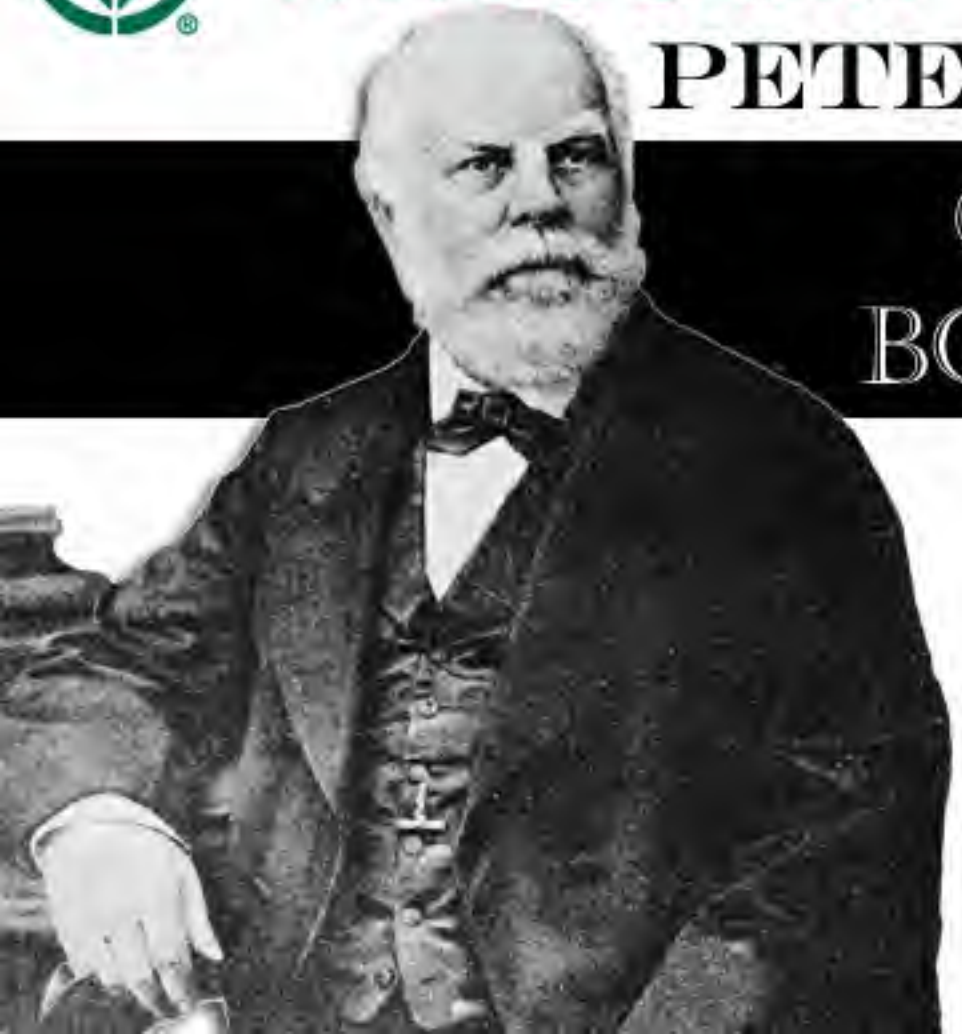
Missouri Botanical Garden
Peter H. Raven Library

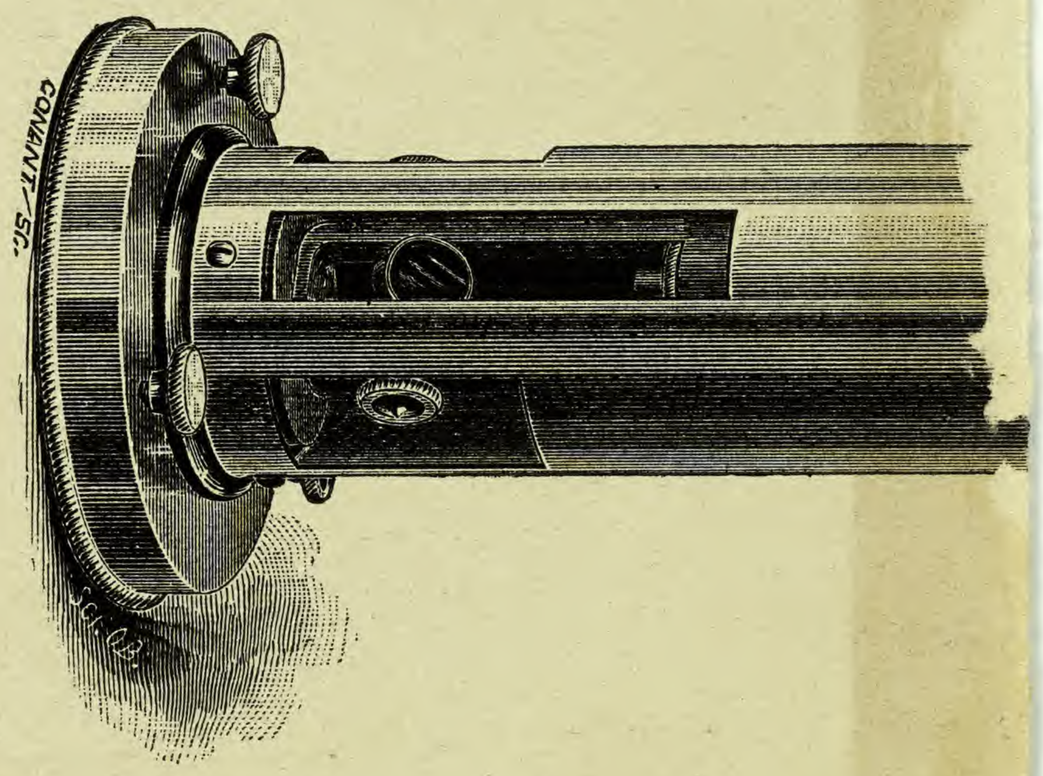
George Engelmann Botanical Notebooks



Pagination Note:
Since many of the items lack a specific page number, the page number displayed online refers to the sequentially created number each item was given upon cataloging the materials.

72-6

Isoetes riparia!
banks of Delaware River



are shaken together, the fat globules which are always formed, become surrounded by an albuminous coat." If fat and albumen outside of the body can form vesicles or cells (and this is a fact) it requires no great stretch of credulity to believe that cells can be formed in a freshly exuded blastema in immediate contact with the living organs.

We quote again from Kolliker, page 43: "With regard to the development of cells, we have to distinguish between their free origin and their production by the intermediation of other cells. In the former case the cells are developrd independently of others in a plastic fluid. The cytoblastema of Schleiden, containing chiefly protein, fat and salts in solution; in the other or in cell multiplication the existent cells produce the so-called secondary or daughter cells within themselves, or multiply by division—endogenous cell formation, and fissiparous cell formation.

