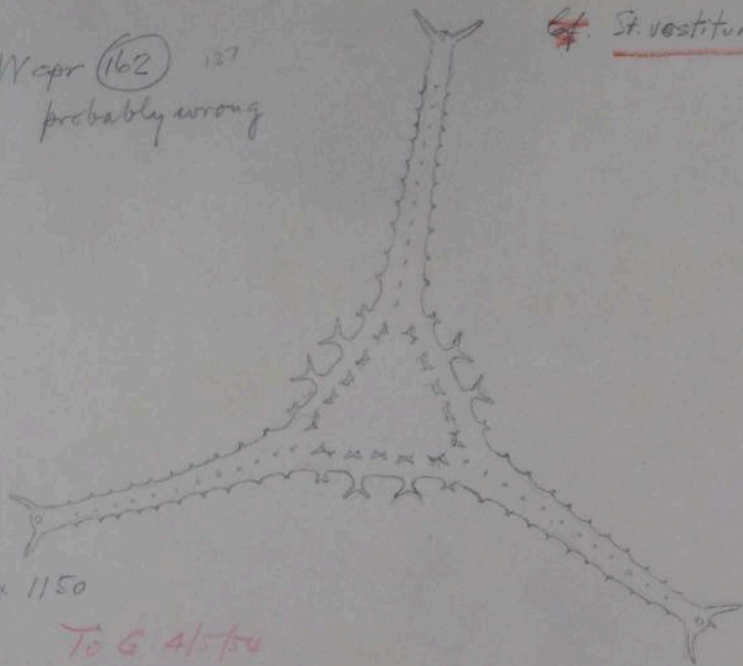
Brazil 8

APR 14/53

Wcpr (162) 127
probably wrong

~~St.~~ St. vestitum var subanatinum
IV+V

B121



x 1150

To G 4/5/50

Brazil 20

Sept 27/53

L 39
W cpr 133
I 17

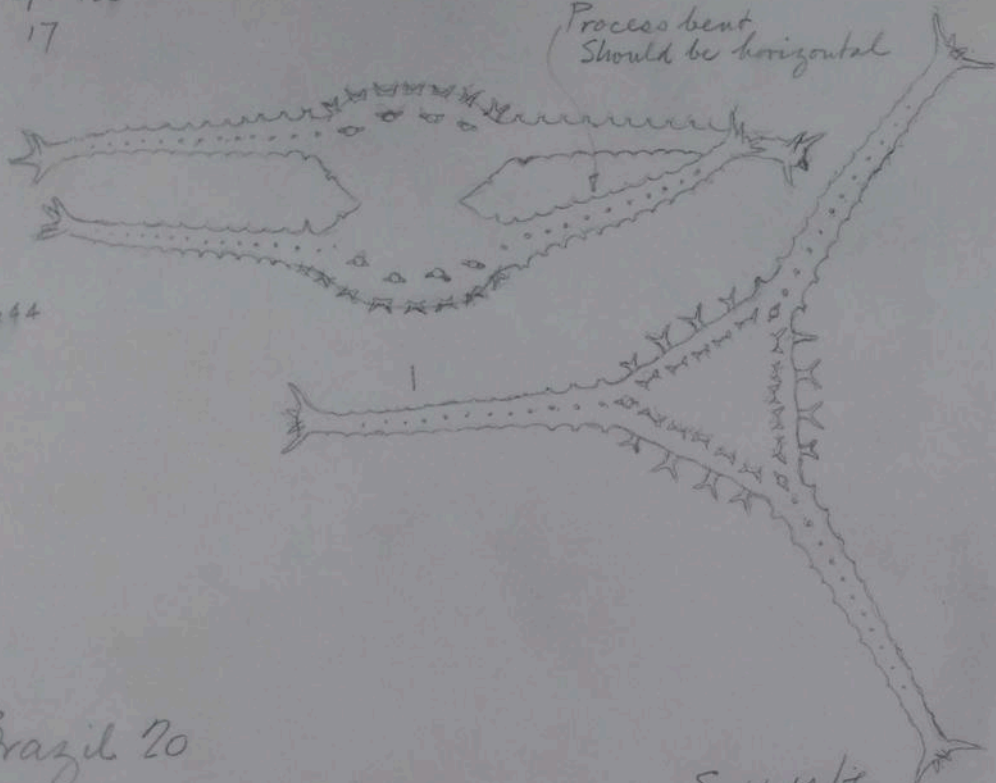
Process bent
Should be horizontal

15x44

Brazil 20

Digitized by the Hunt Institute for Botanical Documentation

Sept 14/16

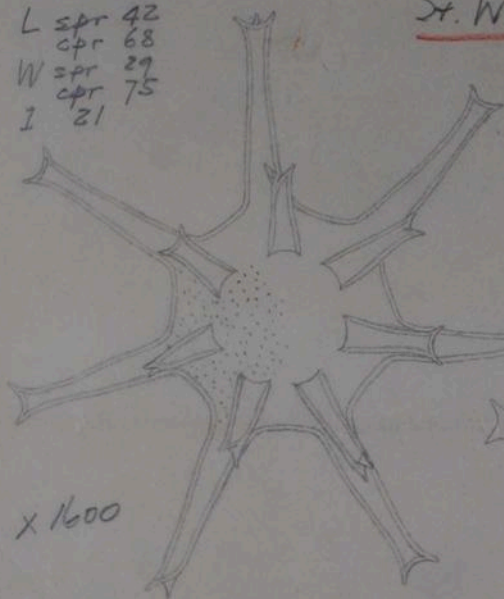


L spr 42
cpr 68
W spr 29
cpr 75
I 21

St. Wolleanum var. brasiliense B114
var. nov.

or *Lacinea* {*hystagonea*?
{*septangulata*?

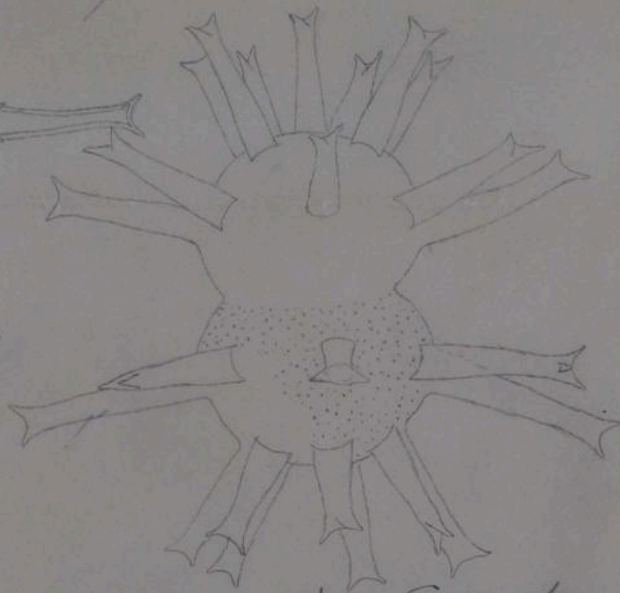
USA form



x 1600

7+7 processes
on both semicells

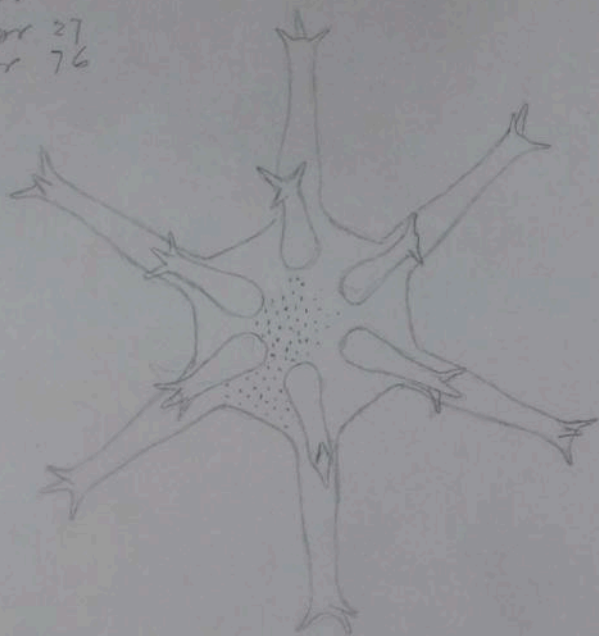
Brazil 20



Sept 28/53

L spr
cpr
W spr 27
cpr 76

I

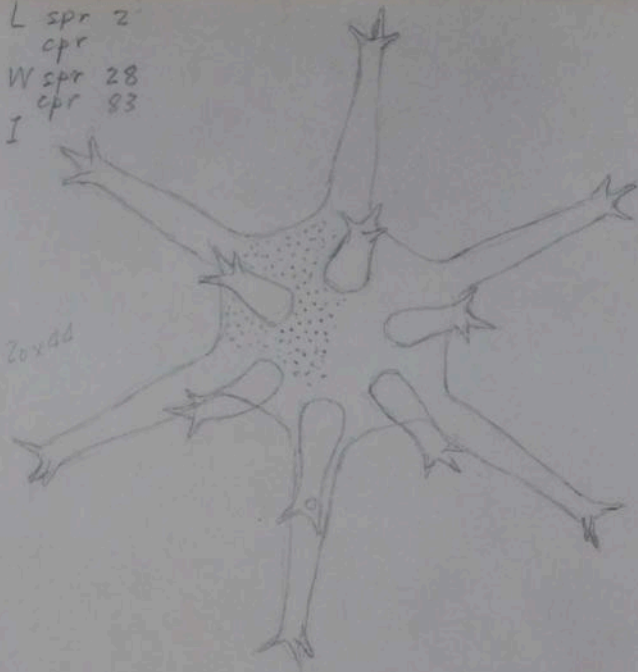


Brazil 20

Sept 13/56

L spr 2
cpr
W spr 28
cpr 83
I

20x44



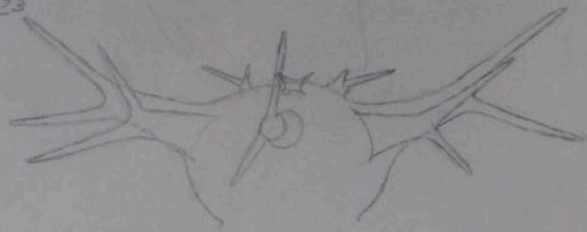
Brazil 70

Digitized by the Hunt Institute for Botanical Documentation

Sept 9/56

L. semicell spr 21
W spr 33+ opr 34
opr 94
I 23

St. Boergesenii var. depauperatum ^{Esblk}
B104



7 radiate

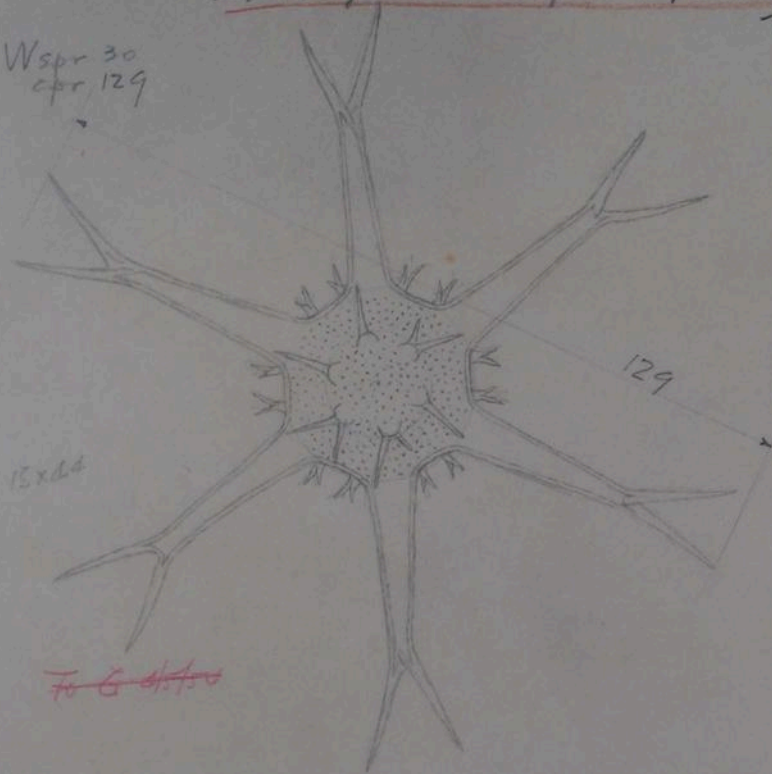
15 x 44

Another specimen seen in Brazil 19 with one semicell of
the type and other semicell of v. depauperatum, both 7-radiate

Brazil 19

St. Boergeresii v. *elegans* f. *pulcherrimum*
G.M. B105

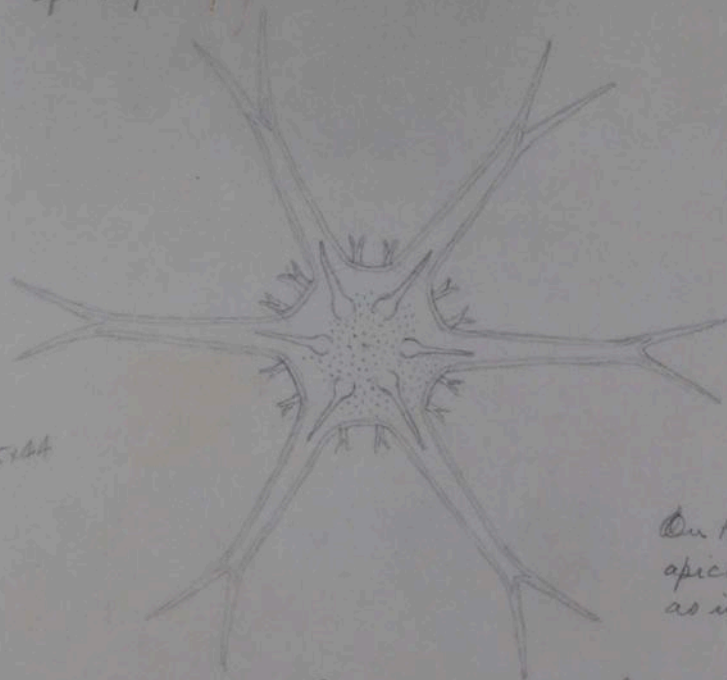
Wspr 30
cpr 129



Brazil 20

Sept 27/53

W spr 29
cpr 117



15x44

On the other semicell the
apical spines were furcate
as in the typical form.

Several seen like this, also some
with a mixture of simple + furcate
spines on the apex.

