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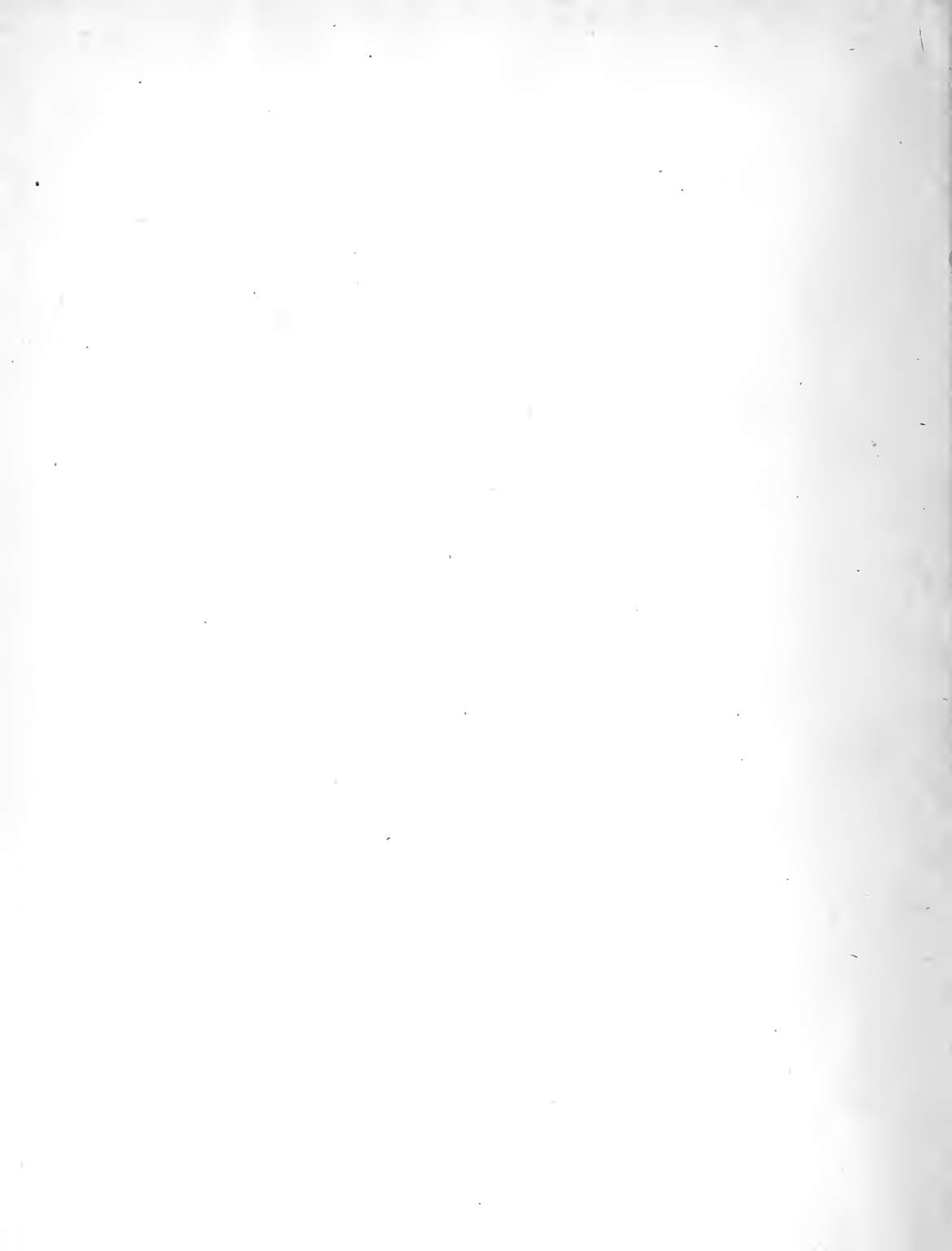
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DEPARTMENT OF THE INTERIOR

MONOGRAPHS

OF THE

UNITED STATES GEOLOGICAL SURVEY

VOLUME XV—PLATES



WASHINGTON
GOVERNMENT PRINTING OFFICE
1889



Map
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vol. 15
plates

UNITED STATES GEOLOGICAL SURVEY

J. W. POWELL, DIRECTOR

THE POTOMAC

OR

YOUNGER MESOZOIC FLORA

BY

WILLIAM MORRIS FONTAINE



WASHINGTON
GOVERNMENT PRINTING OFFICE
1889

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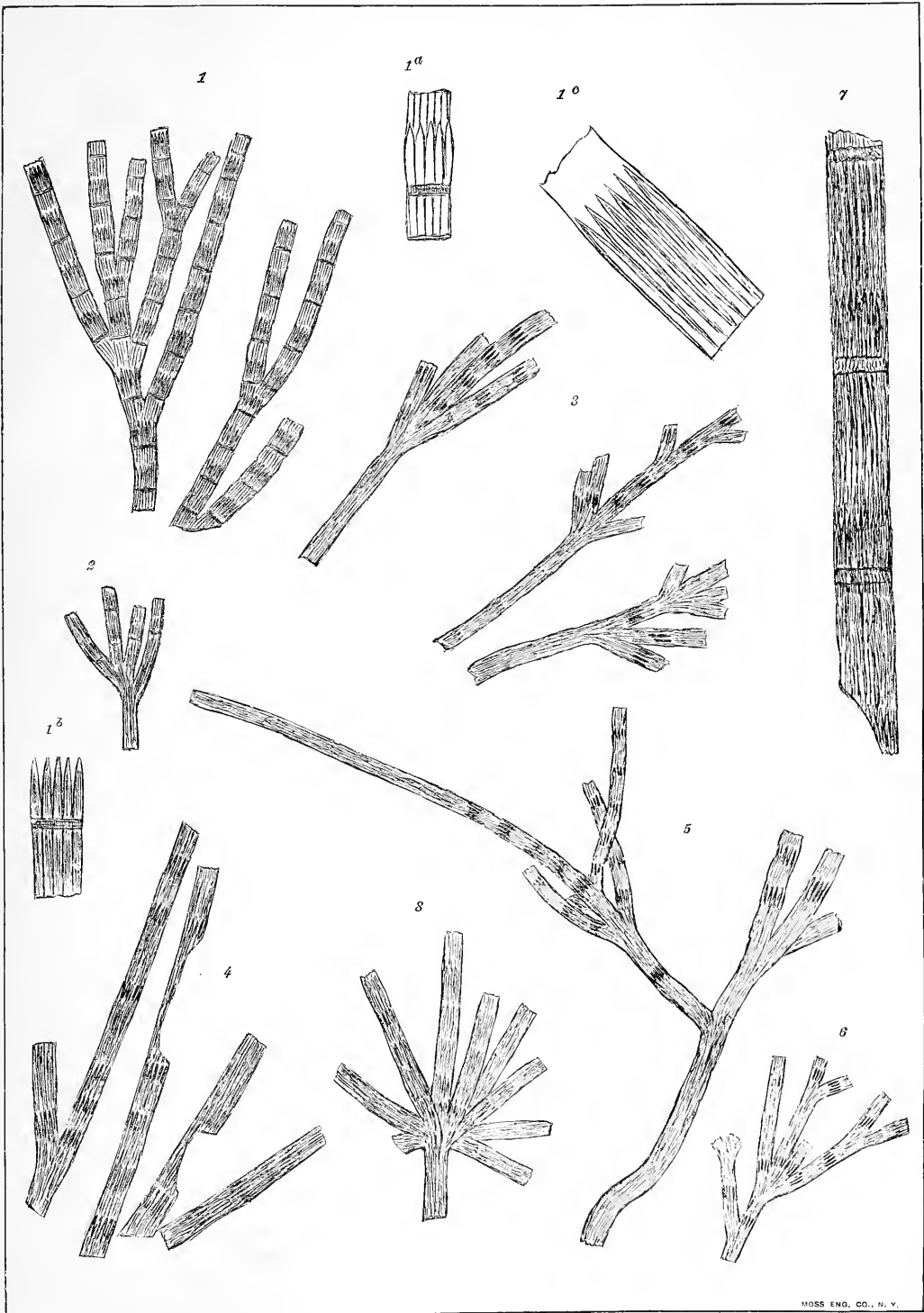