We see that Kolliker recognizes the fact that cells are multiplied by fissiporous generation, that which is almost exclusively contended for by Virchow, yet as a fact contends that they

and we contend, that so far, facts decide the question in the affirmative. Let further investigations finally decide. We await them with a decided leaning to the blastemal theory as a part of the truth, admitting, of course, the facts of fissiparous and endogenous generation as amongst the modes of cell genesis. Even Virchow admits the endogenous generation in a limited extent; and that fibrous exudations may become organized without the intervention of cells; so that cells are not everything.

The theory of Mandl as recorded by Berard, is the prettiest of all the cell theories. It is as follows:

"Anterior to any formation there exists a liquid blastema, containing corpuscles, which Mr. Mandl calls *primitive corpuscles* —(which we noticed above as a blastema and nuclei).

"From this condition, the formation of tissues may take two different directions, from which will result:

I. Asparin from Uxbridge

	macrospores	microspores
Spotted	0.47 - 55	0.029 - 34
Sporangia	0.50 - 65	0.031 - 36
	0.42 - 52	0.029 - 34
	0.46 - 54	0.028 - 31
	0.44 - 55	0.030 - 34
lines 12-13	0.53 - 65	0.029 - 32
	0.51 - 60	0.030 - 35

Stromata
spotted sporangia

188 .

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86-9

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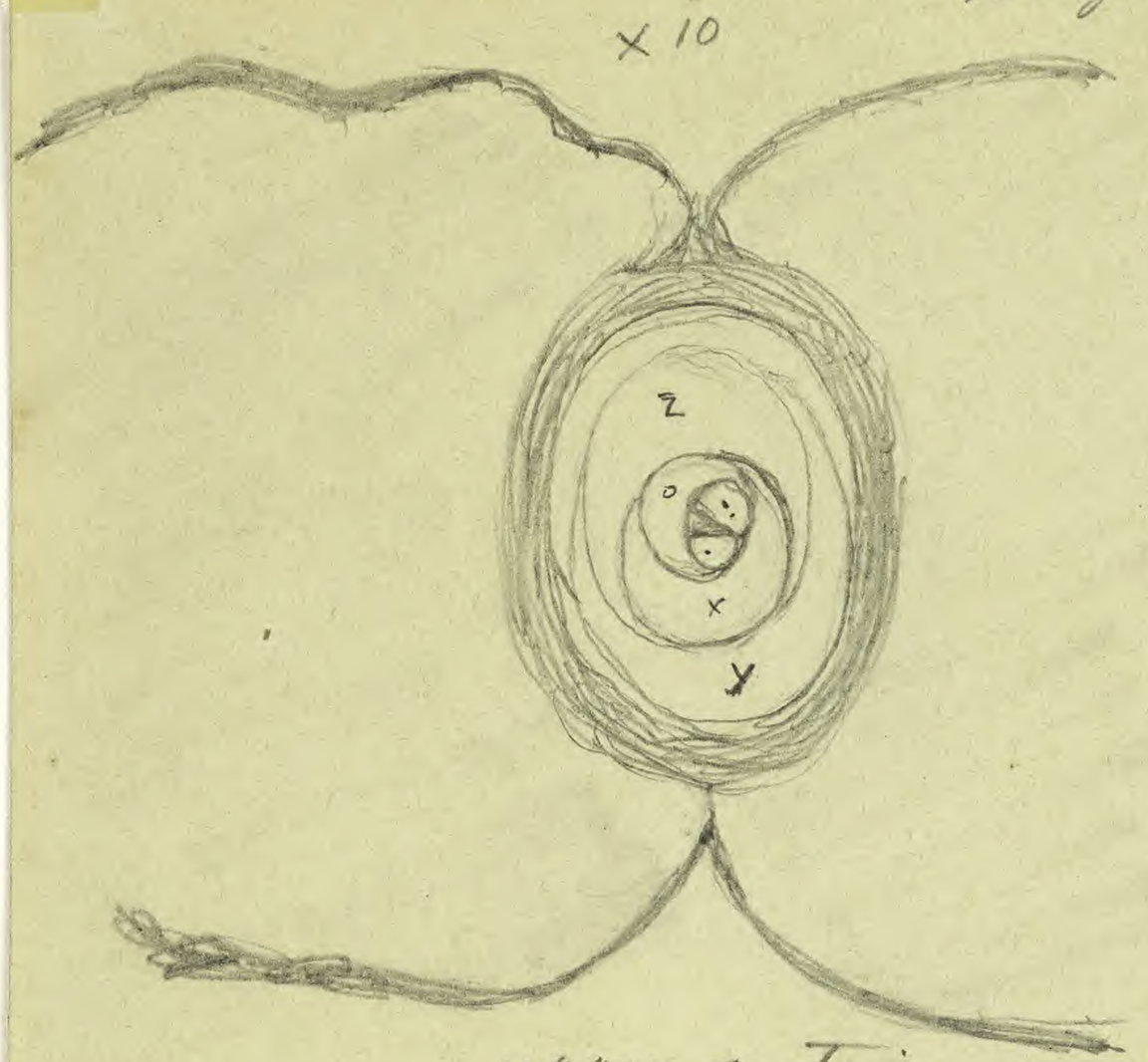
6