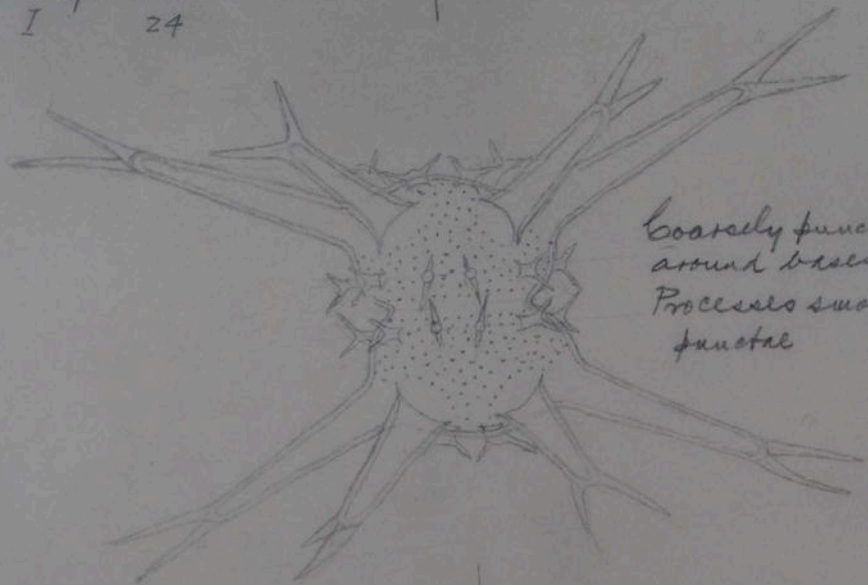
Brazil 20

Sept 4/56

spr 44
cpr 84
W cpr 136
I 24

St. Boergesenii var *elegans* f. *pulcherrimum*

Grönb
Blöb



Coarsely punctate except
around bases of processes.
Processes smooth, no
punctate

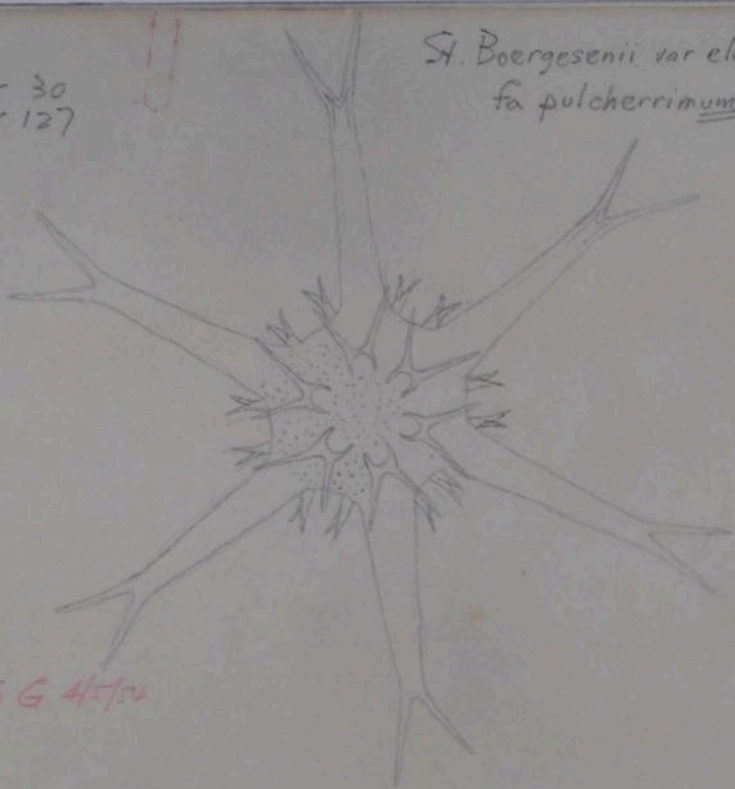
To G 4/5/54

Brazil 20

Apr 1/54

S. Boergesenii var *elegans* B107
fa *pulcherrimum* Grönbk.

W spr 30
cpr 127



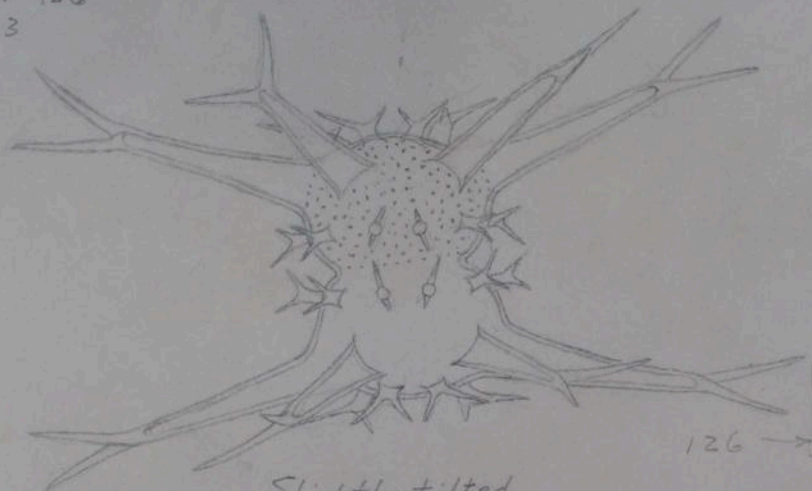
To G 4/1/54

Brazil 20

Moh 30/54

L spr 45
cpr 73±
Wr cpr 126
I 23

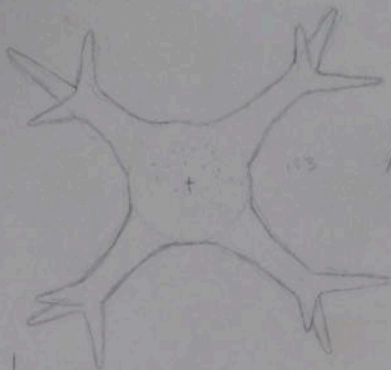
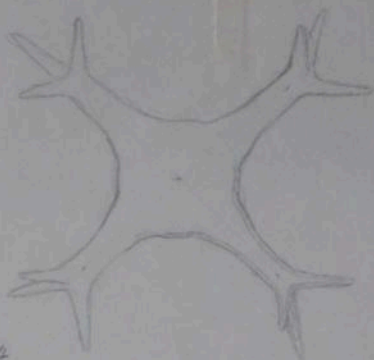
B108



Slightly tilted

Brazil 20

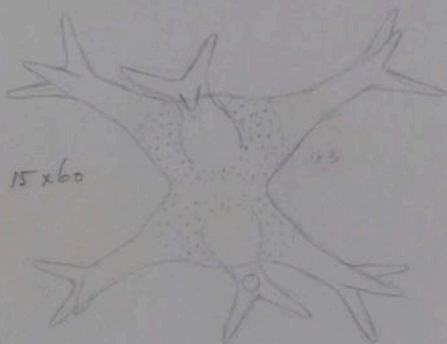
Mch 31/54



15x60

70x44

L spr 22
cpr 39
W spr 15
cpr (diag) 55
I 12



15x60

Brazil 20

Sept 4/56

L spr 21
cpr 51

W
cpr 51

I 9

15x60

Bent

Not well seen.

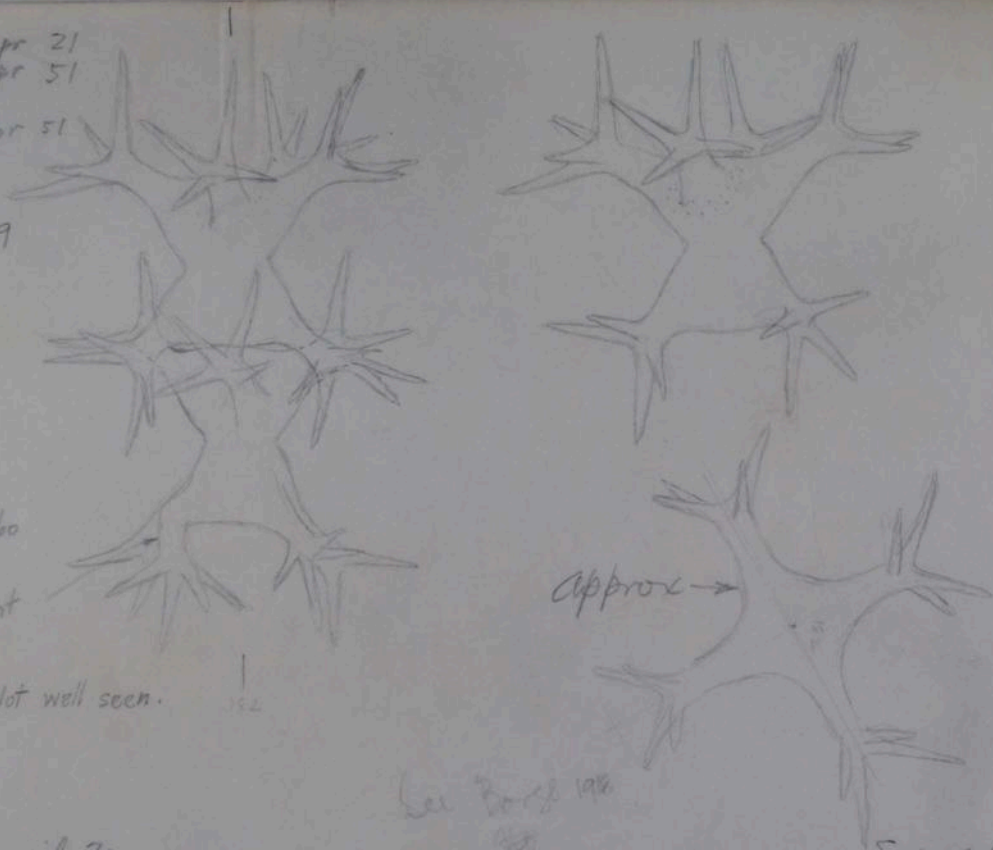
192

See page 198

Brazil 70

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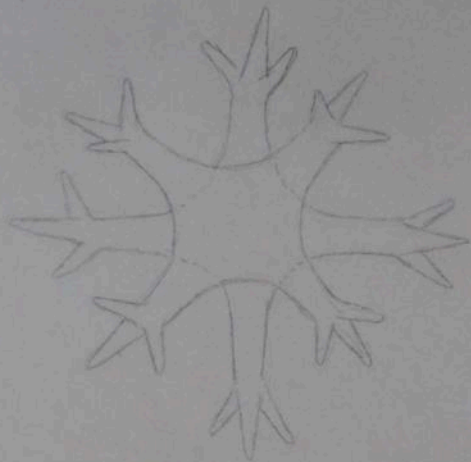
Sept 3/56



Wcpr 54

St. brachiatum

B151



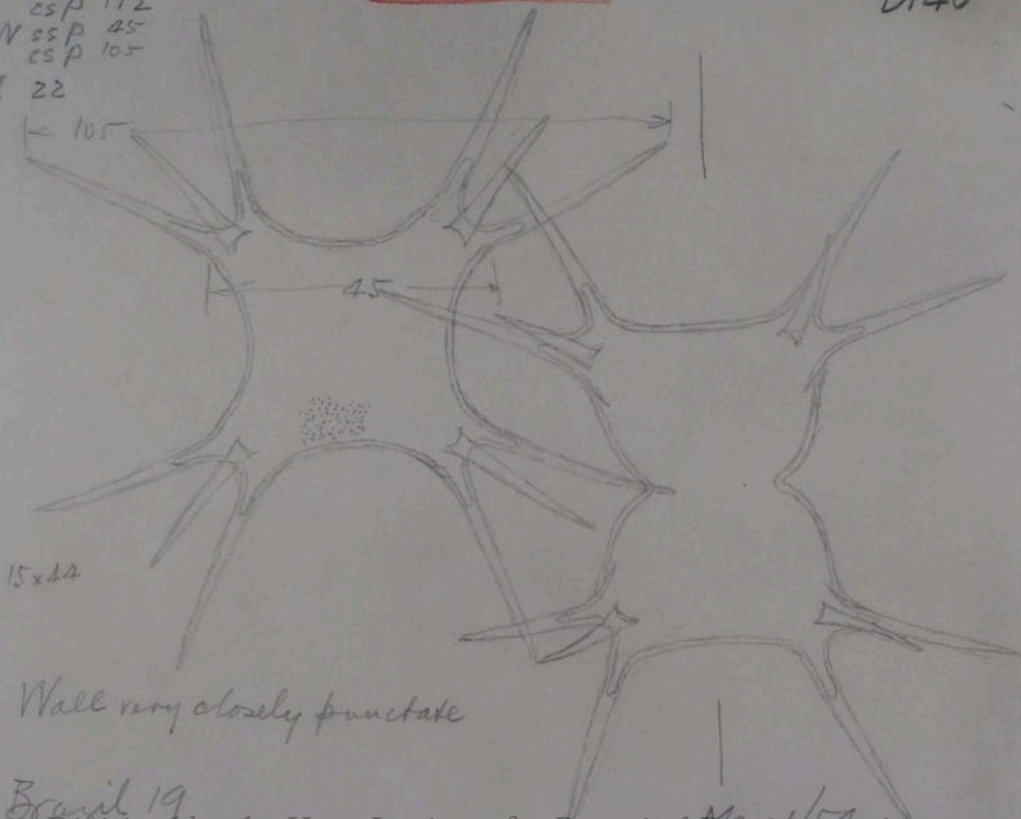
Brazil 10+11

Apr 17/54

L ssp 54
 csp 112
W ssp 45
 csp 105
I 22

St. brasiliense Nordot.

B140



Wall very closely punctate

Brazil 19

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May 1954

L semicell 18
W base 16
W apex esp 19
I 10

St. capitulum Bréb forma
cf var. *tumidiusculum* (Nordst) West in Borge
1918



15x60



apex smooth
all spines are shown.

Empty semicell

Only this 1 semicell seen

Brazil 32

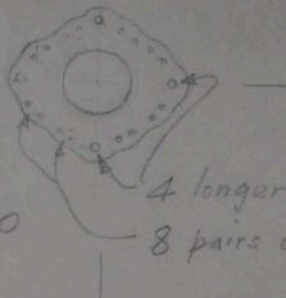
Aug 24/56

St. Ginzbergeri Grisebald
fa. serratum f. nov

B115

St. columbetooides v. *ginzbergeri* ?

W 16
I 7
T 13



20 x 60
x 2200

4 longer and larger spines

8 pairs of smaller and shorter spines

L spr 20
cpr 168
W spr 16
cpr 129
I 7

x 2200

To G 4/5/54



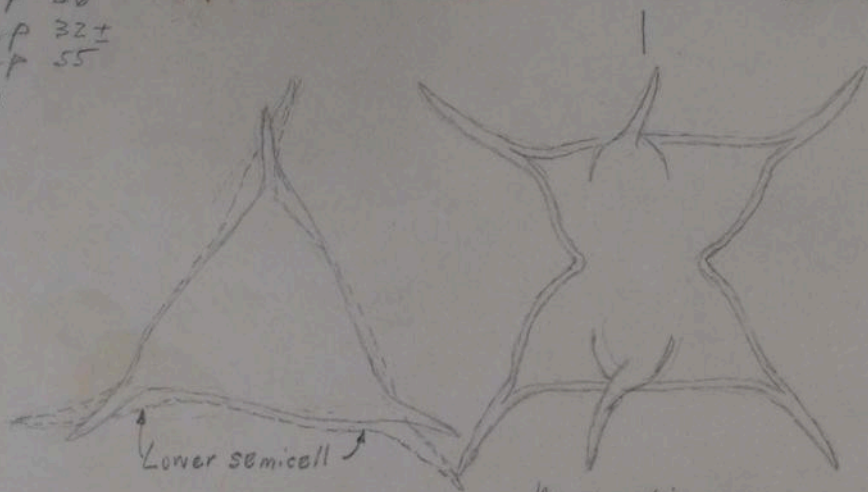
I believe this is how the
spines ought to look

Brazil 20

Oct 1/53

L SSP 30
CSP 46
W SSP 32±
CSP 55
I 17

St. curvatum fa tortum f. nov. B153



Lower semicell

Wall finely punctate
Semicells slightly twisted
at isthmus

Brazil 32

Apr 8/54

L ssp 33

esp 42

W SSP on square 25

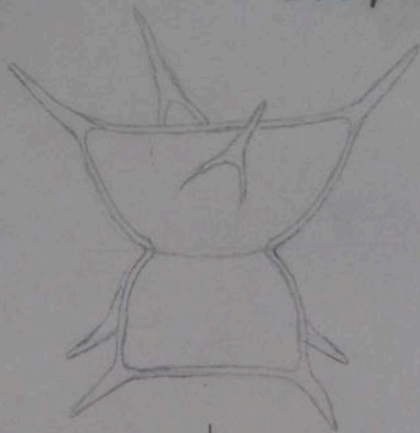
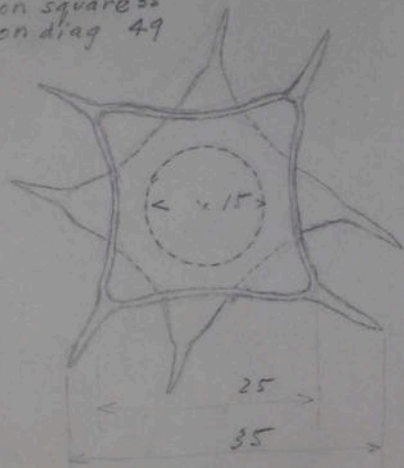
on diag 35

W esp on square 35

on diag 49

I 16

B147



Tilted because of
twisted semicells

Empty cell
Wall smooth, no punctae

^{X1-13}
Brazil 32

Apr 20/54

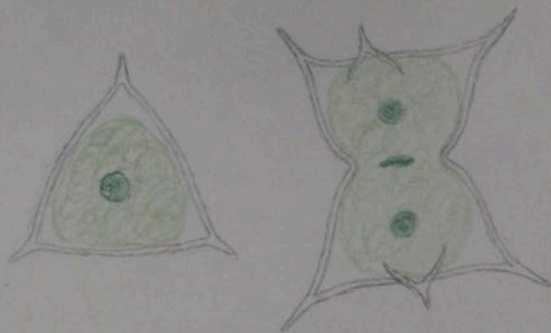
Lssp 30
csp 36

Wcsp 30

I 13

St corniculatum fa

B149



Semicells slightly twisted
at isthmus

Brazil 2011

Apr 17/54

L semicell 30
W 27
I 7?