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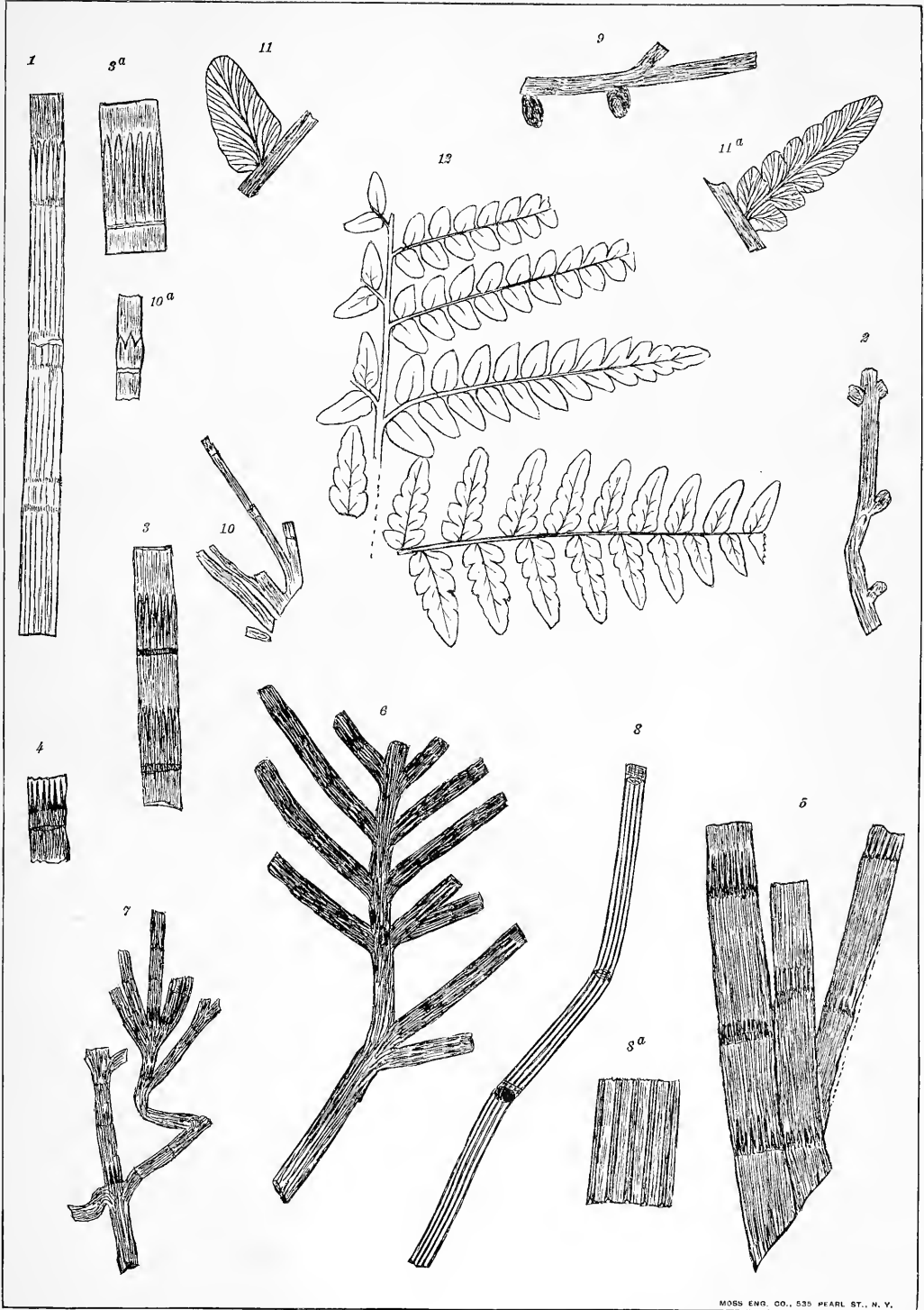