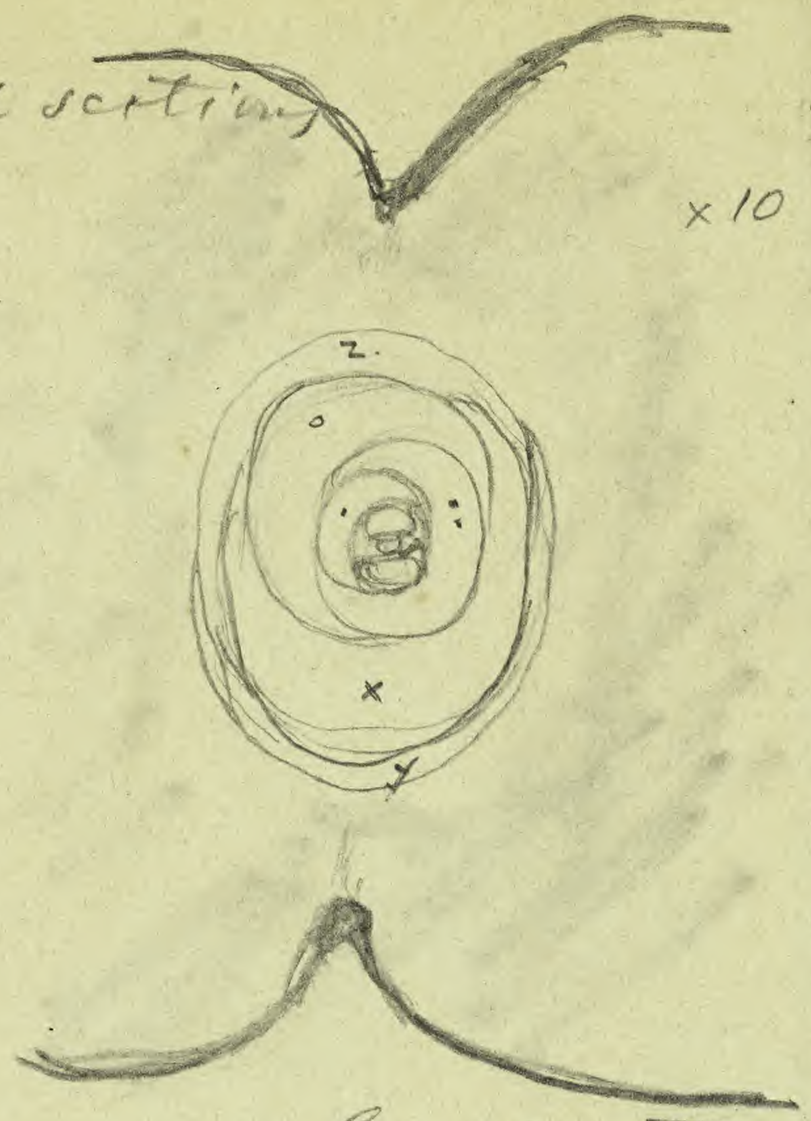
Isoetes riparia

Octob 1860

horizontal section



upper section



lower section

the same leaves
y. z. x o " x. are here larger
than in the upper section, and several
new ones appear in the centre.

13700

M. W. ALEXANDER,

SOUTH-EAST CORNER OF FOURTH AND MARKET STREETS,

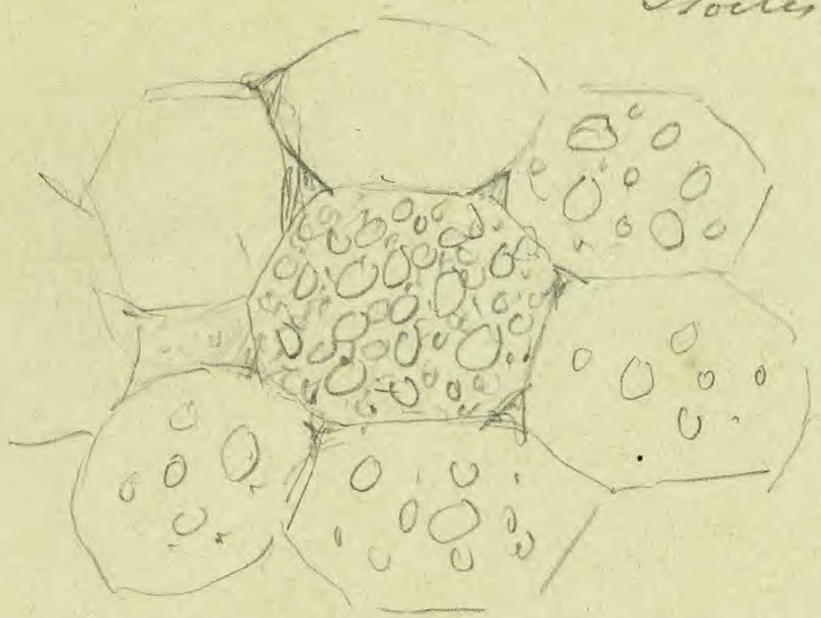
ST. LOUIS.

7

Isoetes riparia

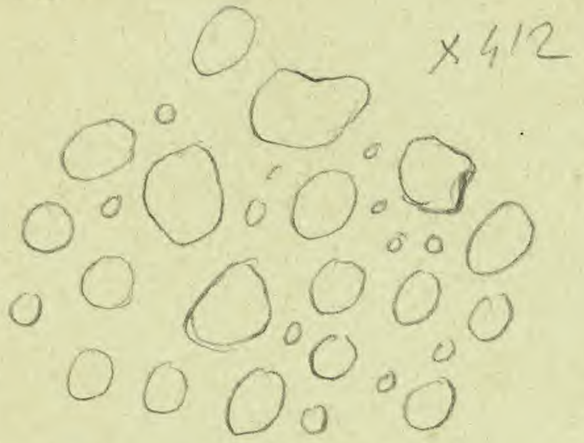
Octob 1860

×270



cells of bulb

×412



Starch of bulb

13701

M. W. ALEXANDER,

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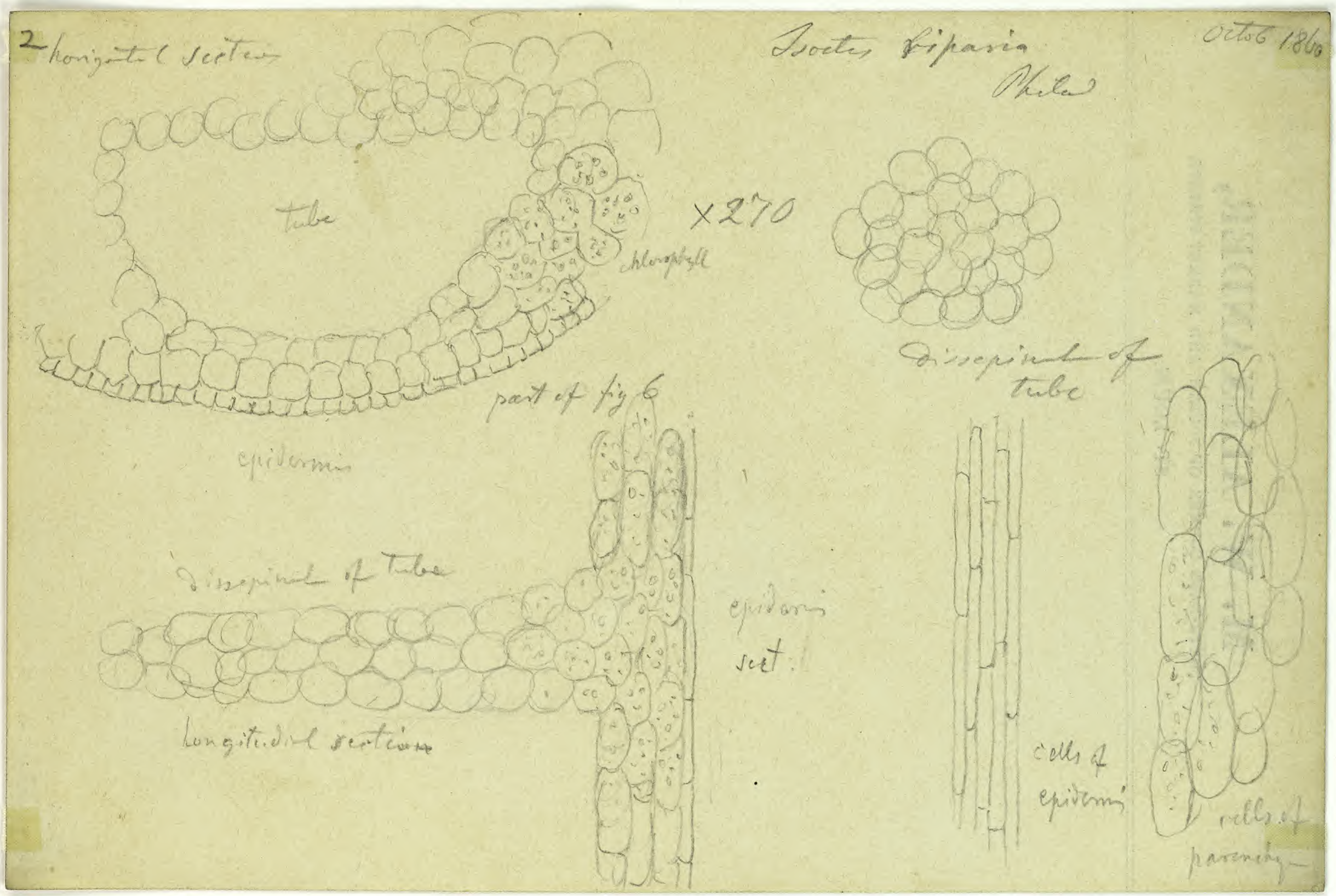