St. cosmarioides Nordst fa.

Smaller than Borge's dimensions, and shape like
my USA specimens. See Borge, Sao Paulo. 1918

20x40



Tilted



Brazil 32

Digitized by the Hunt Institute for Botanical Documentation

Aug 21/56

L 79
W 48
I 27

St. cosmarioides Nordst. Fa.

20x44

Wall serbiculate
all over.



Vertical view
at a higher focus

Vertical view
(optical section)
just above base

Brazil 2.

Aug 11/59

L ssp 21
csp 30
W ssp 27±
csp 36

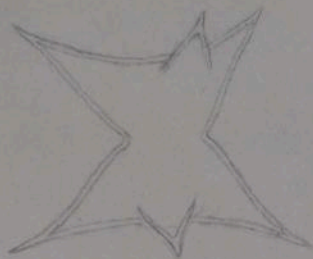
St. curvatum fa parvum

B144

I 9



15x60



Brazil 16

Apr 23/14

L ssp 18
csp 19
W ssp 18
csp 22
I 6

St. dejectum v. patens Nordst B145



15x60



Wall seems to be
granulate or punctate.
Markings obscured
by chloroplast

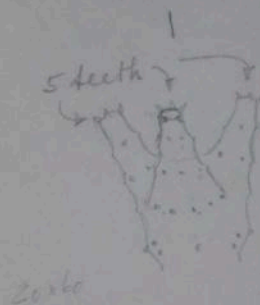
Brazil 16

APL 23/52

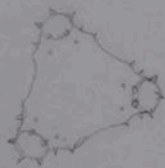
L unicell 13
W base 9
W cpr 14
I 6.5 ±

St. donnellii Wolle var.

f. var. *erectum* Krieg 1950 (Brazil)



L spr 18
cpr 27
W base 9
W cpr 15
I 7



Brazil 32

Aug 5/59

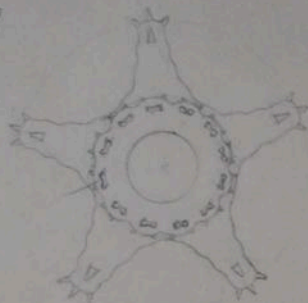
L semicell 26

St. elongatum var. ~~brasiliense~~ var. nov.
amazoniense B141

W base 18

W epr 35

I 9



15x60

x1720

To G 4/5/54



Tilted

Brazil 16

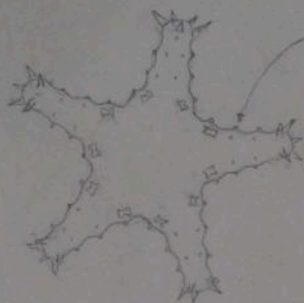
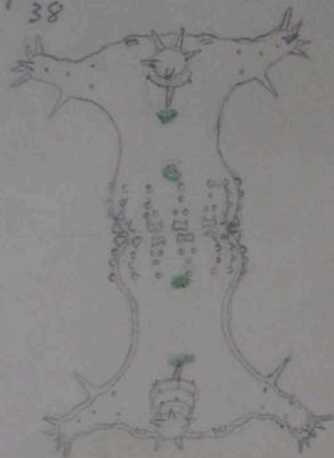
Sept 26/53

L SSP 49
OSP 52
W body above ioth 17
W cpr 38
I 10±

St. elongatum var. ~~brasiliense~~ var. nov.
or var. amazoniense

B142

Very minute spines
or granules? Yes



15x60

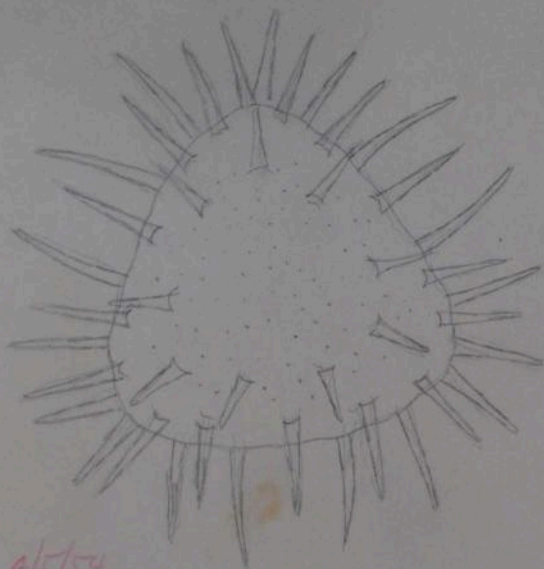
Compared with the North American form, this is somewhat shorter and considerably stouter, with more elaborate basal ornamentation, and 5-radiate instead of 3- or 4-radiate. and longer terminal spines.

Brazil 16

Apr 28/54

St. erinaceus sp. nov.

B119



x1600

To G 4/5/54

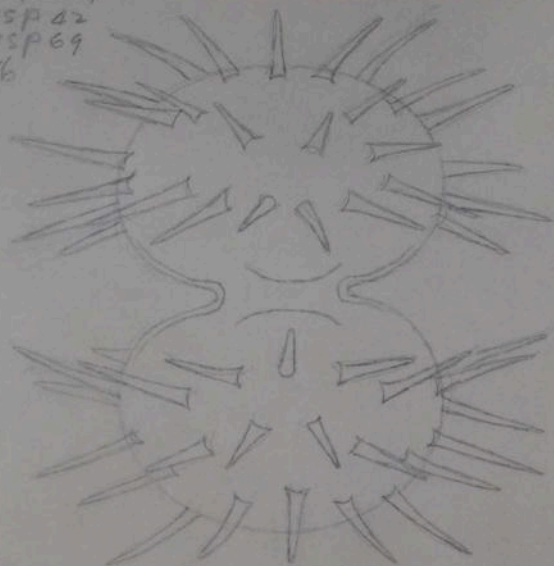
Brazil 19

Sept 23/53

L ssp 57
esp 69
W ssp 42
esp 69
I 16

St. erinaceus sp. nov. ~~St. setigerum~~ var. ?

B118



x1600

To G 4/5/57

Brazil 19

L 30
W ^{csp} 30
 _{csp} 48
I 7

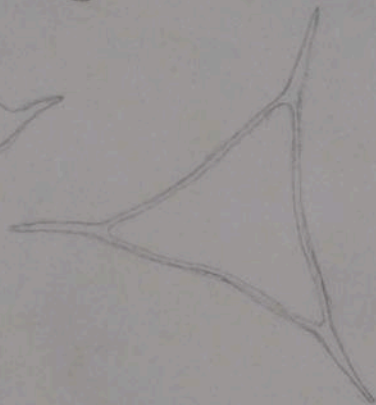
St. glabrum (Ehr.) Ralfo. B143

|



Tilted

|



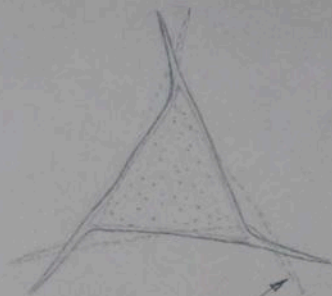
Brazil 16

Apr 26/54

L ssp 18
csp 22
W ssp 21
csp 39
I 10

St. glabrum v. tortum v. nov

B146



Lower semicell



Wall faintly + sparsely punctate

Brazil 16

Apr 21/57

W 417 37

20 x 45



Brazil 20

Sept 15/56

L spr 31
W cpr 91
W cpr 190!

I 10

T 17

St. lepidum Borge v. *latecurvatum* Grönb.

|

3 spines
all processes

122 x 44
x 975



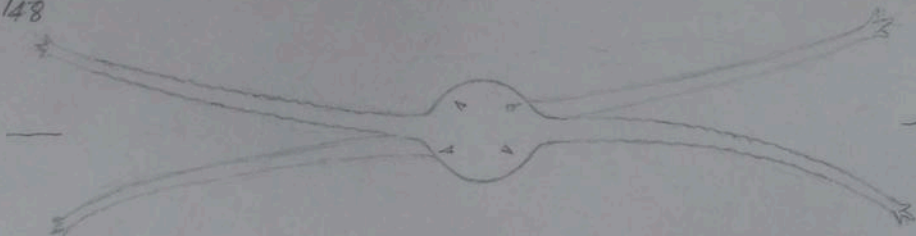
|

Brazil 20

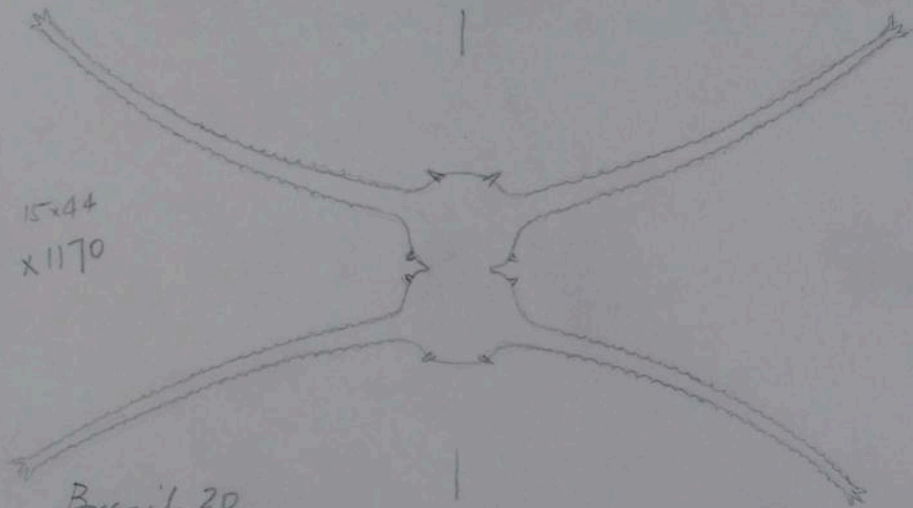
Sept 13/56

L spr 33
cpr 82
Wcpr 148
I 10
T 17

15x44



15x44
x 1170



Brazil 20

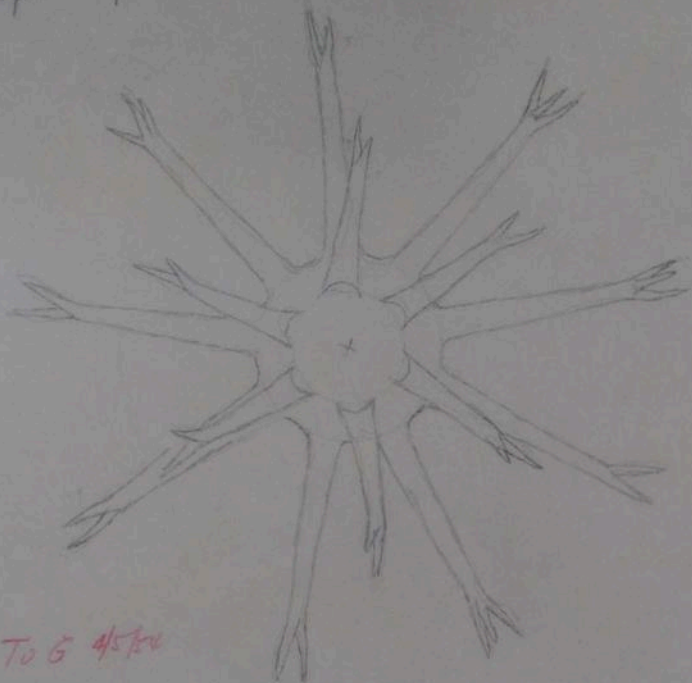
Digitized by the Hunt Institute for Botanical Documentation

Sept 13/47

W spr 28
cpr 117

St. leptacanthum

B156



To G 4/5/50

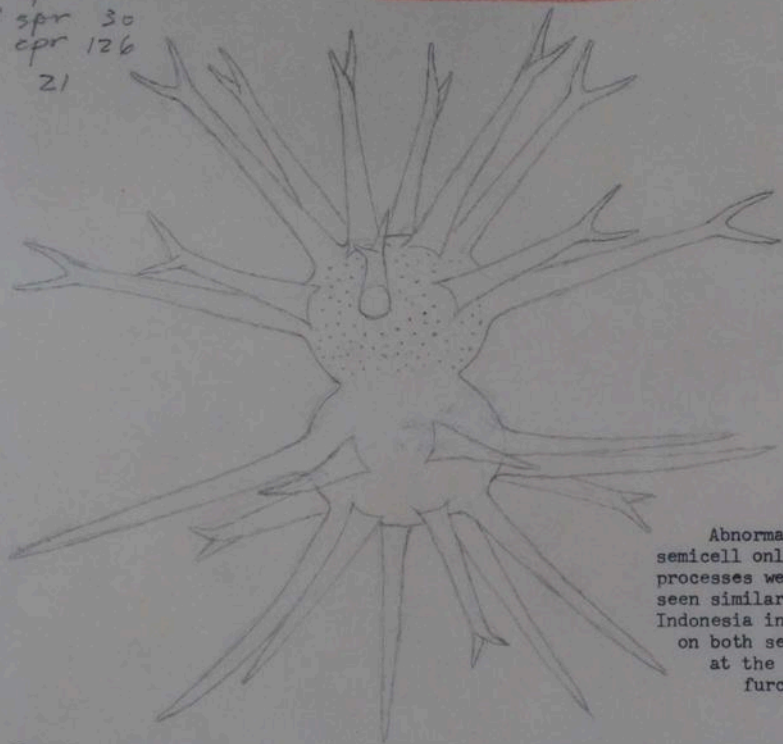
Brazil 20

Apr 1/50

L spr 48
cpr 113
W spr 30
cpr 126
I 21

Staurostrum leptacanthum

B155

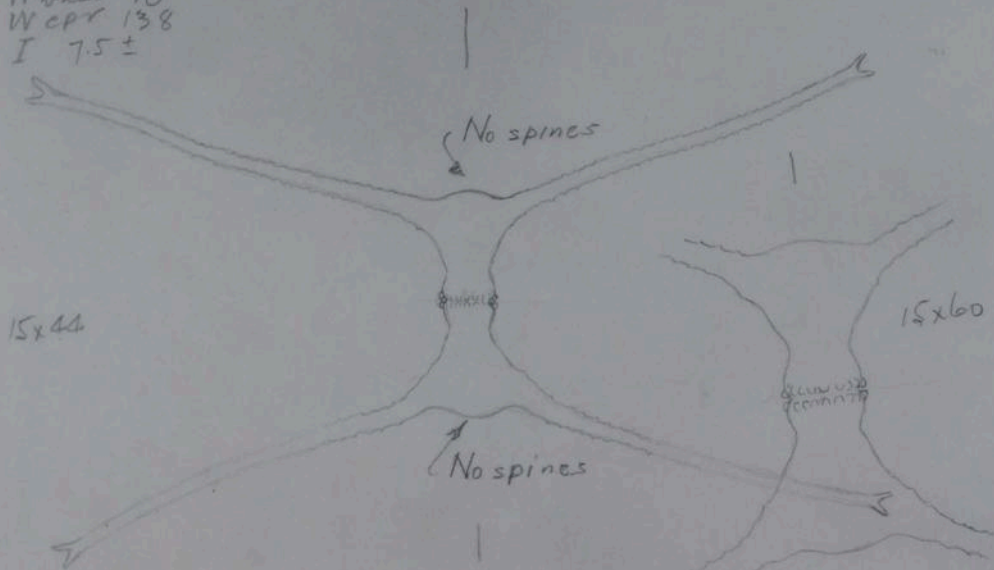


Abnormal. On the lower
semicell only three of the 15
processes were furcate. I have
seen similar specimens from
Indonesia in which all processes
on both semicells were pointed
at the tips instead of
furcate.