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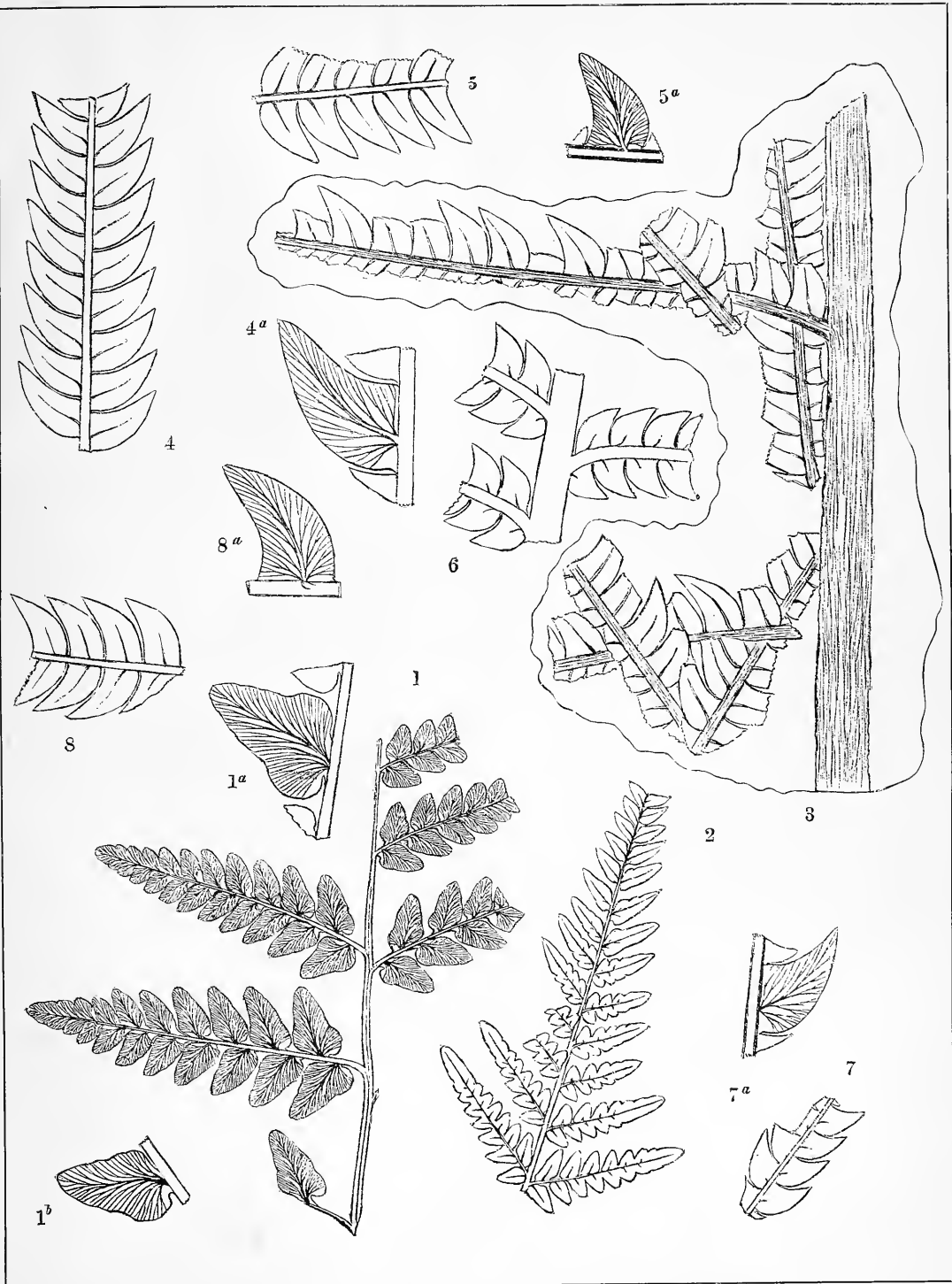
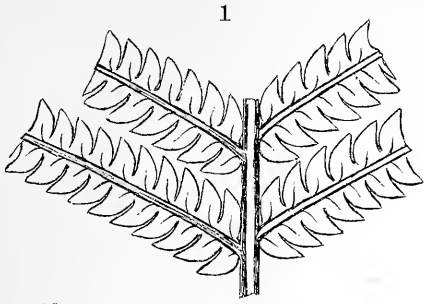


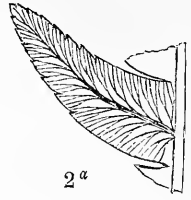
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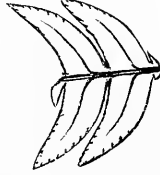
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1



2^a



2

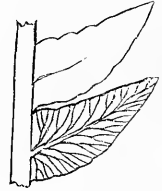
1^a



5



7



3^a

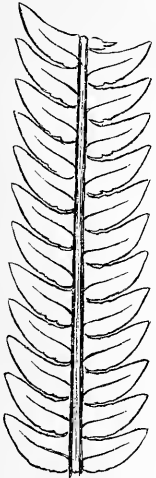


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8^a



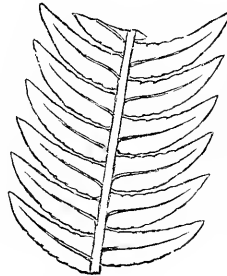
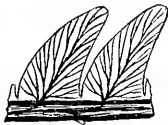
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7^a

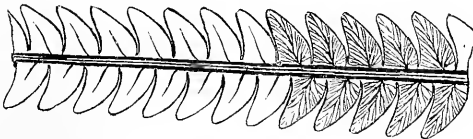


4^b



8

4^a



4

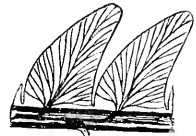


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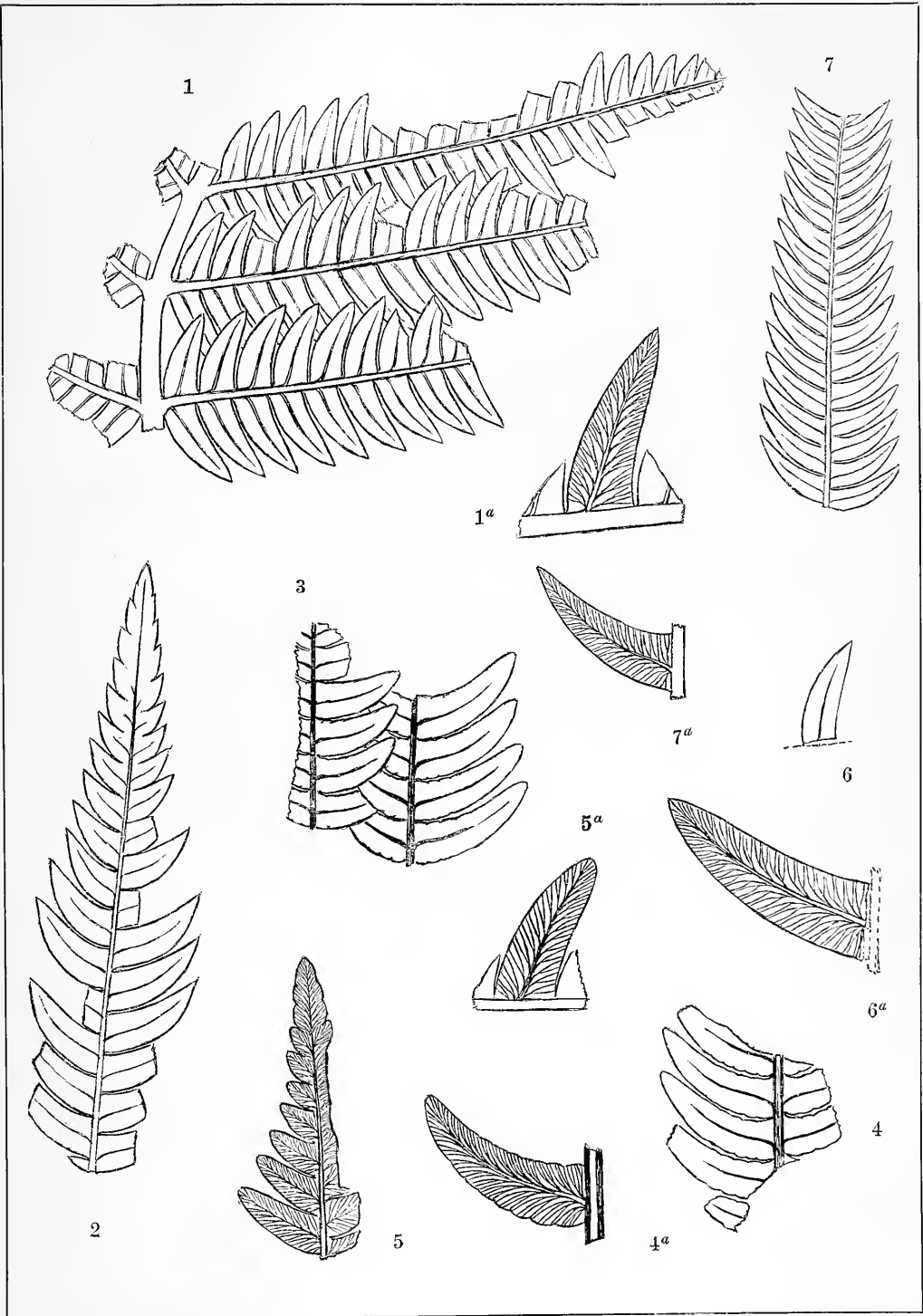