13702

M. W. ALEXANDER,

SOUTH-EAST CORNER OF FOURTH AND MARKET STREETS,

ST. LOUIS.

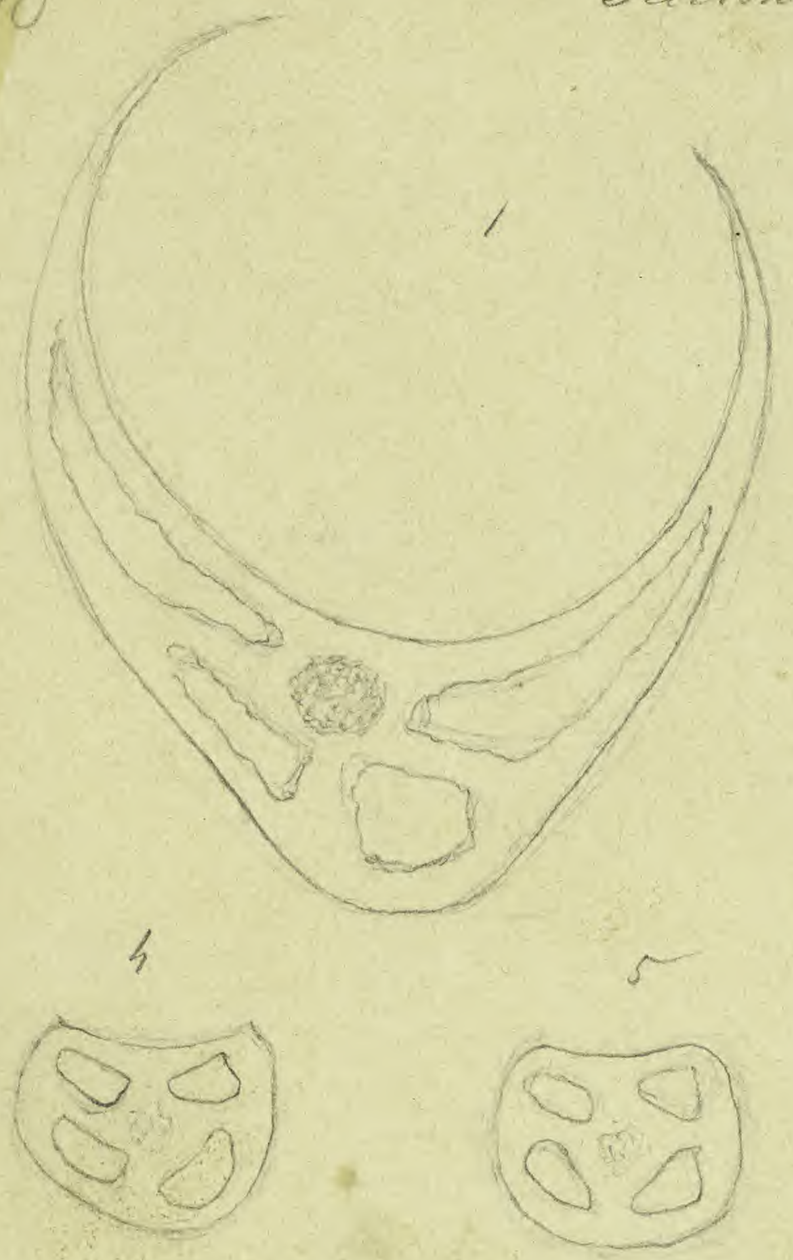
1 X30

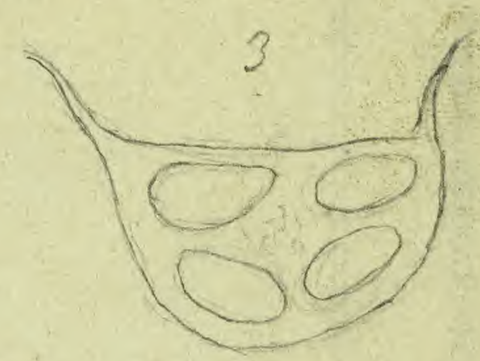
Sections of young sterile leaf

Octol 1860

Isoetes riparia

Ch. Cardiffia





reversed

longitudinal section
tubes with diaphragmata

13703

M. W. ALEXANDER,

SOUTH-EAST CORNER OF FOURTH AND MARKET STREETS,

ST. LOUIS.

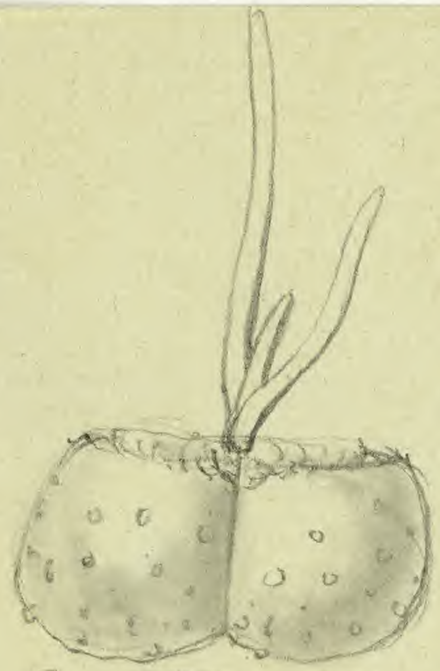
3

Isoetes riparia

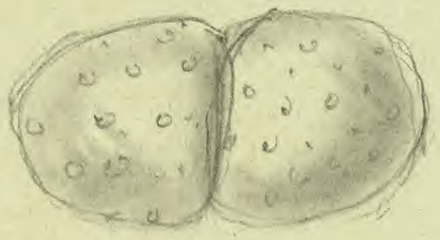
(all ×3)