Brazil 20

Apr 18/54

L spr 37
cpr 79
W basal 10
W cpr 138
I 7.5 ±



Brazil 20

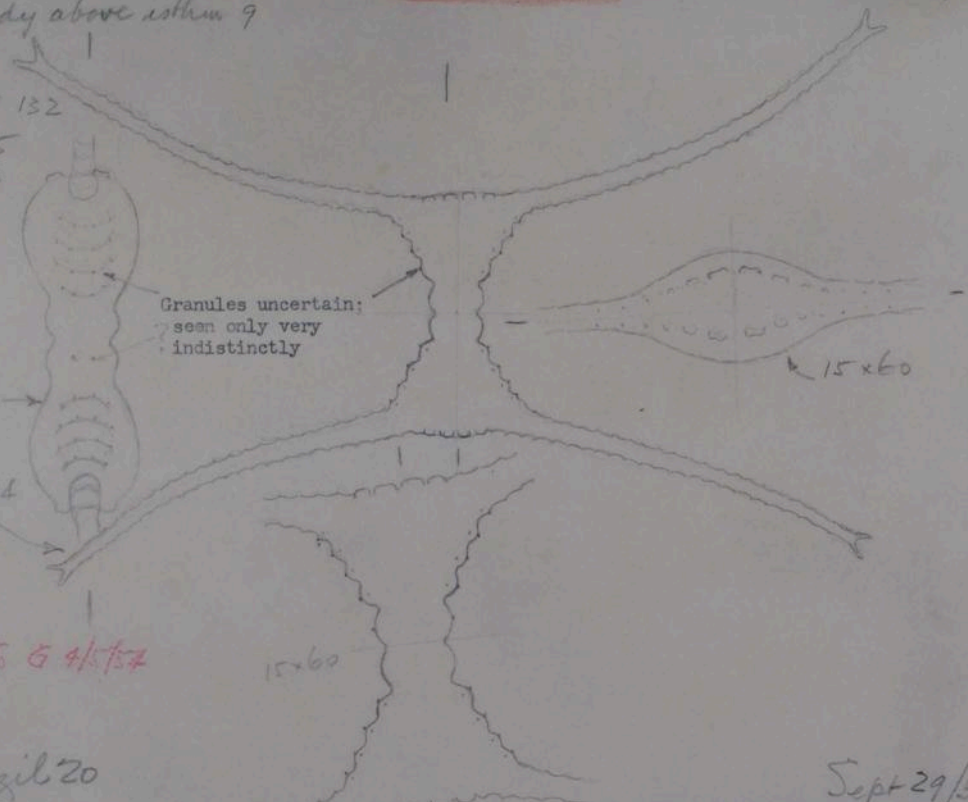
Digitized by the Hunt Institute for Botanical Documentation

Sept 15/56

St. leptocladum, ~~and~~ var. insigne B127

L spr 41
apr 85
W body above isthmus 9

W spr 132
I 7.5
T 14



Granules uncertain;
seen only very
indistinctly

15x60

15x44

15x60

15x60

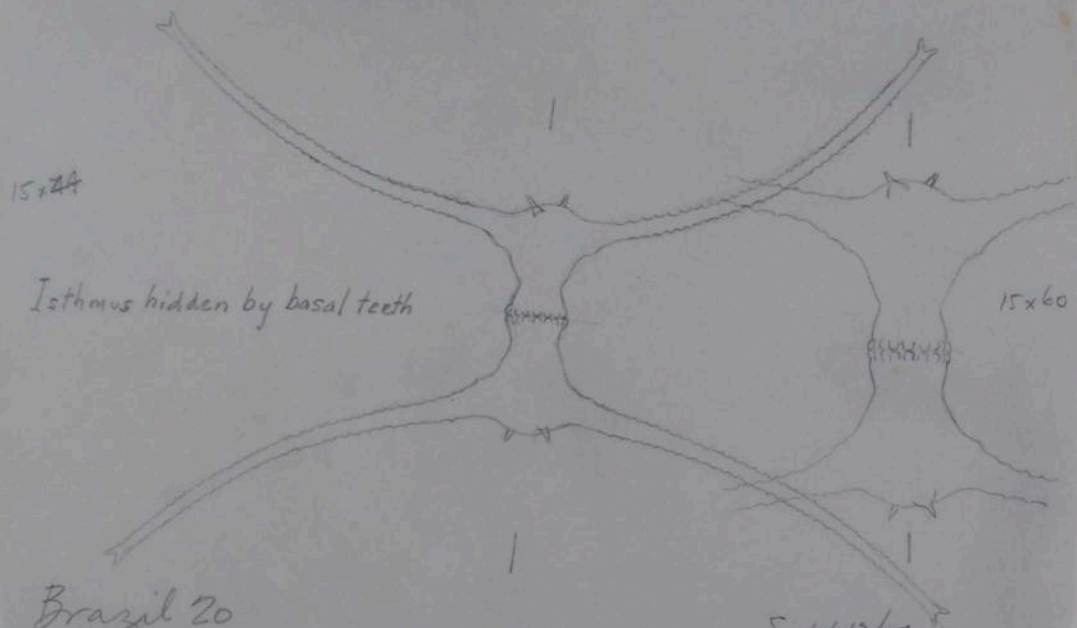
To G 4/1/57

Brazil 20

Sept 29/53

Si leptocladum Nordst v. *Smithii* Grönbld. forma

L spr 39
cpr 93
W base 10
W cpr 138
I ?
T 14

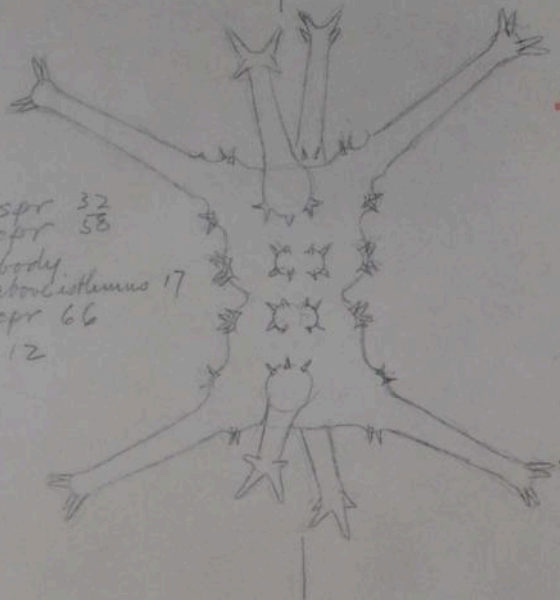


56413/2

New? B120

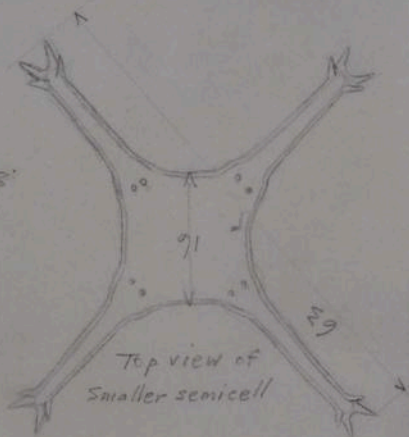
St. leptopus
var. luxurians v. nov

L spr 32
cpr 58
W body
about stemms 17
W cpr 66
I 12



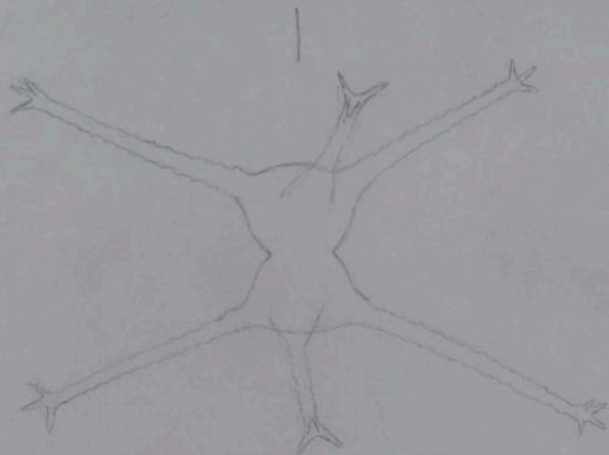
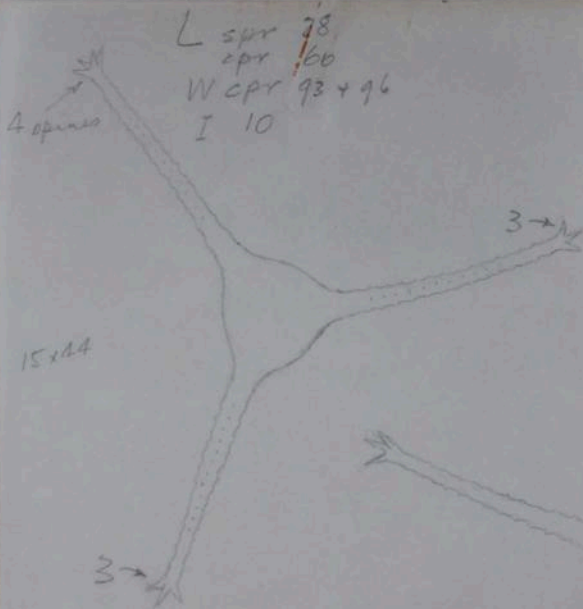
To G 4/50v

Brazil 19



Top view of
smaller semicell

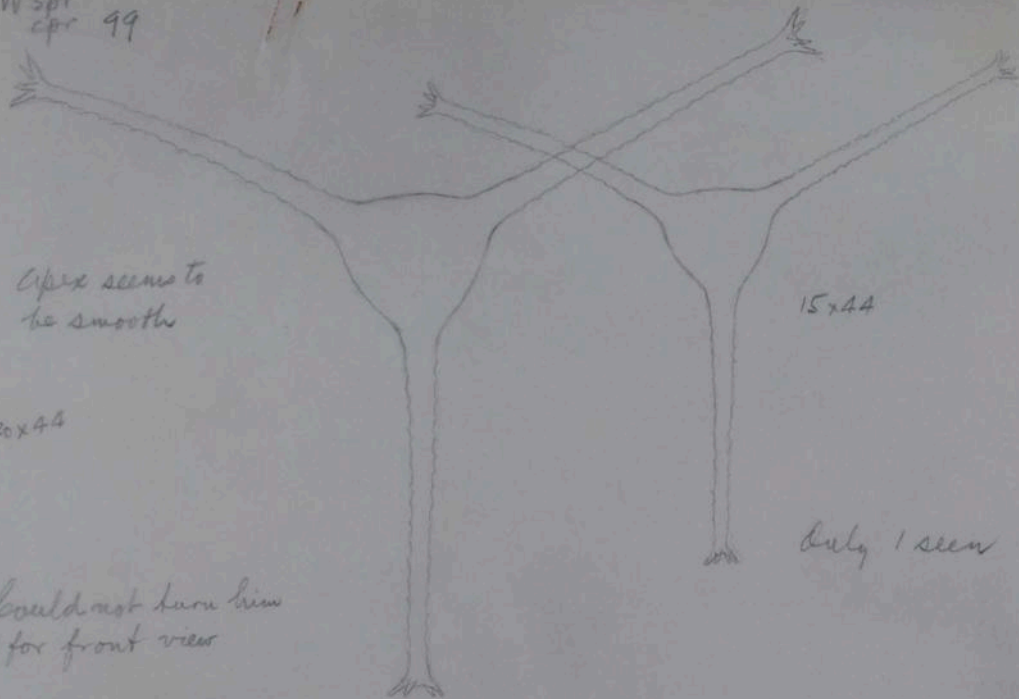
Sept 23/53



Brazil 20

Sept 13/56

W spr
cpr 99



Apex seems to
be smooth

20x44

15x44

only 1 seen

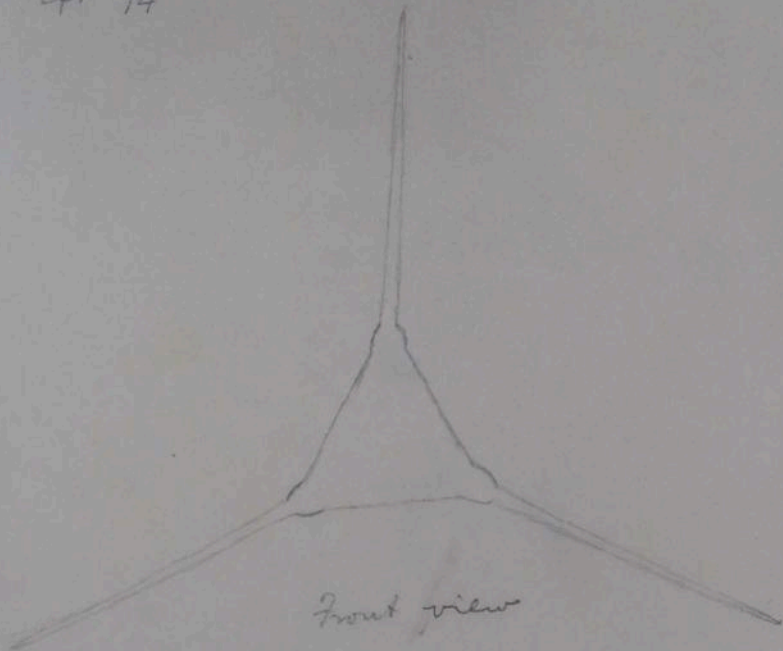
could not turn him
for front view

Brazil 20

Sept 4/56

St. mamillatum ~~f.~~ v. *longirostre* ^{G. H. B.}
Brazil B150

W spr 26
apr 94



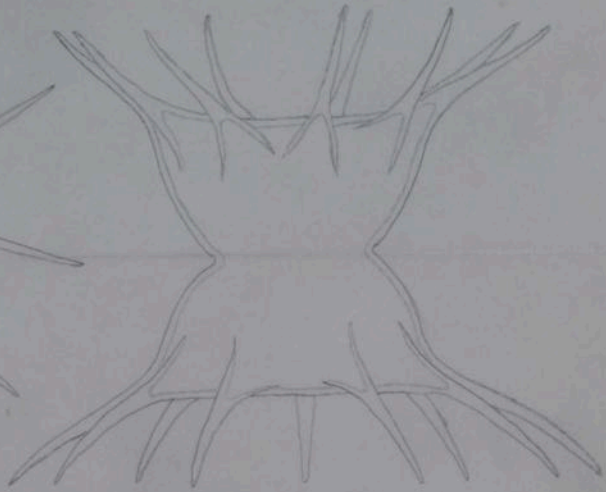
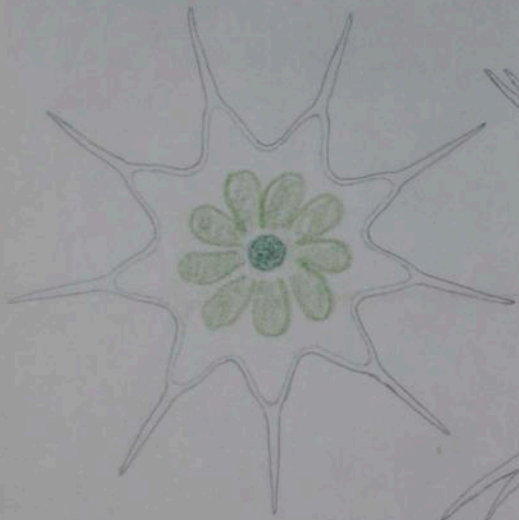
front view

Brazil 20

APL 18/54

L ssp 33
 CSP 57
 W ssp 28
 CSP upper semicell 63
 lower " 75
 I 20

Staurastrum Marthae Grönbld
 | B109



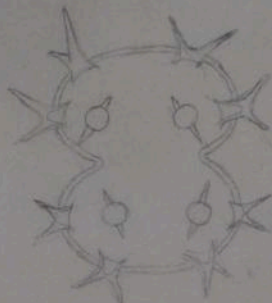
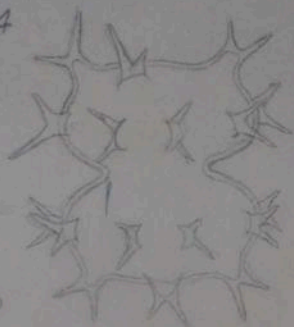
Brazil 19

|
 AMIS Apr 14/54

L ssp 28
csp 38
W ssp 25
csp 36

Staurastrum octangulare Grönb. B138

I 14



A beauty, and very unusual.
Note that on the four apical processes
the plane of the spines is parallel
(more or less) to the sides of the
square, not to the 45° cut-off
corners, as would be expected.