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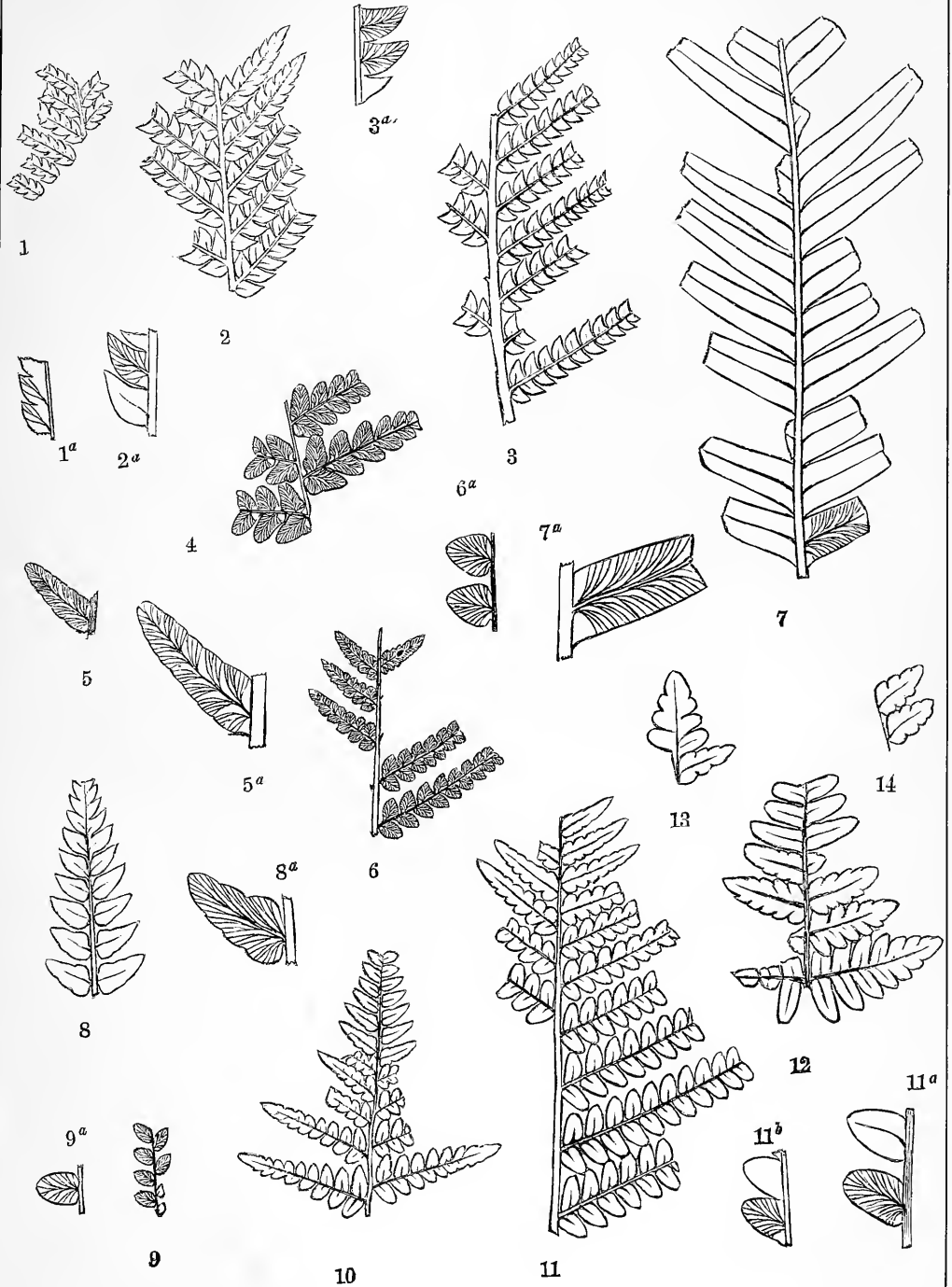
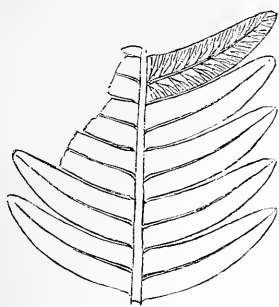


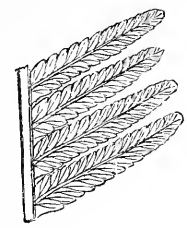
PLATE VII.

PLATE VII.

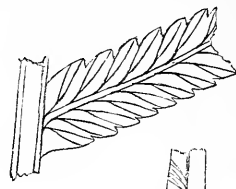
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1



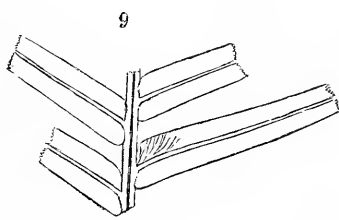
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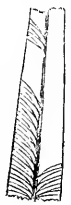
5^a



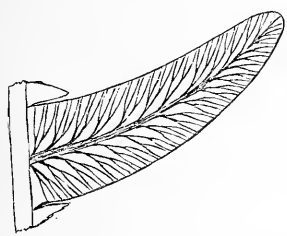
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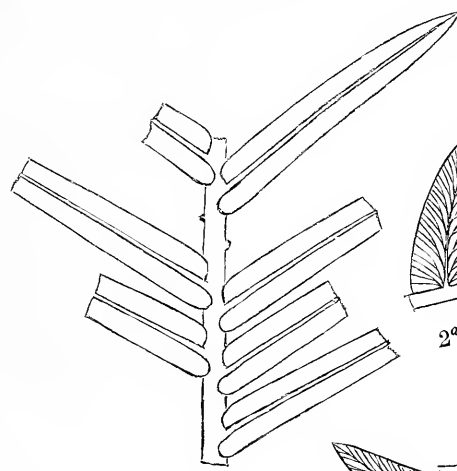
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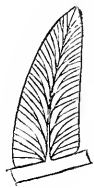
1^a



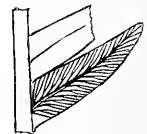
10^b



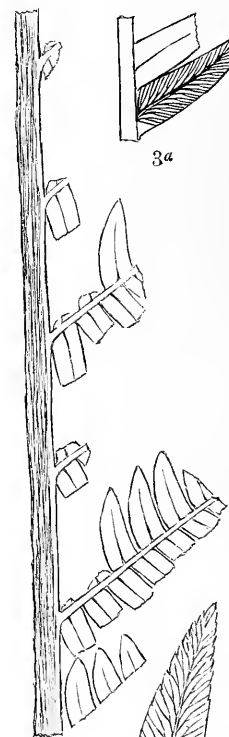
8



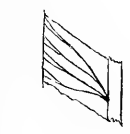
2^a



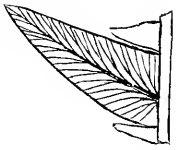
3^a



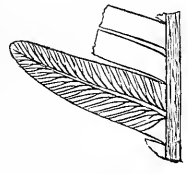
2



10^a



6^a



4



6



7



7^a



10

PLATE VIII.