Octob 1860

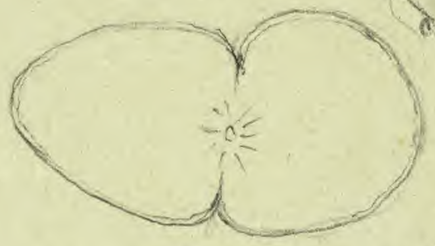
×3



scars of roots, fibres removed



bottom view



horizontal section

×3

large bulb

×3

a younger bulb, disroid above, 2 lobed below

vertical section

see magnified view

×30

centre of bulb, horizontal sect. light yellowish brown with its rays

13704

M. W. ALEXANDER,

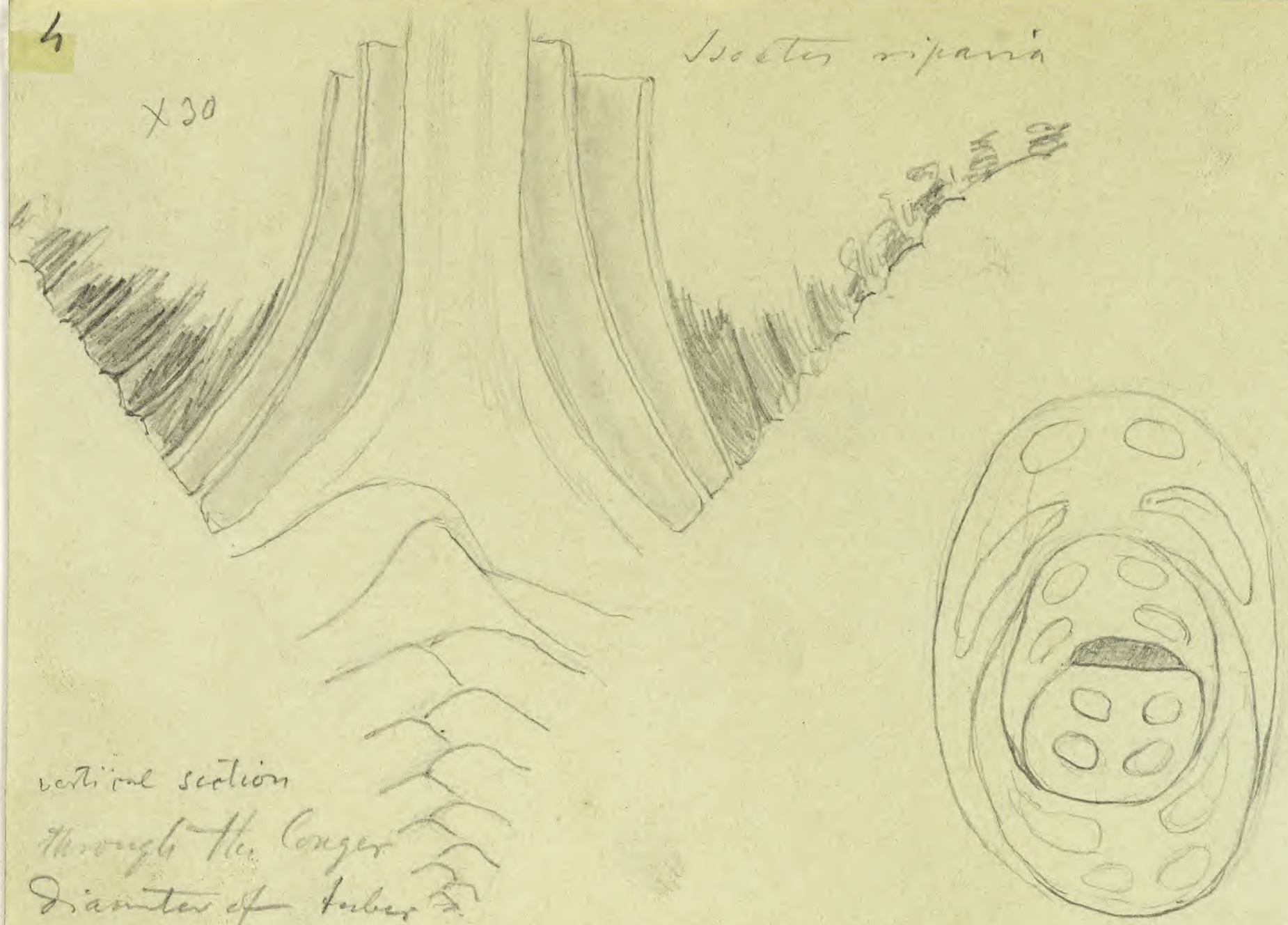
SOUTH-EAST CORNER OF FOURTH AND MARKET STREETS,

ST. LOUIS.

4

Isoetes riparia

Oct 6 1860



13705

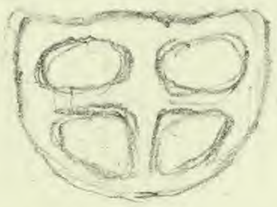
M. W. ALEXANDER,

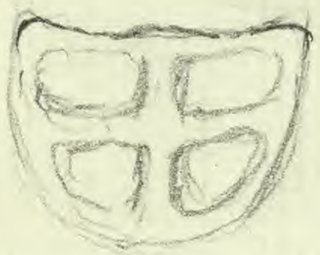
SOUTH-EAST CORNER OF FOURTH AND MARKET STREETS,

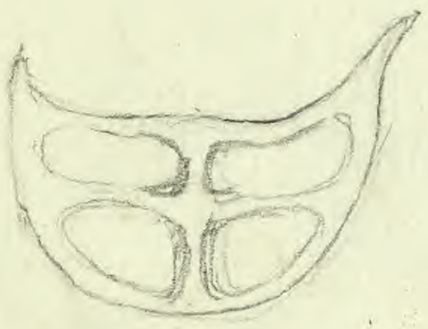
ST. LOUIS.