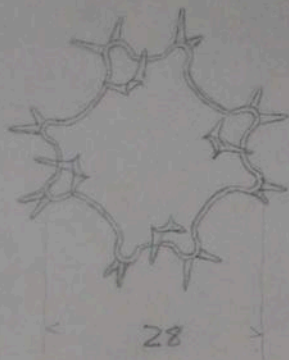
Brazil 16

Apr 25/54

St. octangulare Grönbl.

B137

Wssp 28
esp 34
I 14±



Brazil 16

Apr 21/54

L 48
W 45
I 13 ±

20x44



Wall markings
not visible

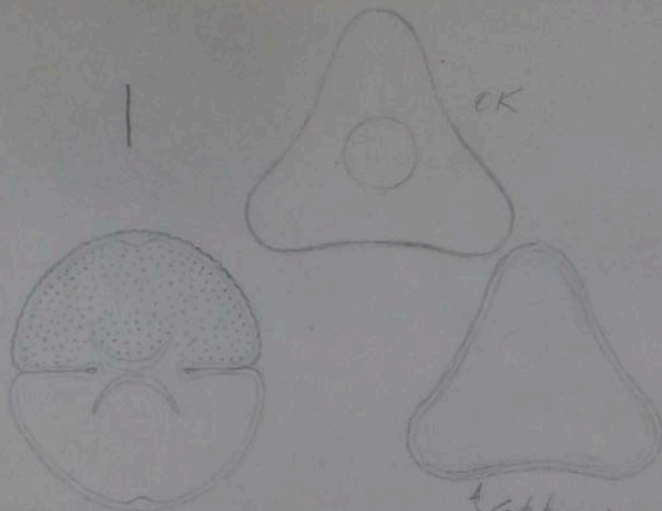


Brazil 10 + 11

Aug 17/59

L 36
W 32
I 12

20x44



64.1
40.0

Wall conspicuously & closely
scrobiculate. Margin crenulate.

Brazil 32

Aug 23/56

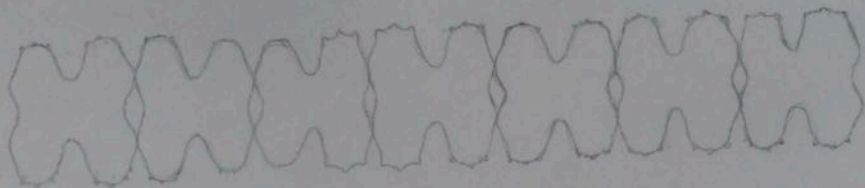
L 7 cells 104 = 15 average

W 18

I 6

T 9 ±

Sph. Wallichii Jacobs v. *Borgei* Grönb.



On many cells the granules
are poorly developed.
No apical granules visible.

Brazil 20

Digitized by the Hunt Institute for Botanical Documentation

Sept 14/56

L 72
W max 21
W pole 15

Bambusina longicollis Nordal B164



12½ x 44

To G 4/5/52

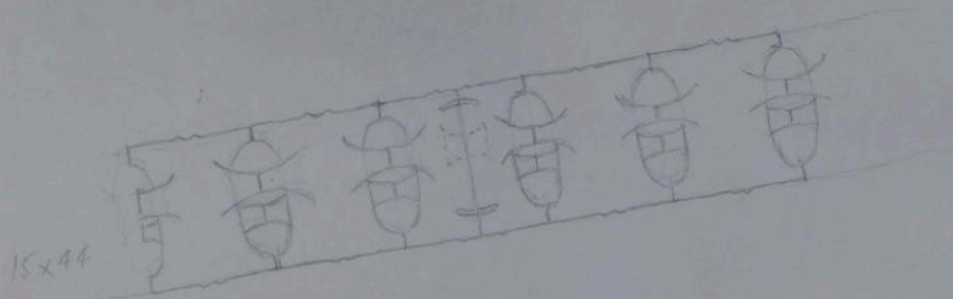
Brazil 11

Jan 10/52

L 5 cells $105 \mu = 21$ average

W square 21

diag $25 \pm$



Brazil 10 + 11

Aug 17/59

L 6 cells 228 = 38 average

W max. 30

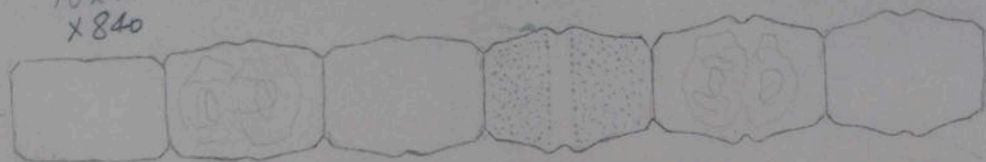
W min. 25

W pole 18

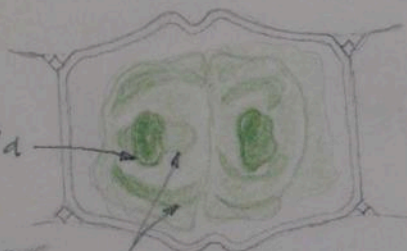
B163

Desmidium elegans (Racib.) Grönbl.

10x44
x840



Pyrenoid



x 1600

Lobes of chloroplast

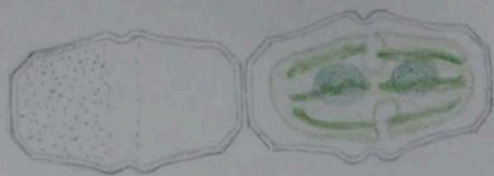
To G 4/5/54

Brazil 20, also 19

McW 30/52

L 40
W 25
I 22
Apex 17

D. elegans (Racib) Groutl.



15x24

2 cells not in contact, but attached
by some invisible means.

The only specimen seen so far

Brazil 32

Aug 29/56

L semicell 15

W on square 30

on diag. 40

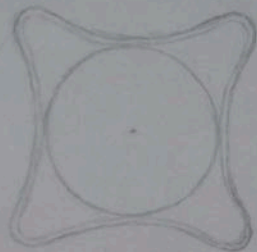
I 21

W apex 10

D. curvatum Nordst



20x44



Total of 3 semicells seen. No whole cells nor filaments

Brazil 32

Digitized by the Hunt Institute for Botanical Documentation

Aug 29/52

L 35
Wsq 32
Wdiag
I 21±



Brazil 32

Aug 5/59

Desmidiium curvatum Nordst.

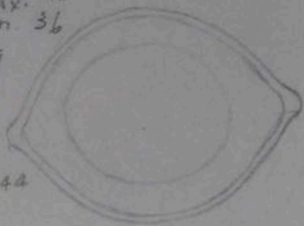
One semicell seen Aug 22/56, in Brazil 32.

Lost in manipulation. Not drawn.

Just like the USA form

W max. 48
min. 36

I 29



15x44

Desmidiium
occidentale? B159
fa biradiatum —

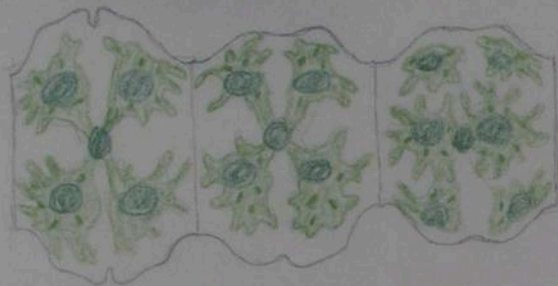


Brazil 37

Apr 20/52

L 30 average
Wmax 45-48
Wmin 36
I 29 41

D. occidentale? fa. *biradiatum* B 160
but note 4 pyrenoids
West+West say 1 pyrenoid
or *D. quadratum* Nordst., forma maior Gld.



Stained, crystal violet.

This has 4 pyrenoids per semicell, and chloroplast is divided into ^{usually} 4 radiating sections, sometimes 5, and rarely 6.

D. Grevillii has 6 pyrenoids + 6 sections.

Brazil 32, and 6

Apr 20/57

D. graciliceps

15 x 4.2



62 ♀
91 ♀

Brazil 32

Aug 29/56

L 4 cells 138 = 35 average

W max 25

W min 20

W pole 12

I 20

D. coarctatum ?

D. graciliceps ?

15x44



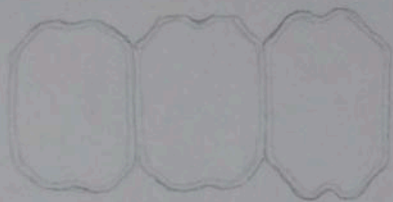
Markings not visible



Brazil 32

Aug 24/56

L 3 cells 65 = 21 average *D. quadratum* Nordst
W max 32
W min 28
I 28



15x44



Brazil 32

Aug 26/56



Wmax 46
Wmin 36

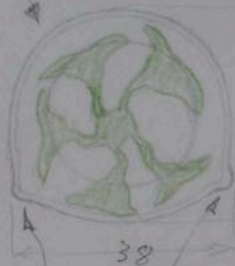
Wmax 45
Wmin 35



15x44



2 seen like this
but no 3-lobed specimens



Most of them have 4-lobed chloroplast, some have 5-lobed,
and 2 examples ^{were} ~~was~~ seen with 6-lobed.
These 2 projections are situated at the third points of the circle

abundant

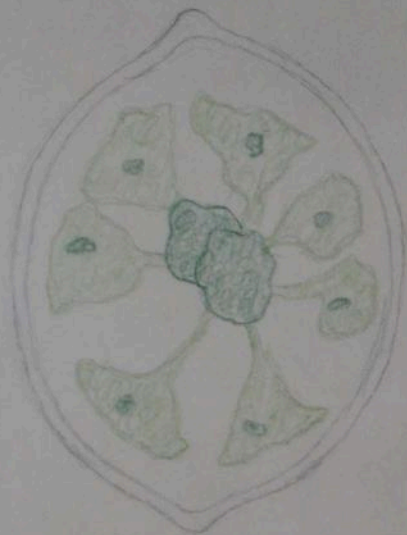
Brazil 32

Aug 28/56

Wmax 64
Wmin 48

Desmidiium

B157



Brazil 14, also in 52, L 30
Wmax 61
Wmin 48

apl 4/57

Desmidium

B158

W max 24
W min 18

20x44

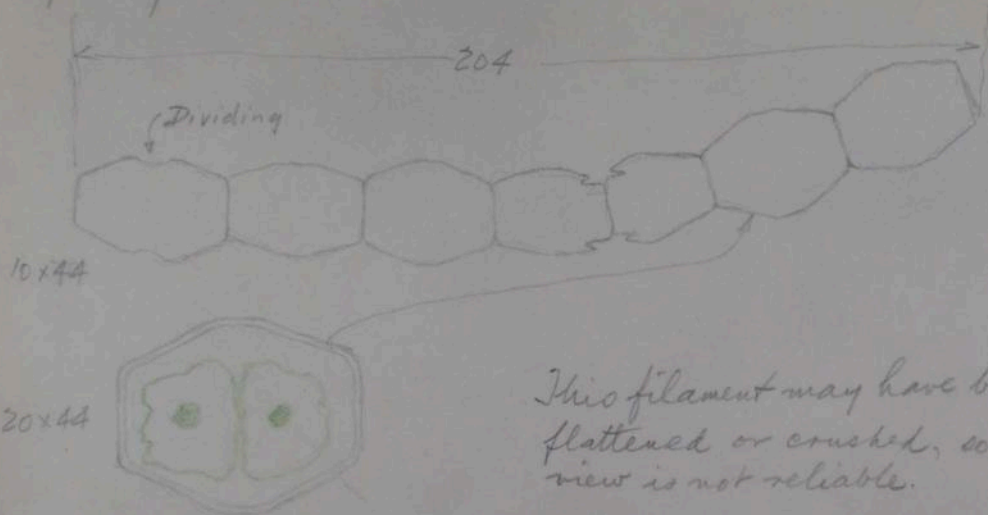


Brazil 32

Apr 20/54

L 31
Wmax 26
Wpole 14

D. elegans fa?



This filament may have been flattened or crushed, so this view is not reliable.

Brasil 10+11

Aug 19/57

L 42. 37. 38. 37. 44 Groenbladia

W pole 12

W max 13

15x44



Brazil 6

Aug 14/59

L 33.32.32.33

Groenbladia.

W 10

Wall porose



15x44

Brazil 4

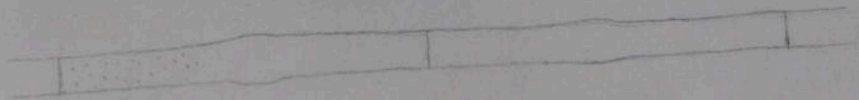
Aug 12/59

L 80
W center 10
W pole 9

Hyalotheca sp.

Bibl

(*H. neglecta* var. *elongata* var. nov. ?)



10 x 44



20 x 44

Brazil 19

May 2/54

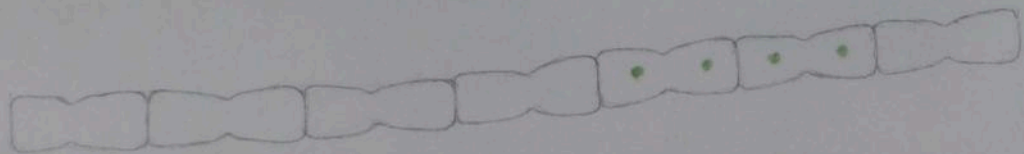
Hyalotheca dissiliens (Smith) Brit

L 21-27
W 27

Brazil 1, also 3, and 4

Aug 11/59

L 7 cells 132 = 19 average
W max 7-8
I 4.5



20x44

Similar to *H. undulata* Nordst
but not quite the same
Chloroplast decayed.

Brazil 20

Digitized by the Hunt Institute for Botanical Documentation

Sept 2/56

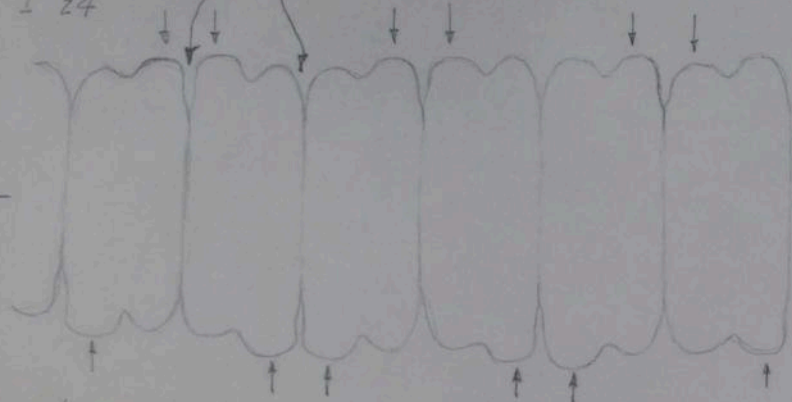
L 6 cells $66\mu = 11$ average

W max 28

W min 16

I 24

The openings between adjacent cells
are of different shapes



30x60

Arrows indicate the protuberances, which can
be seen in end view.