PLATE VIII.

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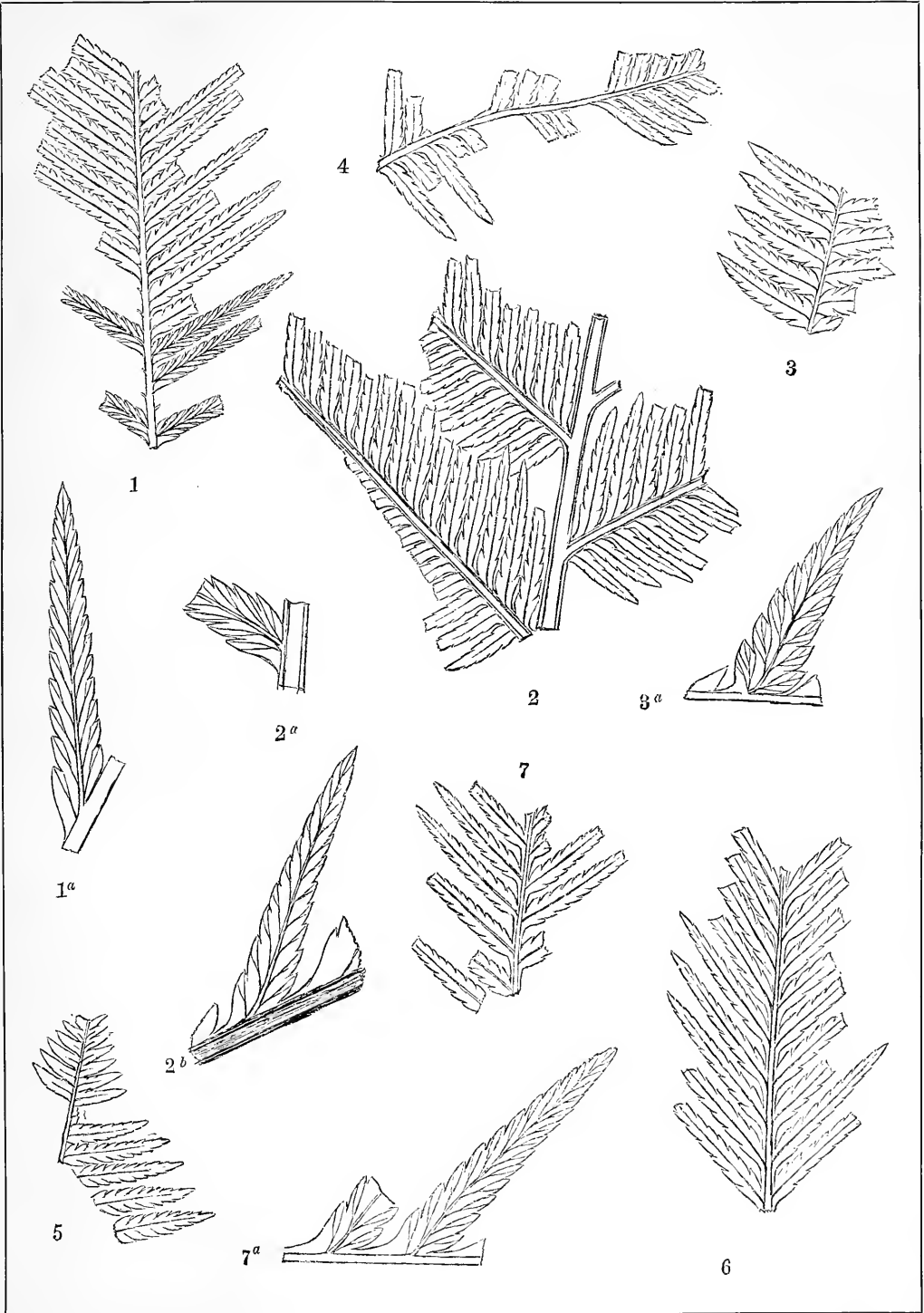


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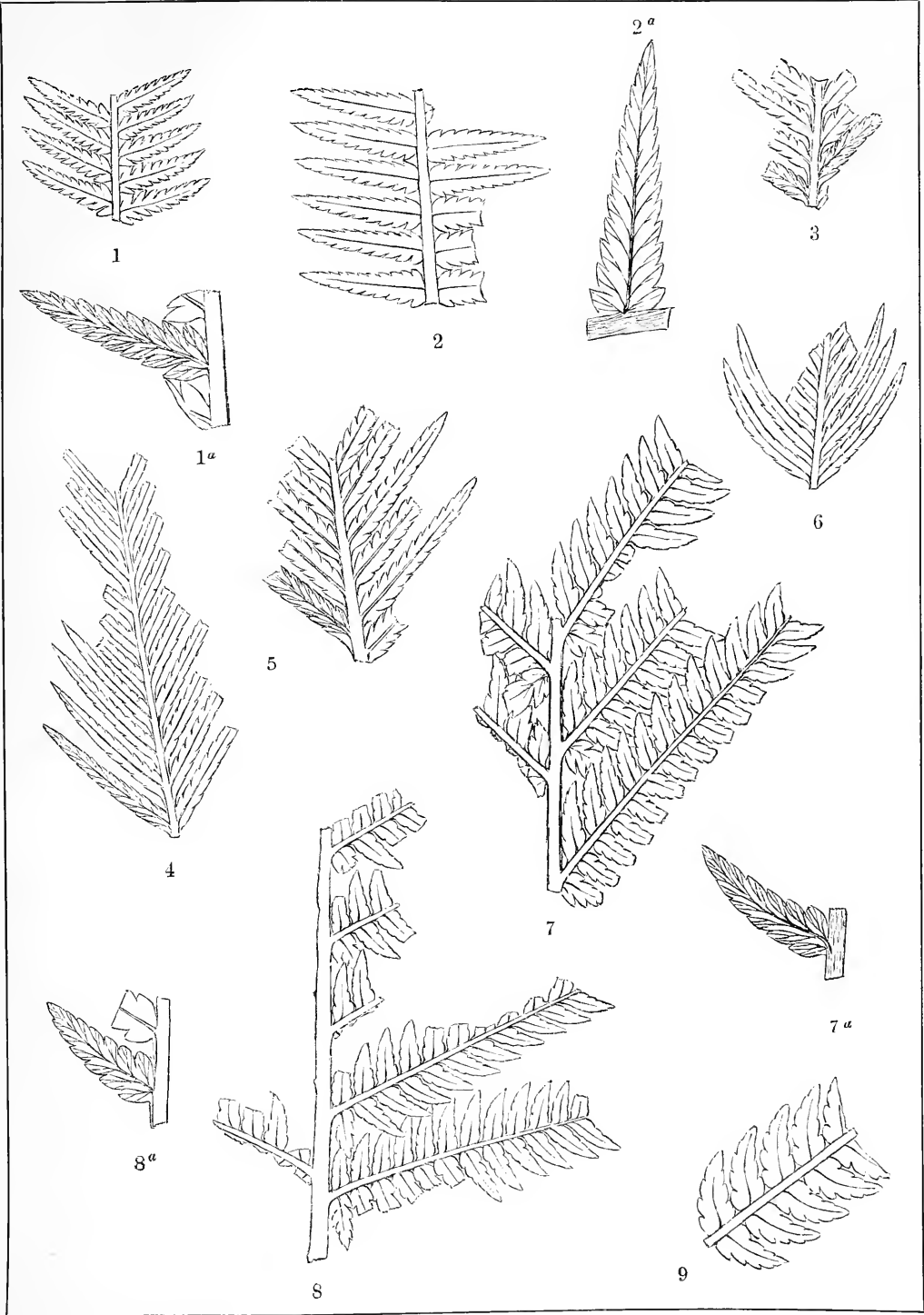