Isoetes riparia, Canby
Delaware
Wilmington
July 4 1866

Sect of leaf
x 10
June 29
1866







St Louis July 4 1866

13706

ALEX. LEITCH,

APOTHECARY AND CHEMIST,

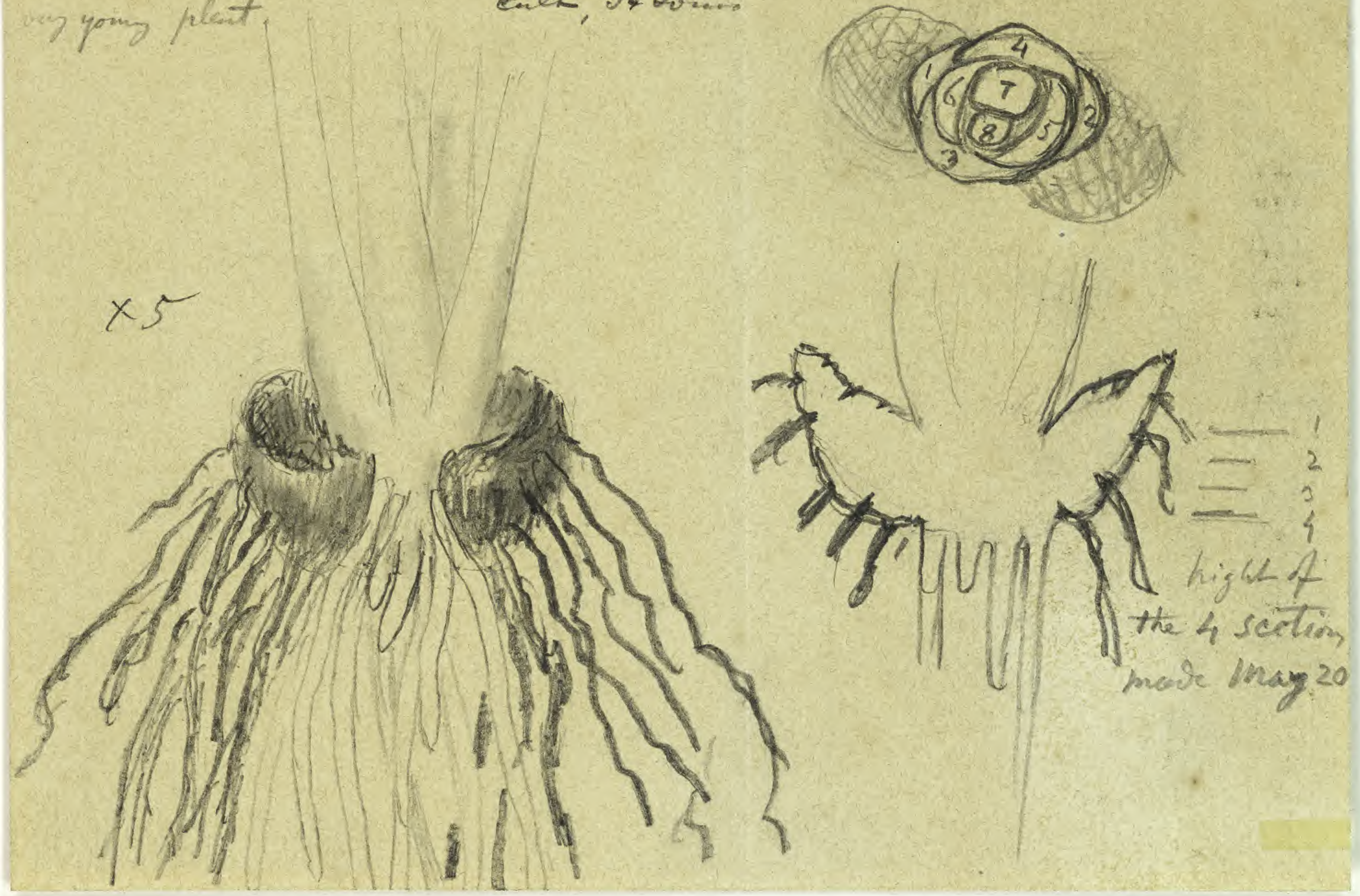
Marble Building, Cor. Fourth and Olive Streets,

ST. LOUIS, MO.

Isoetes riparia from Philadelphia May 19 1866

cult, St Louis

very young plant



Alex. Leitch,

APOTHECARY & CHEMIST,

Cor. 4th & Olive Sts., St. Louis.

13707

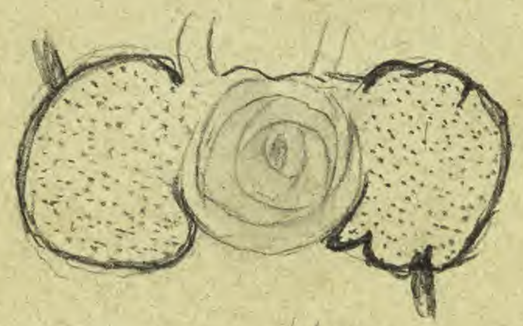
Bontia siparia ... May 20 1866

from Philadelphia

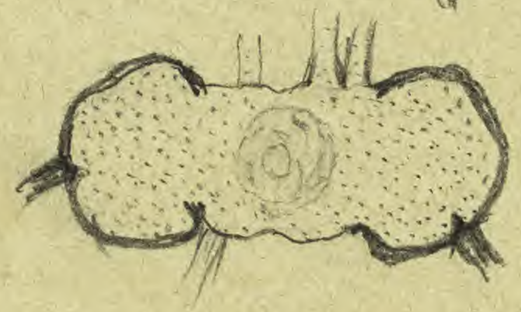
horizontal sections Cultiv. at St Louis

×5

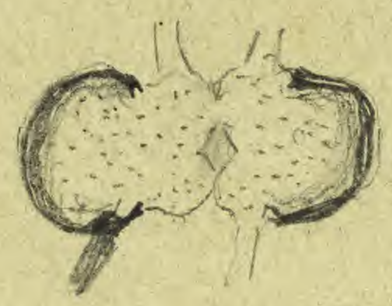
sections of tuber separating from the leaves



sections tuber cohering with base of leaves



only lowest part of innermost leaves visible



13708

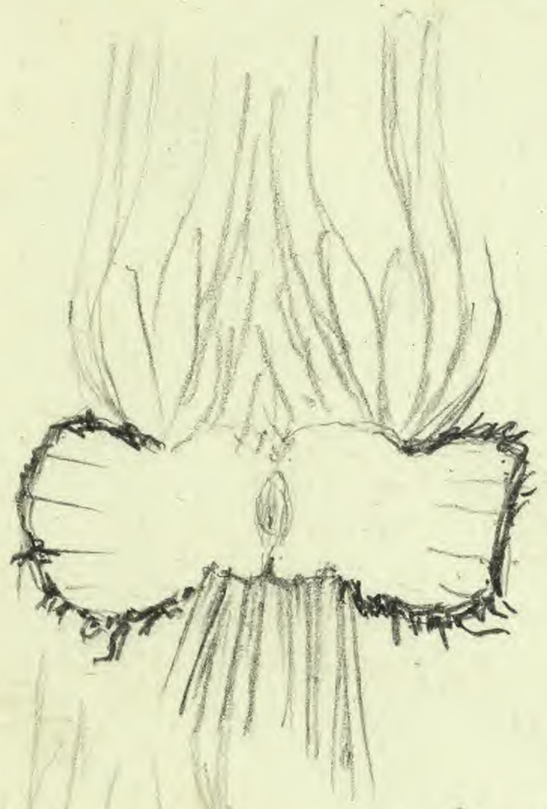
Alex. Leitch,

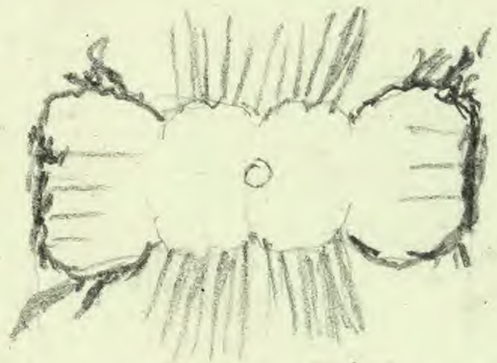
APOTHECARY & CHEMIST,

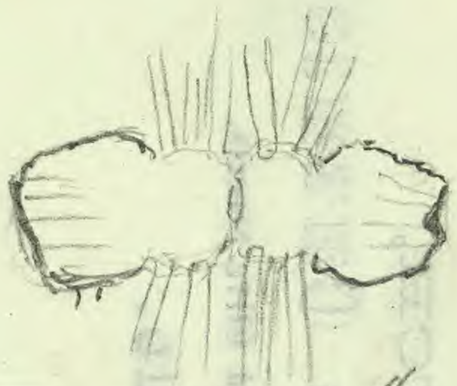
Cor. 4th & Olive Sts., St. Louis.