Brazil 32

Aug 26/56

L 13
W 27
I 21
T 16

Lower semicell
Upper

20x60

Slightly raised portion
of apical surface

Brazil 32

Aug 27/52

L 14 (swollen)
W 27
I 22

L 14
W 27
I 24
T 14

The undulations are not visible when the margin is seen at this angle, but clearly seen on the opposite margin.

Pores not visible

20 x 60
x 2250

Slight angularity

2 specimens

Brazil 32

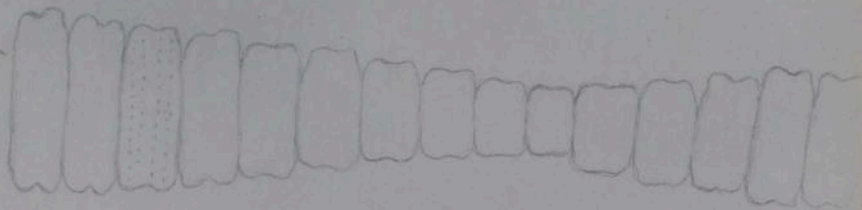
Slightly tilted to show the shapes of the 2 semicells
x 2250

15 x 60
x 1680



L 9-10
W 29
I 27
T 10

15.44



Part of a filament of 27 cells.

Brazil 20

Aug 31/56

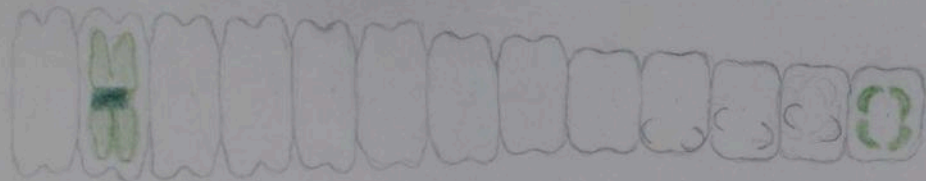
L 13 cells $150\mu = 12\mu$ average

W max 29

W min 16

I 26

Part of a filament of 181 cells

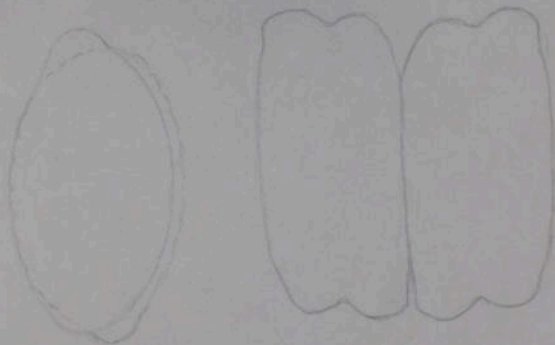


15x44

Brazil 32

Aug 25/56

L 13
W 27
T 22
T 15



20.60

95
97

Markings not visible

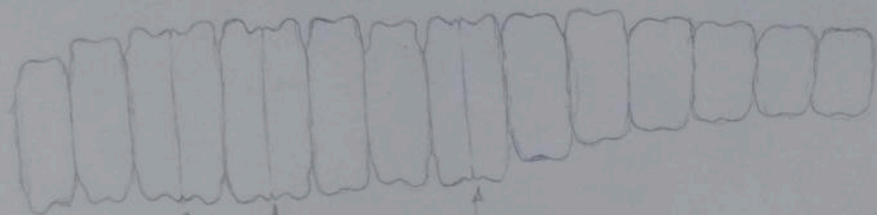
Wittrock & Nordstedt exsicc No 1270

L 12 cells $117 \mu = 10$ average

W max 31

W min 15

I 28



15x44

Dividing cells

Brazil 8

Aug 14/59

L 2 cells 23

W 26

J 23

T 15

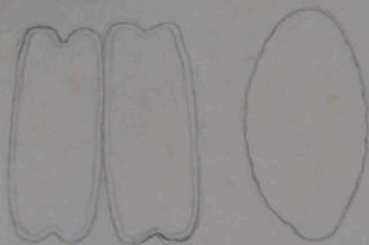
Spondylosium desmadiiforme (Borge) G.S. West
fa. *tenuior* Borge 1918.

15x60
x1800



No undulations visible
on these 2 margins

Oblique view of
2 empty cells.



Extremely faint
undulations, barely
visible even when
specially looked for.

Brazil 32

Aug. 15/56

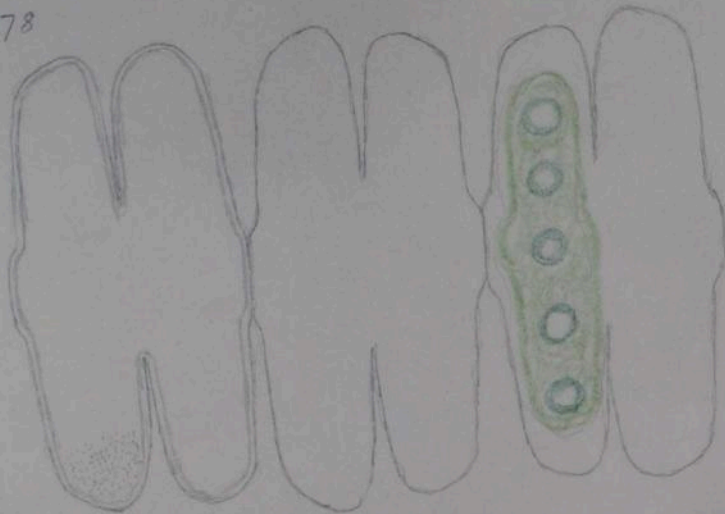
L 3 cells 118 = 39 av.

Sp. pulchrum

B162

W max 78

I 27



15x44

Wall closely punctate

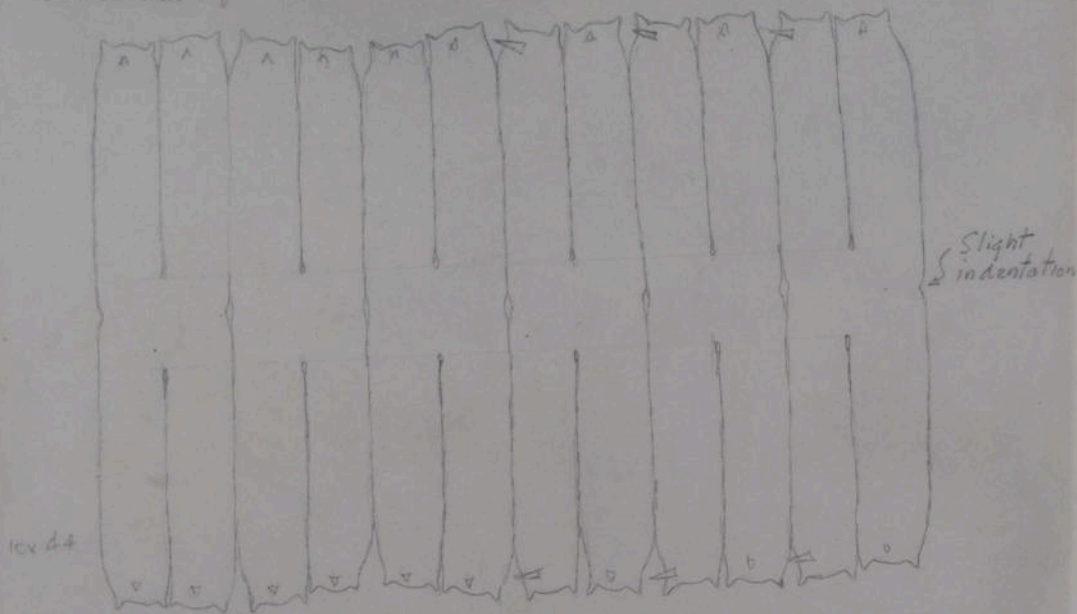
Brazil 60

Apr 16/57

L 6 cells 199 = 31 average
W max esp 132 !

Spondylosium rectangulare (Molle) W & W
fa. majus fa. nov. B168
Racis 110 μ Tapetozoma

Filament of 16 cells



Brazil II
To G 4/5/54

Oct 22/53

L 6 cells 102 = 17 average

O. laeve Nordst

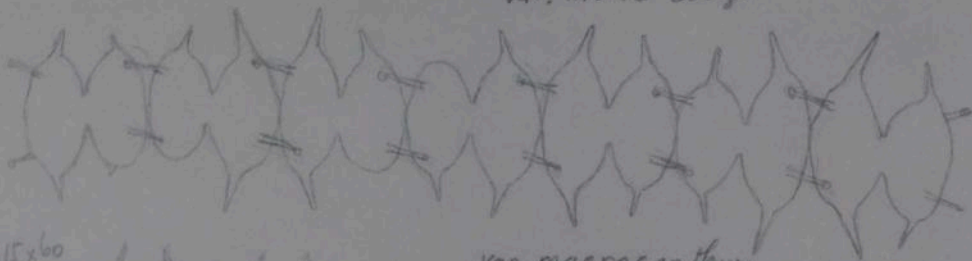
Wssp 15

CSP 28

I 6

T 10

var. *hians* Borgs



15x60

var. *macracanthum* Gled

L 6 cells
99 = 16.5 av.

Wssp 18
CSP 30

I 4.5

Brazil 20

2 different forms

Aug 31/56

L spr 18
cpr 158
W spr 16
cpr 157
I

All processes
are serrate

10 x 44

158

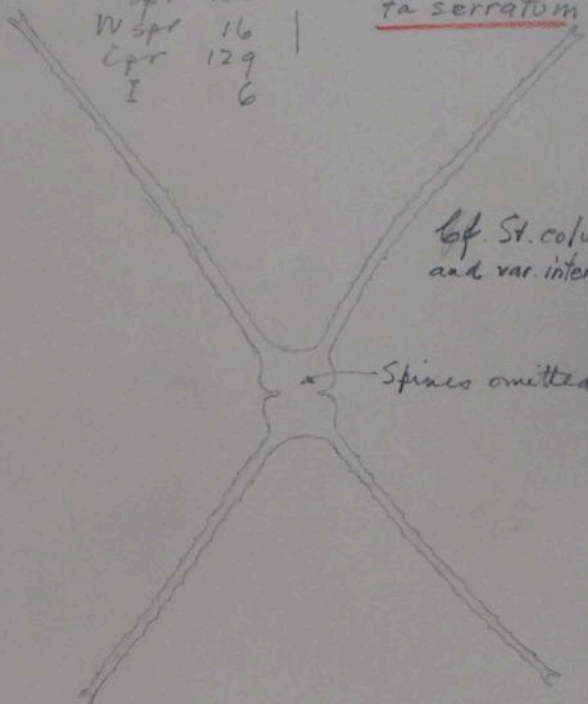
15 x 60

Brazil 20

Aug 18/56

| | |
|-------|-----|
| L spr | 20 |
| cap | 156 |
| W spr | 16 |
| cap | 129 |
| I | 6 |

St. Ginzbergeri Grönb
fa serratum f nov



cf. *St. columboides* W & W
 and var. *intermedium* Krieg

* Spines omitted

To G 4/5/54

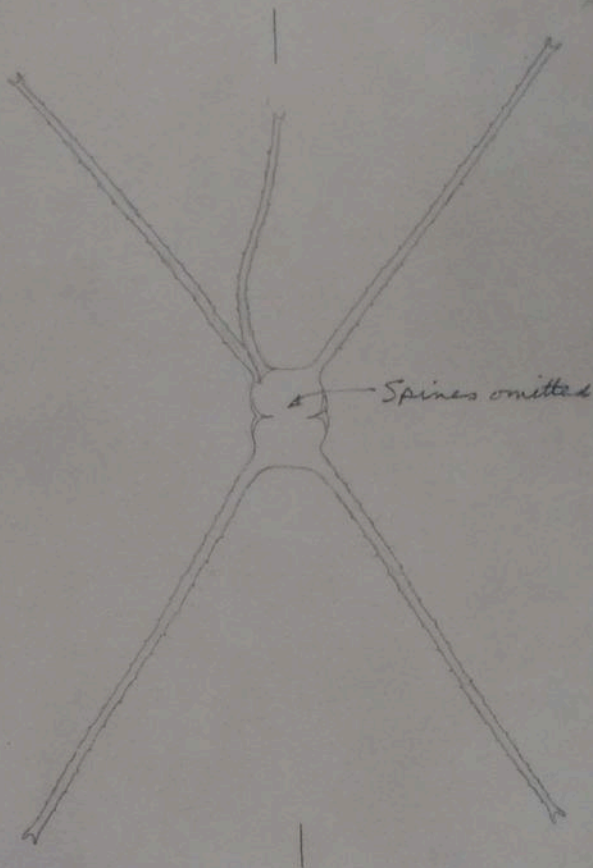
Brazil 20

Mex 30/54

B116

L spr 22
cpr 177
W spr 18
cpr 120
I 7

To G 2/5/54



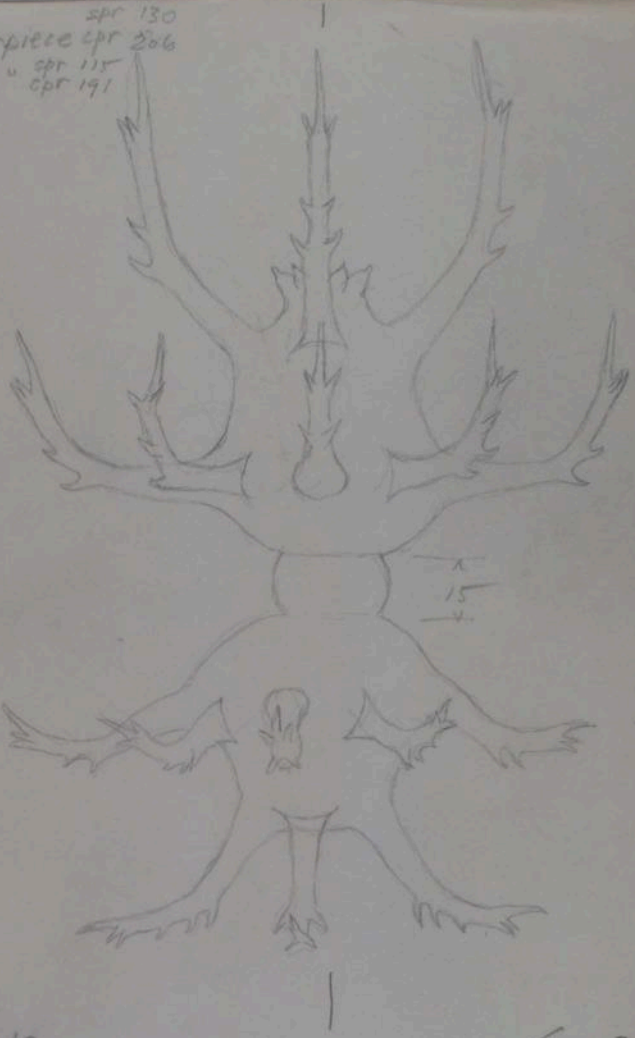
10 x 44

B117

Brazil 20

Mich 30/54

L with centerpiece spr 130
 cpr 206
 L without " spr 115
 cpr 191
 W spr 51 ±
 cpr 138
 I 20 ±



10x44

Brazil 10

Aug 20/57

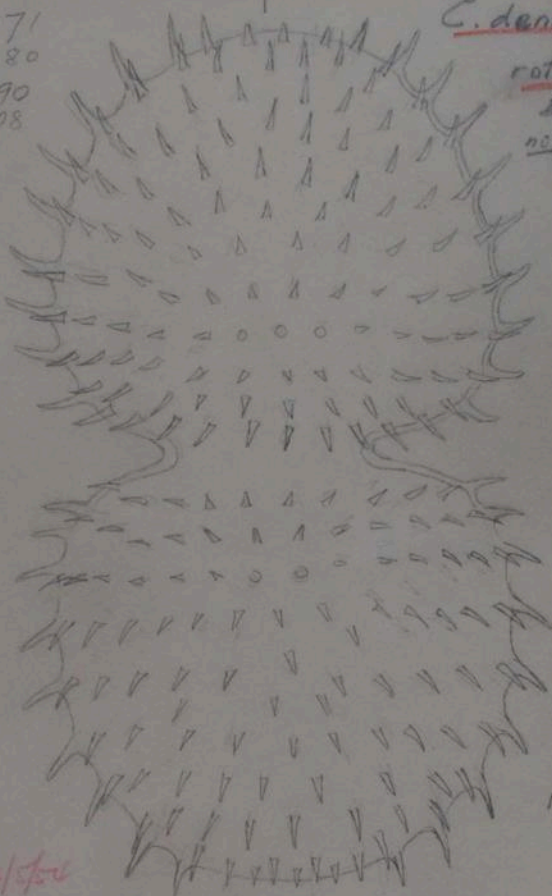
L ssp 171
CSP 120

W ssp 90
CSP 108

I 41

T ssp 78
CSP 90

C. denticulatum
var.
rotundatum
Bory ~~1844~~
not la gigantea



12 1/2 x 44

To G 4/5/50

B72

1st one seen

Very rare

Chloroplast was shrunken and partly disintegrated; but it was evidently arranged in parietal bands (5 bands visible) with a slight spiral tendency, similar to Gronblad's fig. 105a, De Algis Brasiliensibus, 1945.