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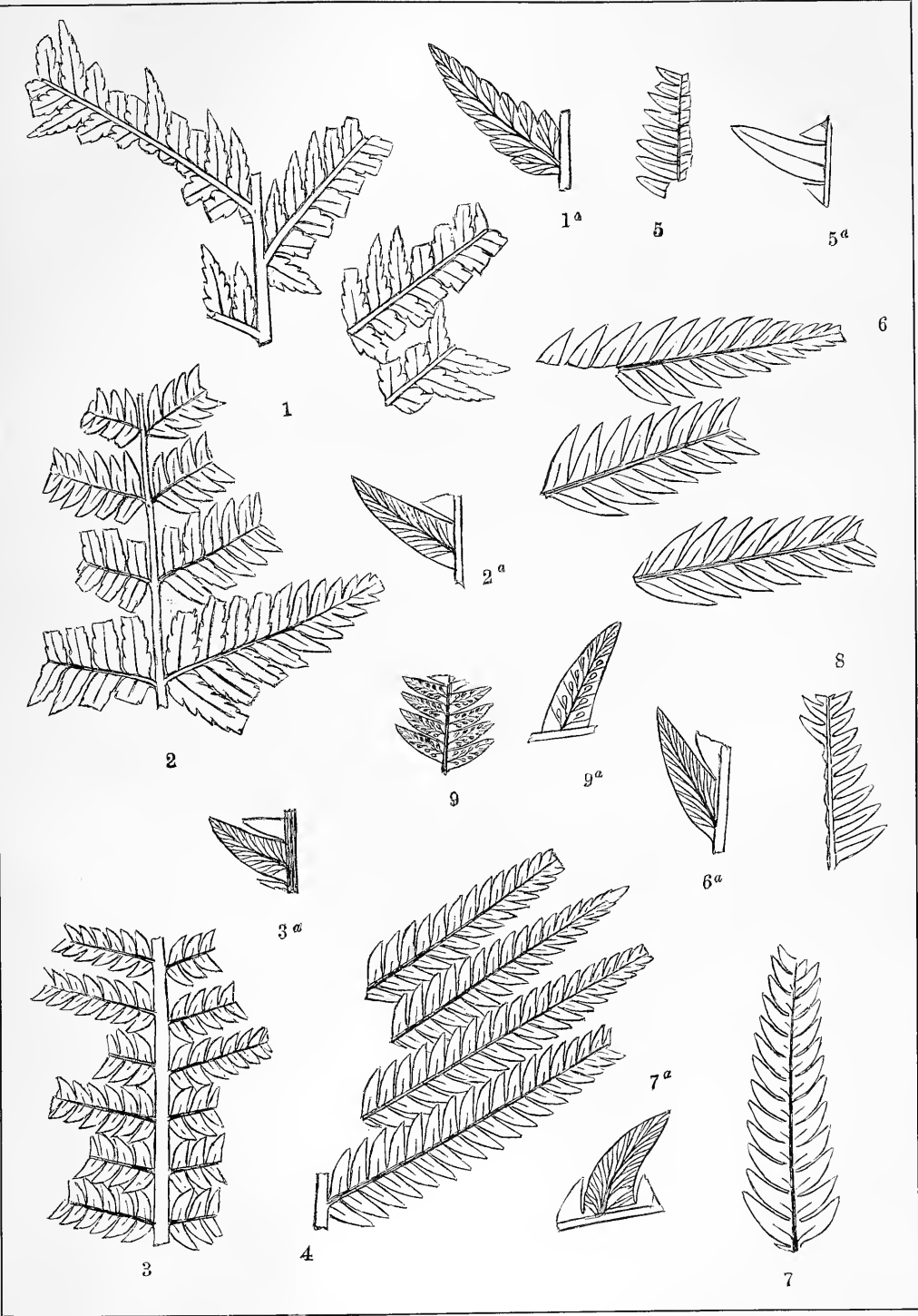