27 leaves 6–7 inches long Isoetes riparia fresh June 21 1866
Philas Durand June 18

24 leaves 5–6" long







horizontal sections of two different plants with 21 & 23 leaves

all sections X2

12 leaves 4–5" long

very sterile plant throwing off old bulb rotting

fully ripe spores of last year adhering to plant $\frac{32-33}{60}$ mm

young spores, not yet fully grown, $\frac{25}{60}$ mm

0.42 – 0.54 mm very full grown

spores X 415 margin smooth

13709

ALEX. LEITCH,

APOTHECARY AND CHEMIST,

Marble Building, Cor. Fourth and Olive Streets,

ST. LOUIS, MO.

5

Isoetes riparia

Octob 1860

x15

vertical section through the short or transverse diameter of bulb

13710

M. W. ALEXANDER,

SOUTH-EAST CORNER OF FOURTH AND MARKET STREETS,

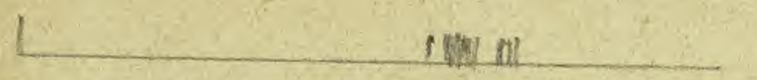
ST. LOUIS.

J. W. Robbins No 7

J. Vipara

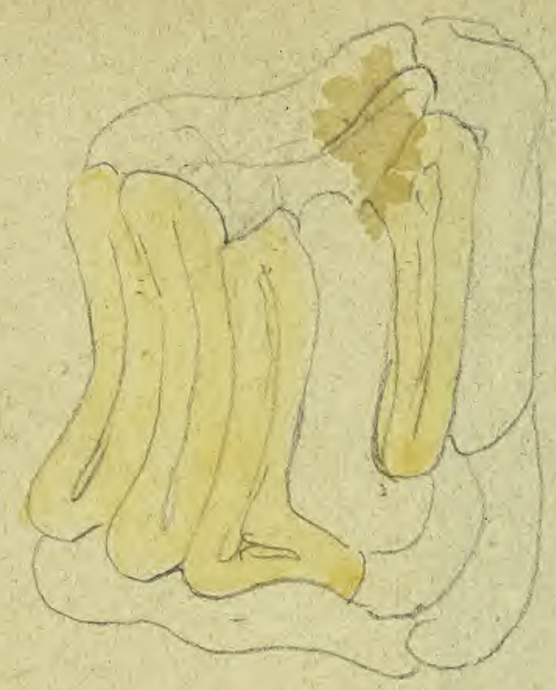
Uxbridge 1848

Dec 28 1866



$\frac{25.0 - 31}{60} = 0.42 - 0.52$

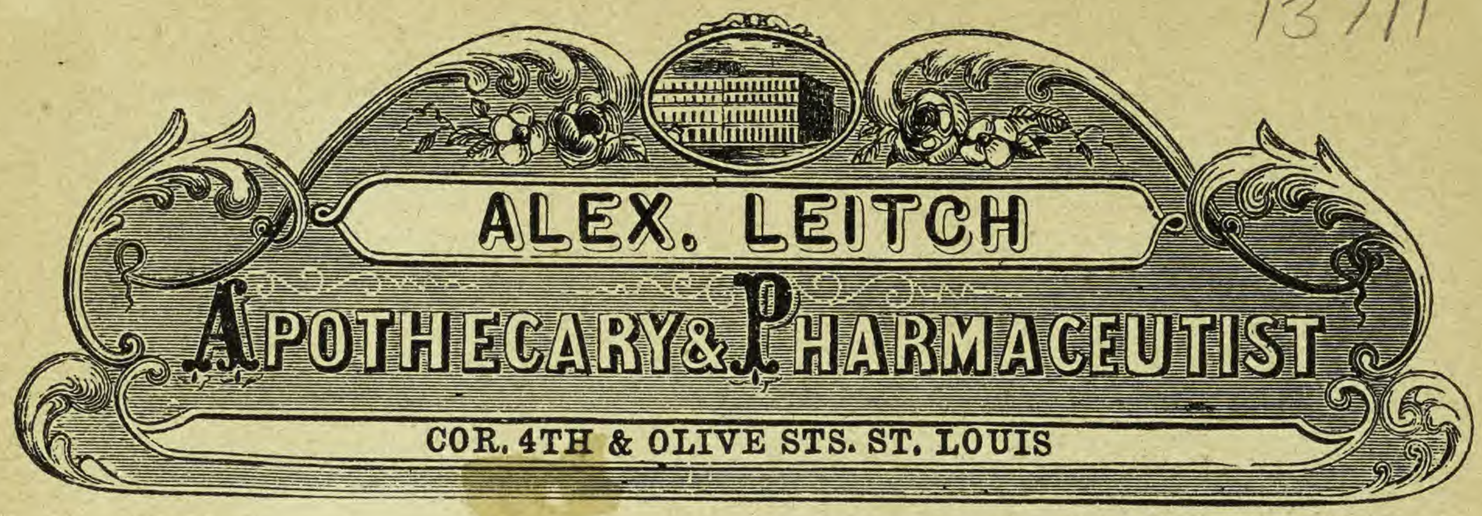
$\frac{12 - 14}{3.15}$ 0.029 - 0.034 mm



×280

Sporangium cells

13711



J. W. Robbins No. 9

J. riparia

Dec 28 1866

Rebridge in a millpond 5 feet deep 30 1865?