Brazil 19

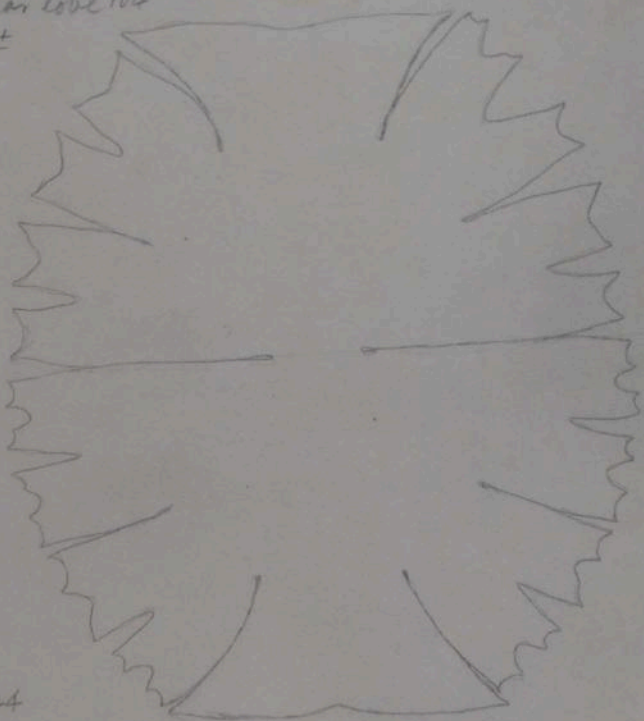
Nov 2/53

L 229

W 195

W polar lobe 104

I 33 ±



7'2x44

T. G. 3/9/54

Brazil 14

Oct 4/53

B54

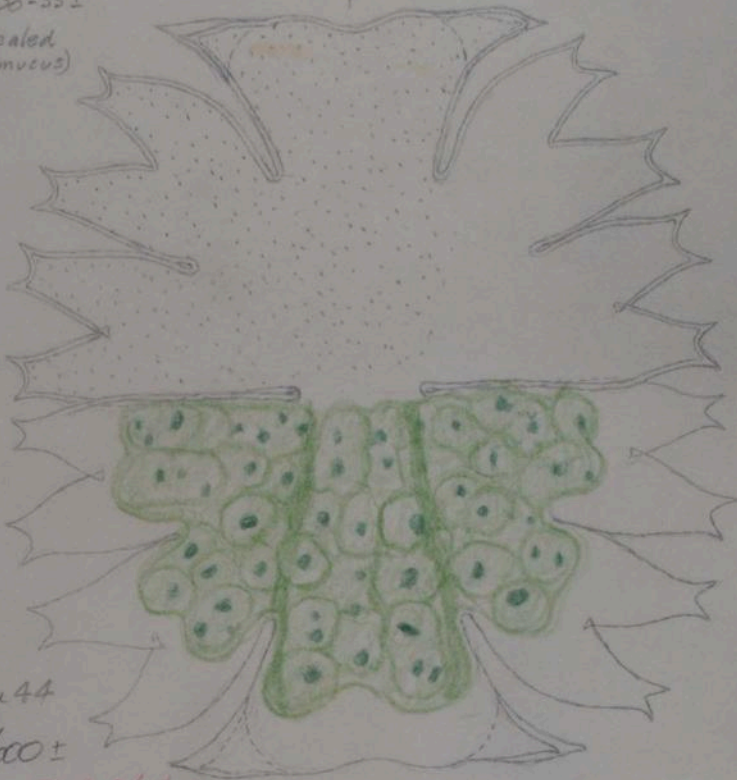
L 240

VY max 228

W polar lobe, max 130

The lateral extensions of the polar are divided into two (unequal?) parts, as in *M. Moebii*. This was the first specimen seen, and it was thought to be a new species because of the split polar lobe. It is extremely rare, but after several hours search another example was found in which the polar lobe is entire. See next sheet.

I 30-33±
(concealed
by mucus)



7½ x 44

x 600±

To G 3/9/54

Could not get top or side views.