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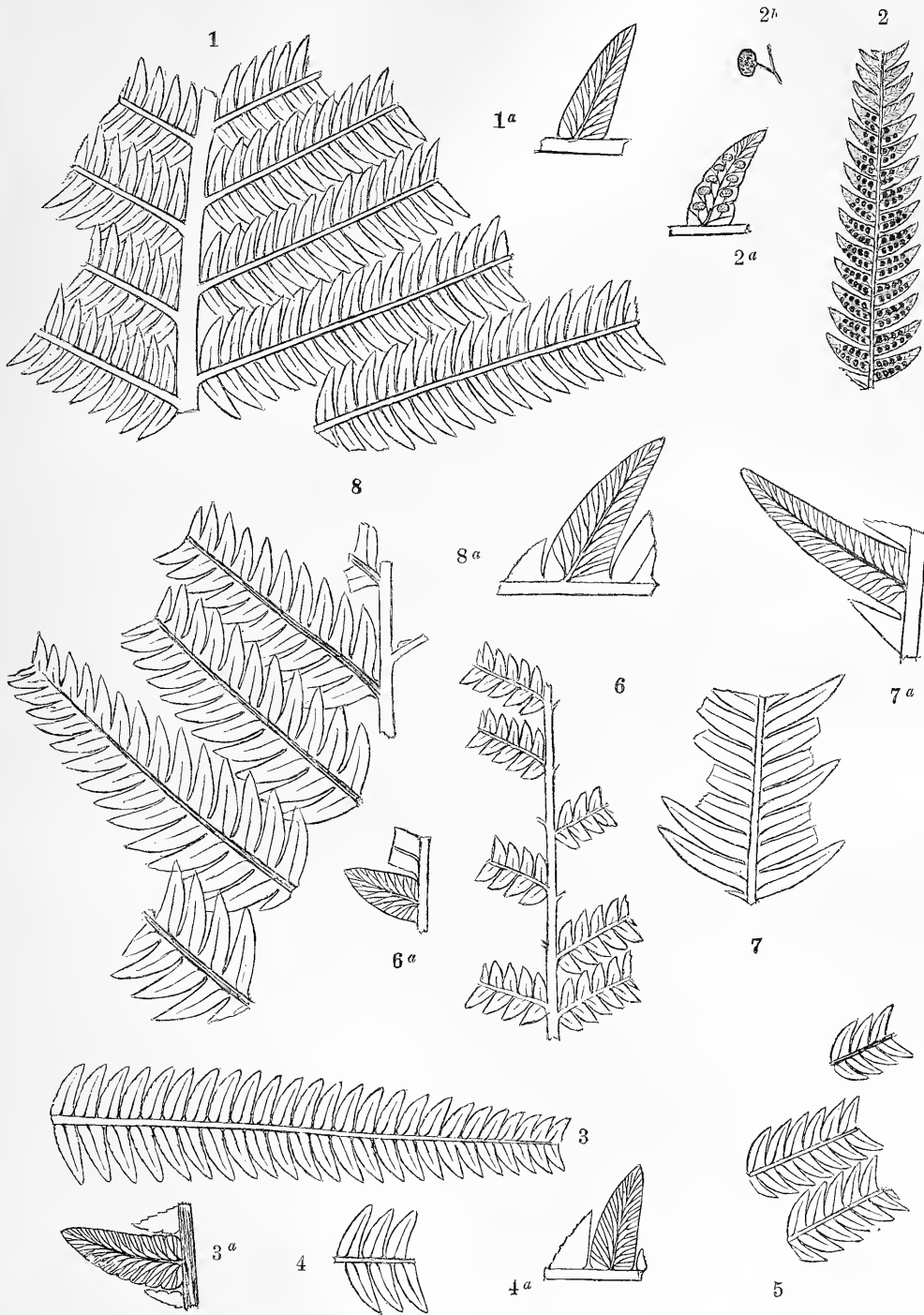


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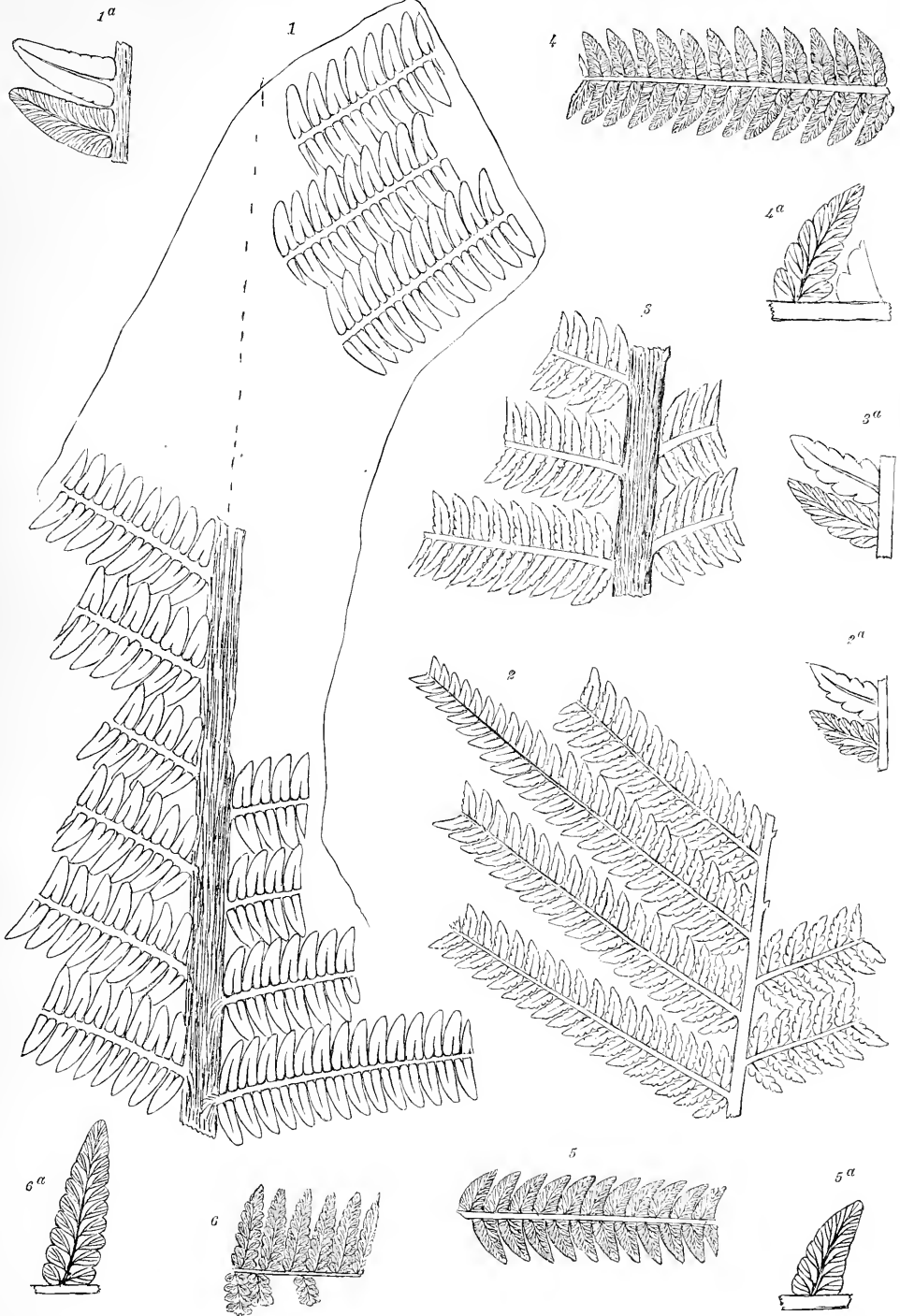


PLATE XIII.

PLATE XIII.