diam of microspores ×60

$\frac{28-33}{60} = 0.47-0.55$ mm

microspores with much meandered sculpture

leaves full of stomata

leaves 8-12 15 cm long

0.029-0.034 mm

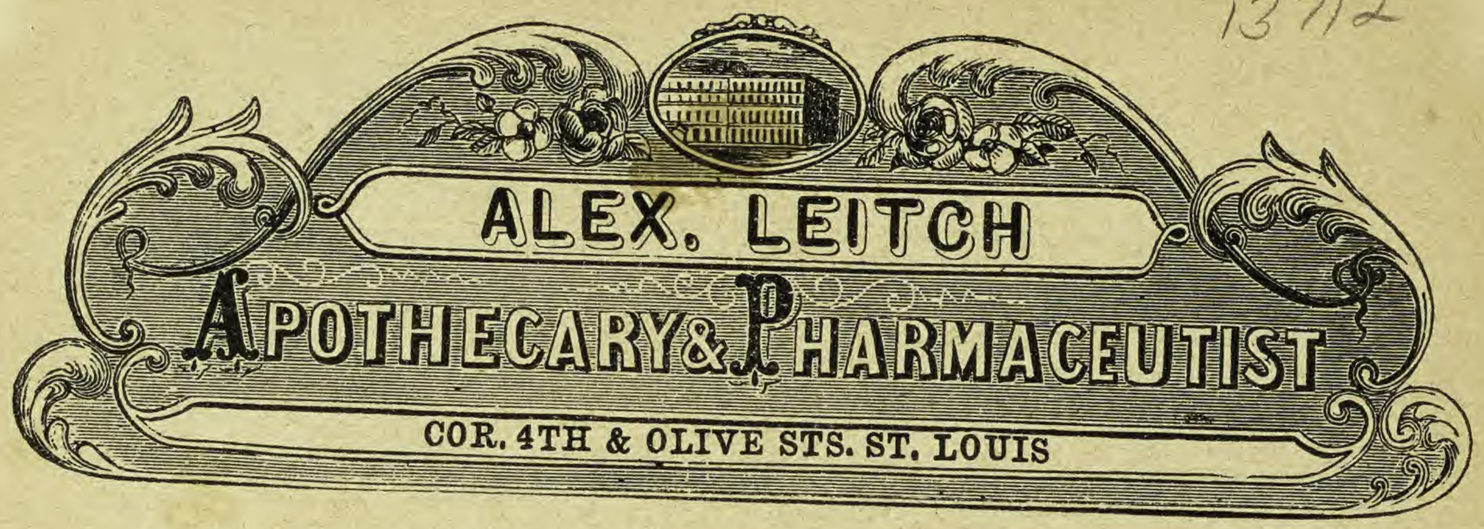
×415

×2

brown sclerodermoids abundant in sporangia

microsporing—

13712



J. W. Robbins No 8 Boletus ripan Dec 28 1866

Uxbridge 1843 ?

diam. of macrospm, markings between Eng. lumen and lamellae

$\frac{32-39}{60} = 0.53-0.65$ mm

same as "Robbins 1864" in Hb A. Gray see fig. Dec 14

$\frac{13-15}{415} = 0.031-0.036$ mm

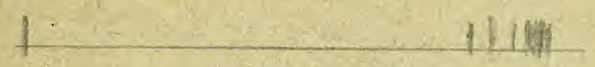
13713

Dec 28 1866

Bractea viparia

J. W. Robbins No 11

Uxbridge 1848



Spores subtriangulates

$\frac{27.5 - 32.5}{60} = 0.46 - 0,54$ mm

Stéréo ~~Lepm~~ cells embryon

0,028 – 0031 mm

13714

ALEX. LEITCH

APOTHECARY & PHARMACEUTIST

COR. 4TH & OLIVE STS. ST. LOUIS

J. W. Robbins No 14

Aug 30. 1866

Isoetes riparia

Dec 29 1866

Millpond at Uxbridge Mass
2-3 feet deep

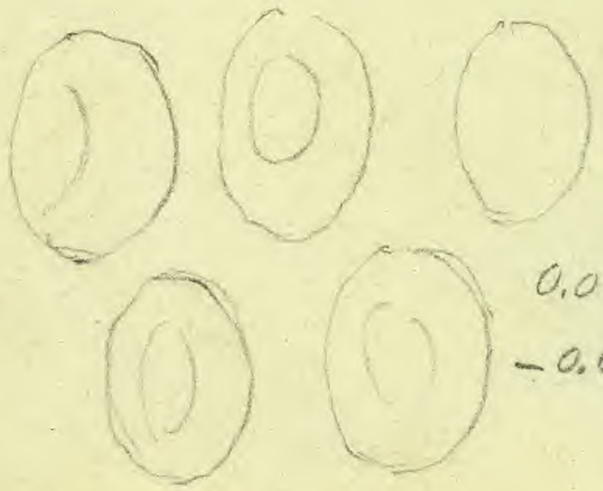
$\frac{265-33}{60} = 0.44-0.55$ mm diam of

x2

macrospores
spores exactly like those of No. 10
meandering ridges
on lower half

Sporing cells
x 280

x280
stomata in
some parts not sure
in others impossible
to find



0.030
-0.034 mm

13715

ALEX. LEITCH.

APOTHECARY & PHARMACEUTIST.

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

J. W. Robbins U.S.N. Isoetes riparia maxima

Dec 28. 1866
Dec 30

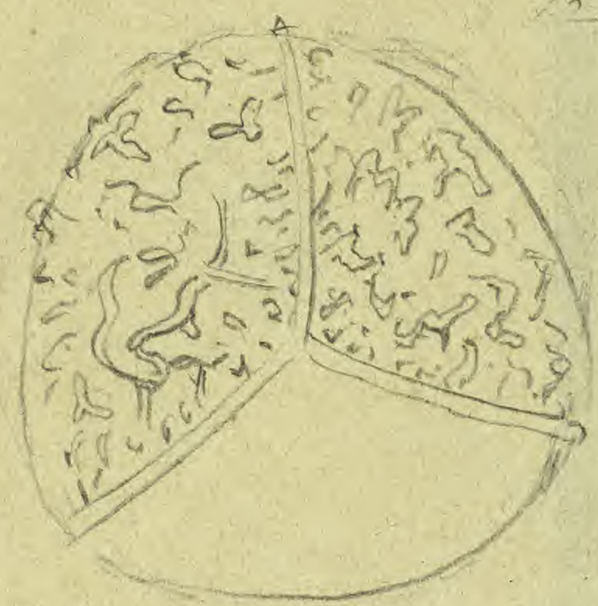
Ux Bridge 1845?

from Intermediate between riparia and Engelmanni

$\frac{32-39}{60} = 0.53-0.65$ mm

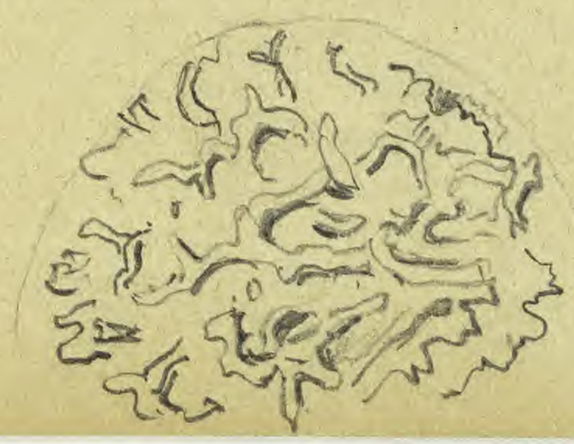
leaves 15–18
28–32 cm long
12–13 inches

$\frac{12.5-13}{415} = 0.029-0.032$ mm



×2

macrosporang.



13716

ALEX. LEITCH

APOTHECARY & PHARMACEUTIST

COR. 4TH & OLIVE STS. ST. LOUIS

Rottlera No. 10. *L. riparia* Dec. 30 1866

Sporang. cells
×280

×280

stomata in some leaves or part of leaves (more apparently towards the tip) abundant, in others not seen

13717

ALEX. LEITCH,

APOTHECARY & PHARMACEUTIST,

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.