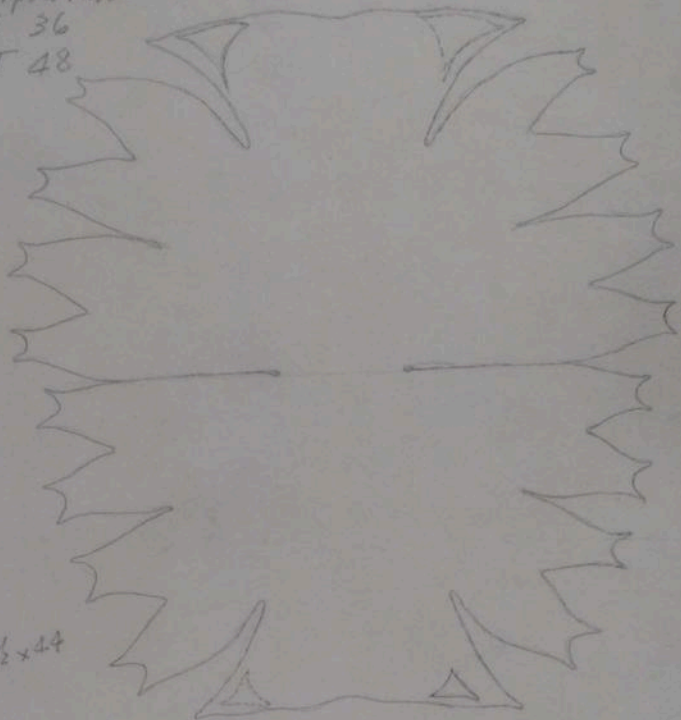
Brazil 14

Oct 3/53

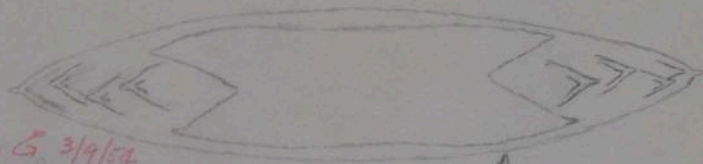
B52

L 225
W max 213
W polar lobes 116
I 36
T 48

M. sp. nov



$7\frac{1}{2} \times 44$



To G. 3/9/52

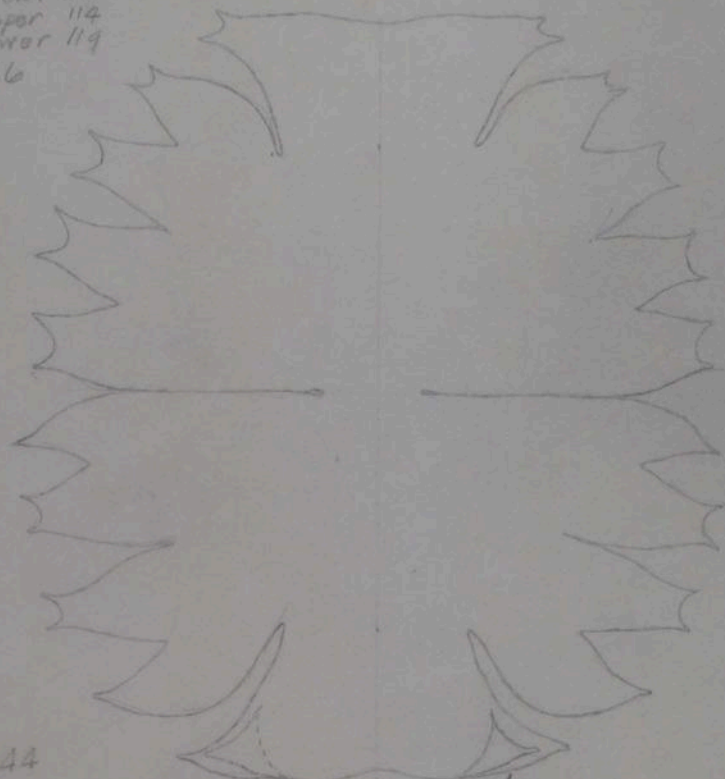
Brazil 14

Approx ^a

Oct 6/53

B49

L 241
W max 219
W polar lobe
upper 114
lower 119
I 36



$7\frac{1}{2} \times 44$

To G 3/9/54

Bifid

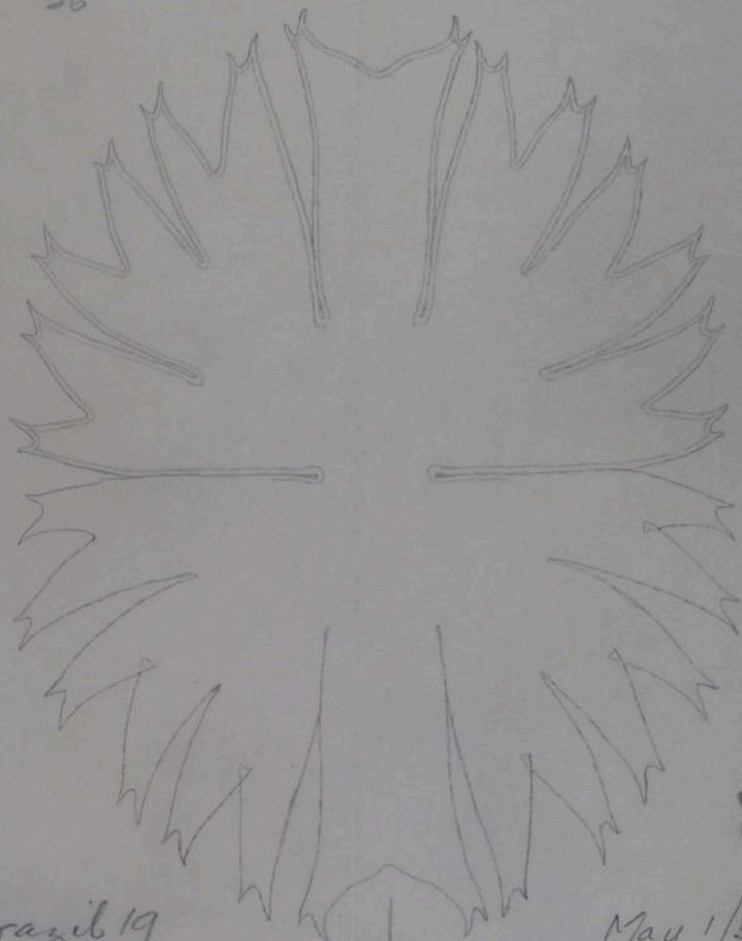
B53

Brazil 14

Nov 4/53

L 301
W 230
I 36

M. Torreyi var. curvata Krieg.



Brazil 19

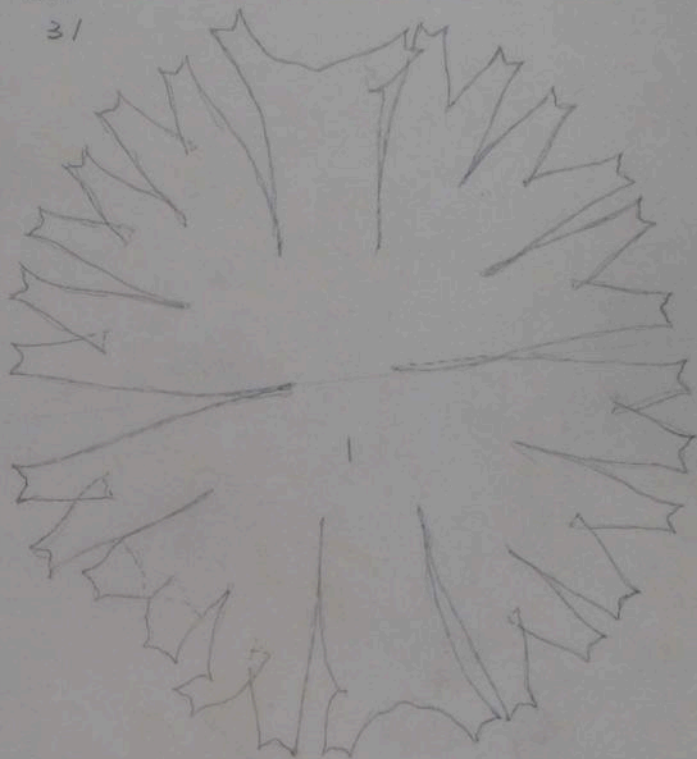
861
May 1/54

L 243

W 220

I 31

M. Torreyi var. Nordstedtiana (Hier.) Schum.



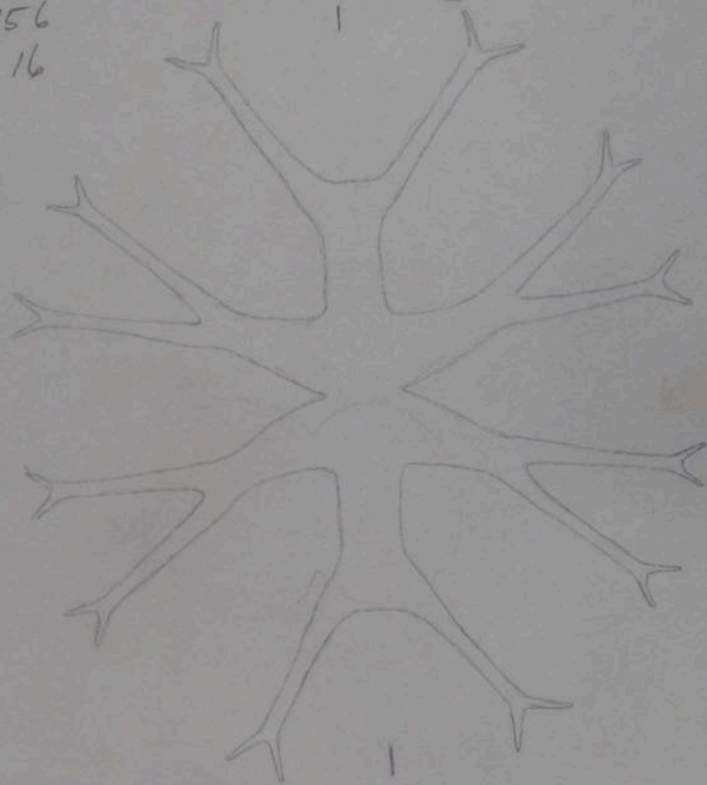
Old cell, partly crushed and distorted

Brazil 6

B60
Apr 24/52

L 168
W 156
I 16

M. radiata var *gracillima* GMSmith



To G 4/5/54

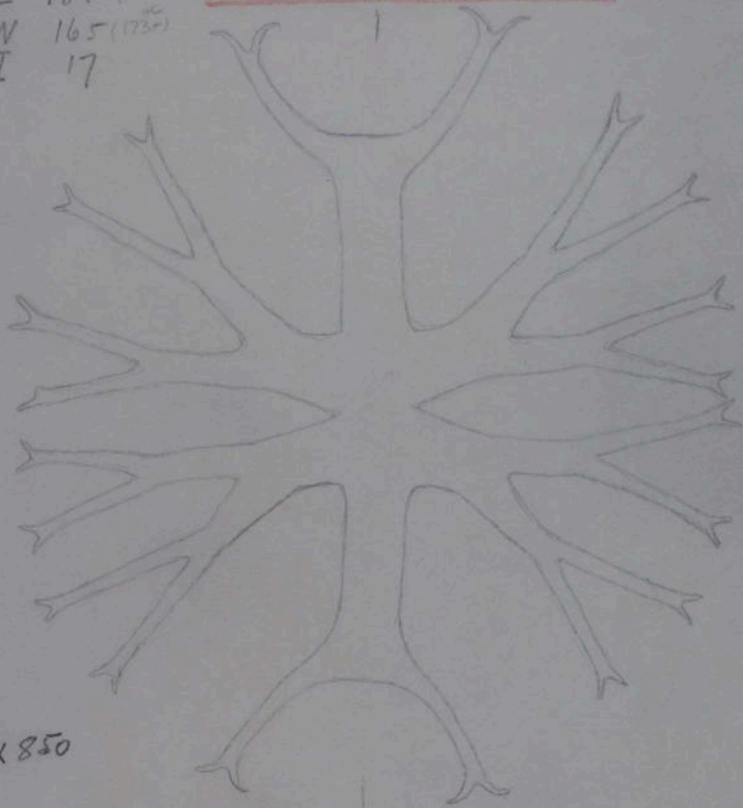
B46

Brazil 20

Moeh 30/54

L 184
W 165 (1730)
I 17

M. radiata var. brasiliensis Griseb



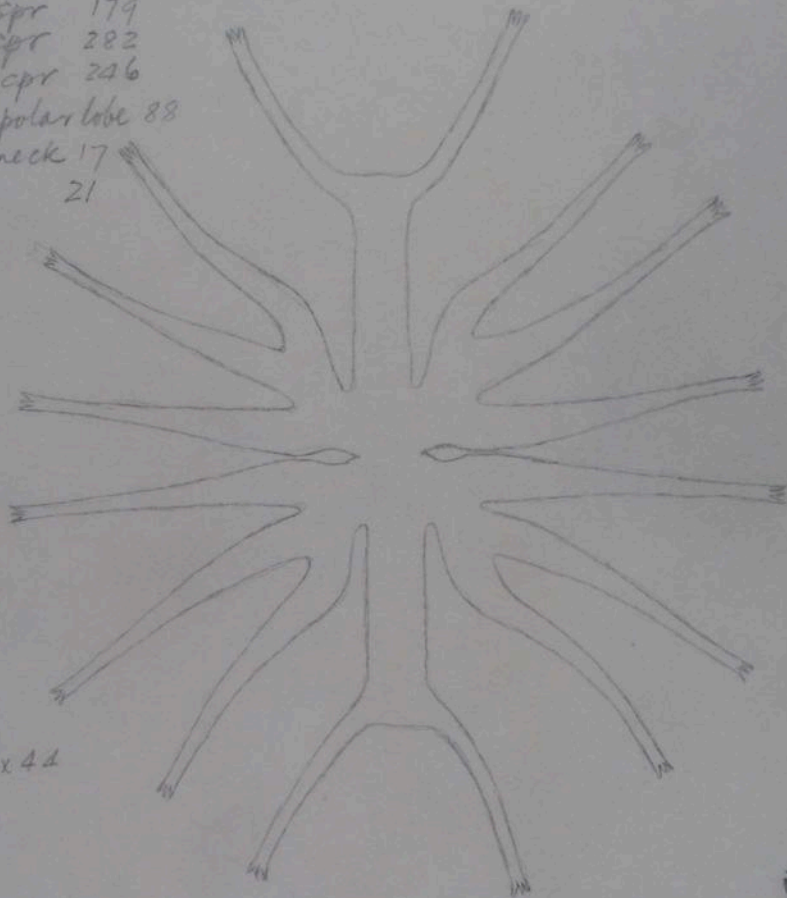
x850

To G 4/5/50

Brazil 20

B45
Meh 30/54

L spr 179
cpr 282
W cpr 246
W polar lobe 88
W neck 17
I 21



7 1/2 x 44

M. alata "fa. gracilior" Grönbled

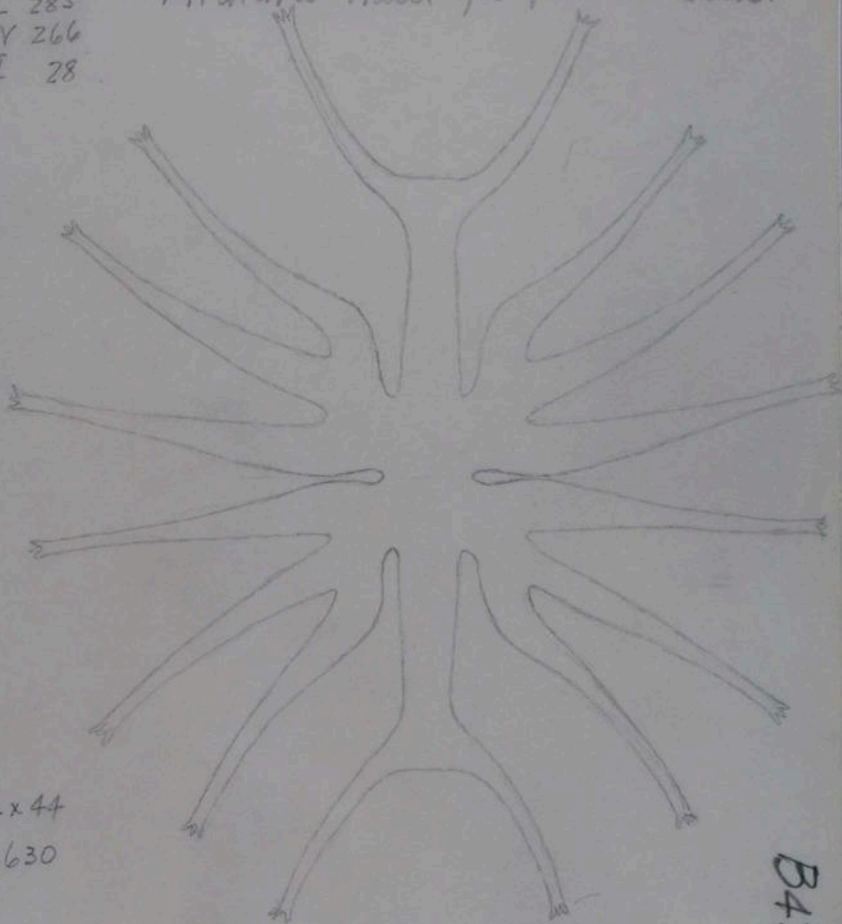
B43

Brazil 20

Sept 30/53

L 285
W 266
I 28

M. alata Wall. fa *gracilior* Sblk.



7½ x 44
x 630

B42

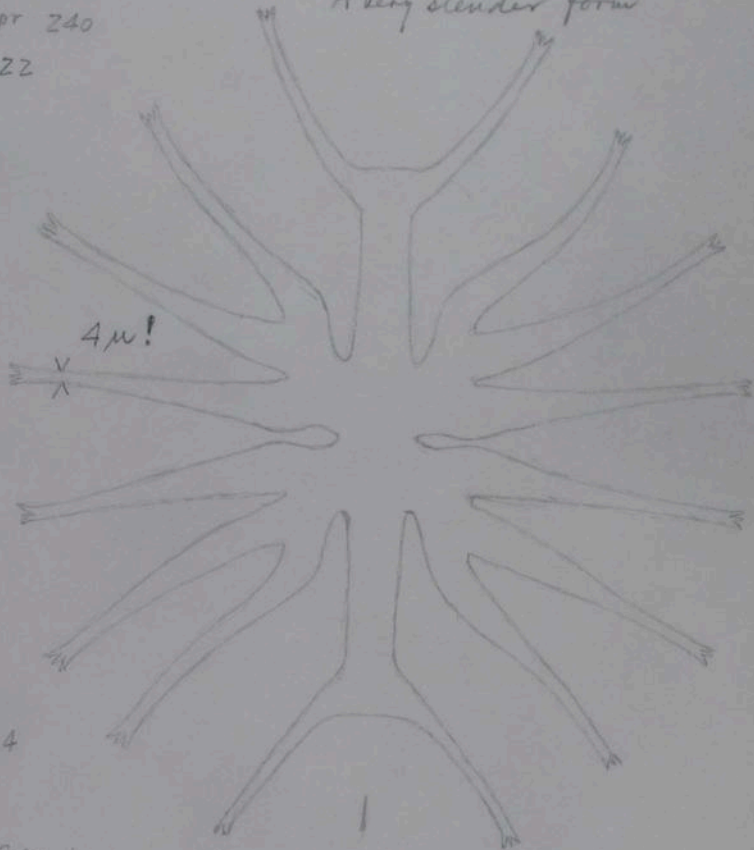
Brazil 20

APR 18/57

L spr 177
cpr 263
Wcpr 240
I 22

M. alata 1

A very slender form



7 1/2 x 44

All processes have 3 terminal spines

Brazil 20.

Sept 2/56

L 132
W 25

T. granulatus (Britt) Ralph



122 x 44

Wall sparsely porose

Brazil 32

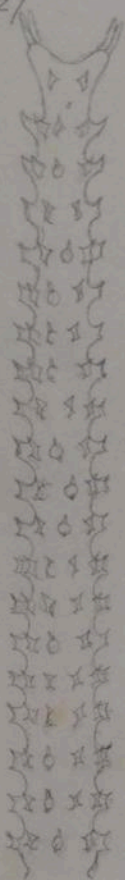
Aug 27/56

L semicell 274

W base cpr 36

W pole ssp 27

Tr. gracile var. bidentatum Nordst



Others have as many as
22 whorls per semicell
and total length up
to 608 μ

$7\frac{1}{2} \times 44$

B
14

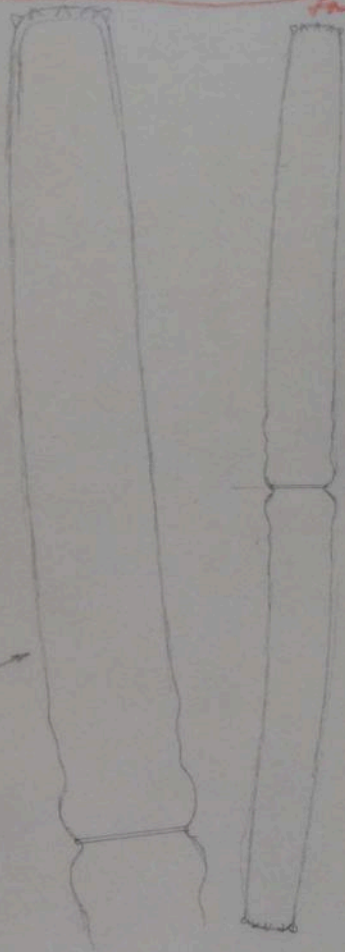
Brazil 19

May 2/52

L 522
W base 42
W pole 30
I 33

Pleurotaenium coronatum (Brid.) Rabenh

522
29
307



Many scattered
pyrenoids.

$7\frac{1}{2} \times 44$
 $\times 615$

$\leftarrow 20 \times 10$
 $\times 350$

B 11

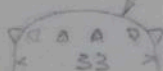
Brazil 16

Apr 27/54

L 372
W base 41
W pole 33
I 31

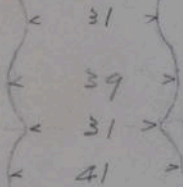


5x44



This apex decidedly
elevated.
Other apex more
nearly flat.

~~cf.~~ Pl. coronatum
var. robustum fa



No girdle band visible

Brazil 16

Sept 26/53

B/B

L 442
W back 42
W pole 32
I 31

truncatum? fa



no. 1/1/54
T. G. 1/1/54

B/12

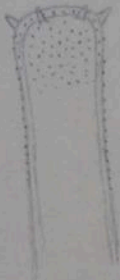
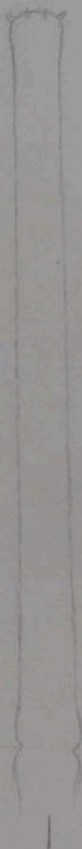
Oct 11/53

Brazil 16

L 298
W base 14
W pole 11
I 12

Pl. tridentulum var. capitatum W. West
var. hexacanthum G. H. A.

6 spine



B9

Brazil 32 also 160

Apr 20/54

L 156
W base 10
W pole 4
I 9

Pl. minutum (Raf.) Delp
v. attenuatum Krieg.

cf *Bourrellyi*.



12½ x 44

Brazil 32

Aug 21/56

L 199
V base 17
W pole 15
I 13 ±

Doacidium undulatum



10 x 44

Seems somewhat stouter than
the USA form

Brazil 16

Oct 11/53

B15

L 213

W base 17.5

W pole 15

D. undulatum Bail



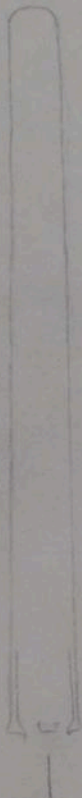
10 x 44

B 16

Brazil 16

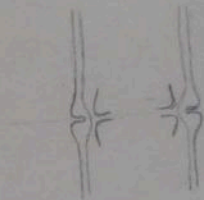
APC 25/54

L semicell 165
Vc base 18
W pole 12
I



Docidium hexagonum (Boerger)
Krey

Differs somewhat
at base of semicell



Brazil 32

Apr 19/54

B19

L 277
V base 19
W pole 15
I 15

D. hexagonum (Börger.) Krag



7 1/2 x 44



20 x 44

B/8

Apr 22/50

Brazil 16

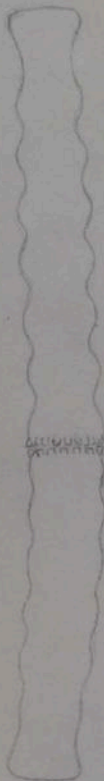
L 171

W base 16

W pole 16.5

I 13 ±

Docidium undulatum Bail.



16 folds

Typical has 11-12 according
to Krieger.



Diam 16.5

20 x 44 = 1500x

7 1/2 x 60

B17

Apr 21/57

Brazil 16

L 325
W center 31
W pole 9

Cl. porrectum Nordst ~~?~~

1

6x42



Wall yellowish
About 12 costae visible
at center
Pole slightly flattened

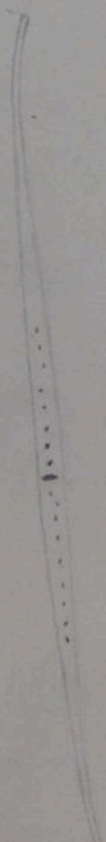
B.3.

Brazil 52

May 3/54

L 332
W center 12
W pole 2.5

Cl. setaceum ~~Zuccato~~
Kuetzingii ~~fa.~~



could not see if any striae
or costae were present

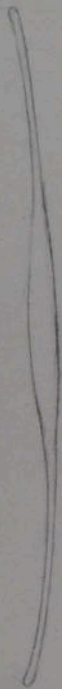
B 2.

Brazil 52 also 9

May 4/54

L 298
W center 12
W pole 3

Closterium Kuetzingii
fa



This occurs, very rarely, among a very large number of marine diatoms such as Coscinodiscus, Aulacodiscus, Actinoptychus, Diploneis, Triceratium, etc. There are also some other genera of diatoms which may be either marine or freshwater, depending on the species, such as Orthosira and Surirella.

Brazil 54

B8
Apr 14/54

597

W center 27
W pole 9

Cl. Delpontei (Klebs) Wolle ?

cf. *Cl. macilentum* v. *substriatum*
(Groul) Krieger

in Kurt Förster 1957



10 striae in 10 μ according
to Förster.

Get more inform

20x10

Wall colorless, markings not visible
There may be some striae or costae.
Pyrenoids 28-30 per semicell,
arranged more or less on centerline

B5

Brazil 52

May 3/57

L 453
W center 60
W pole 20!



Get more inform.

B6

Brazil 14

Apr 4/54