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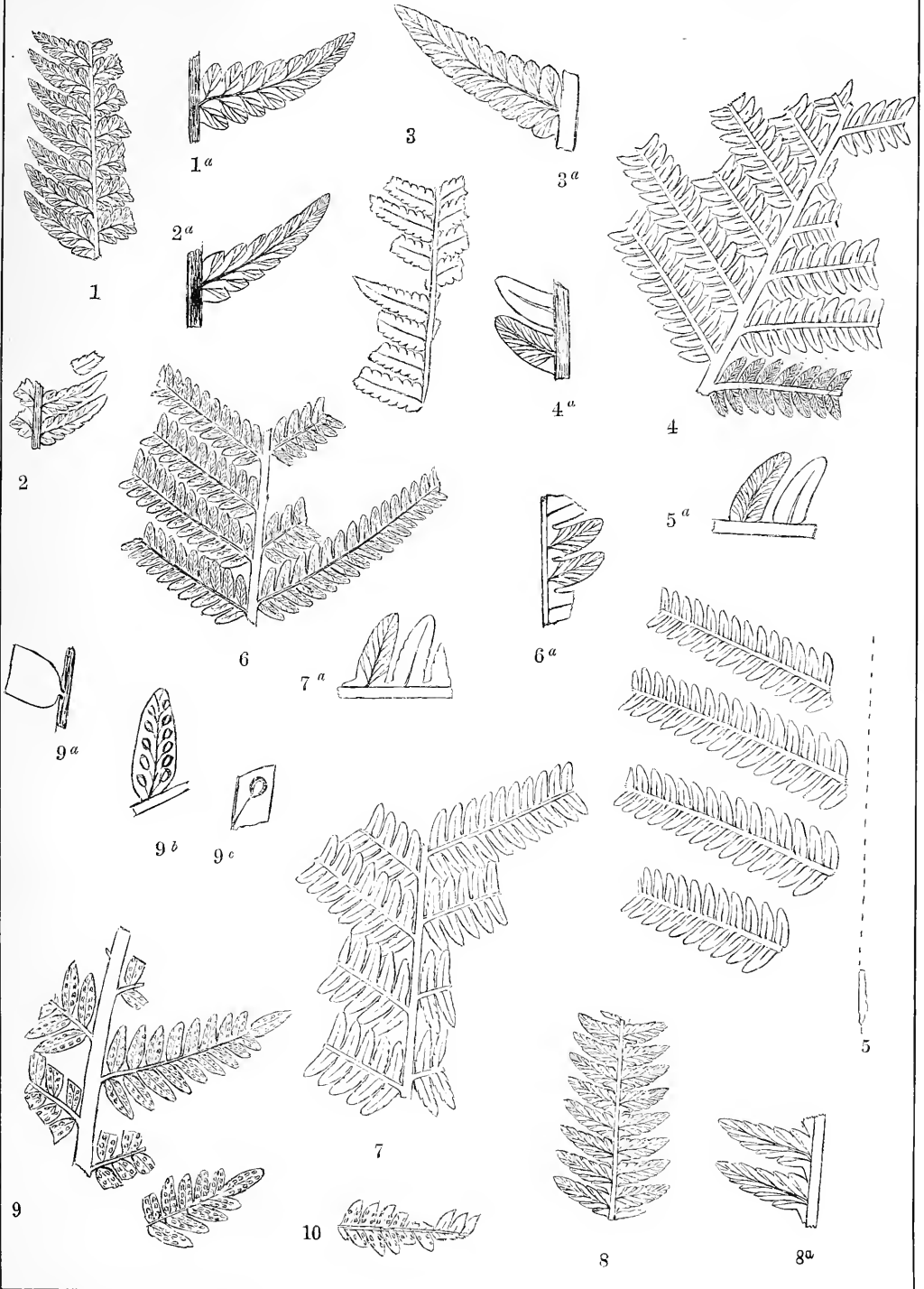


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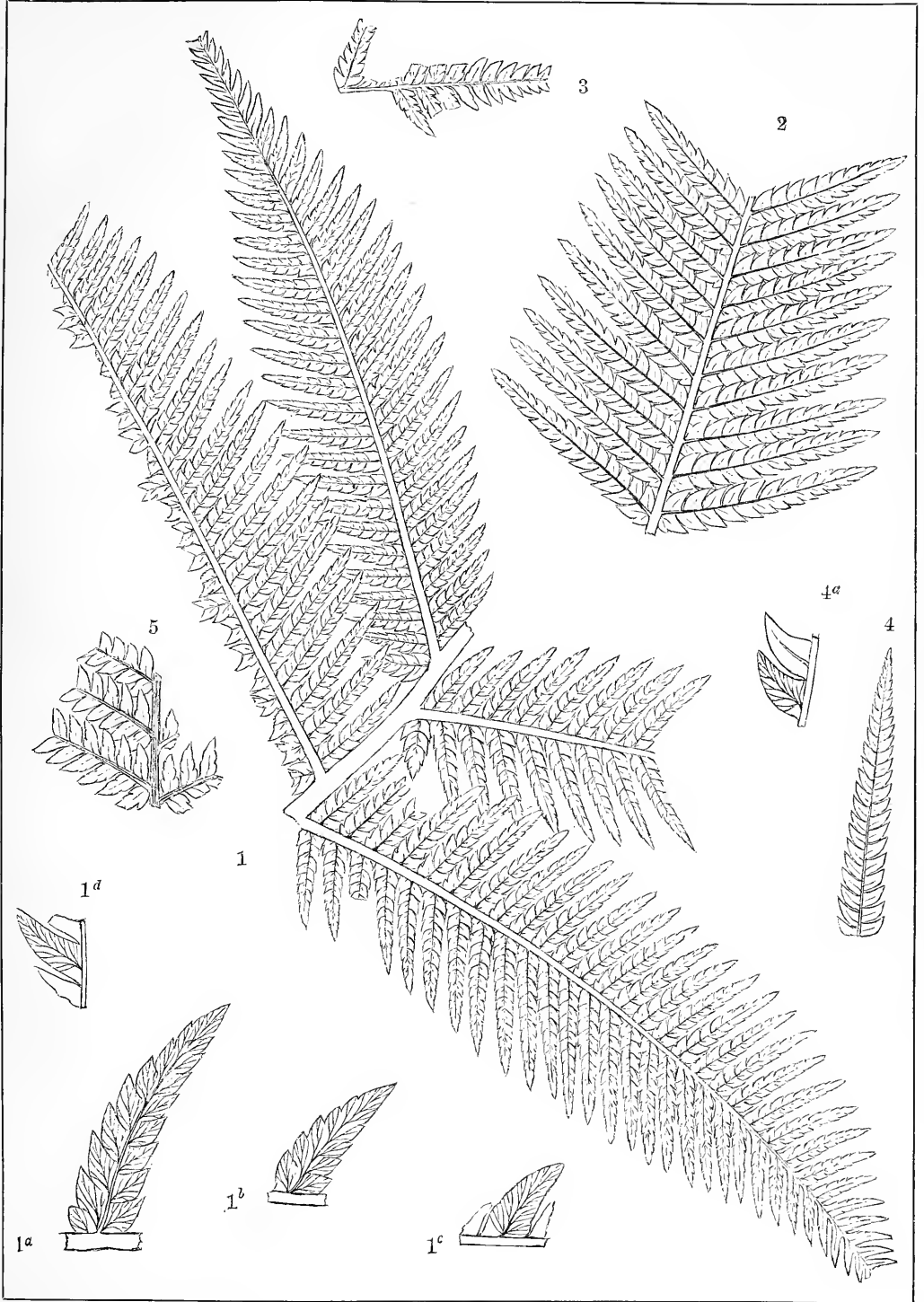




PLATE XV.

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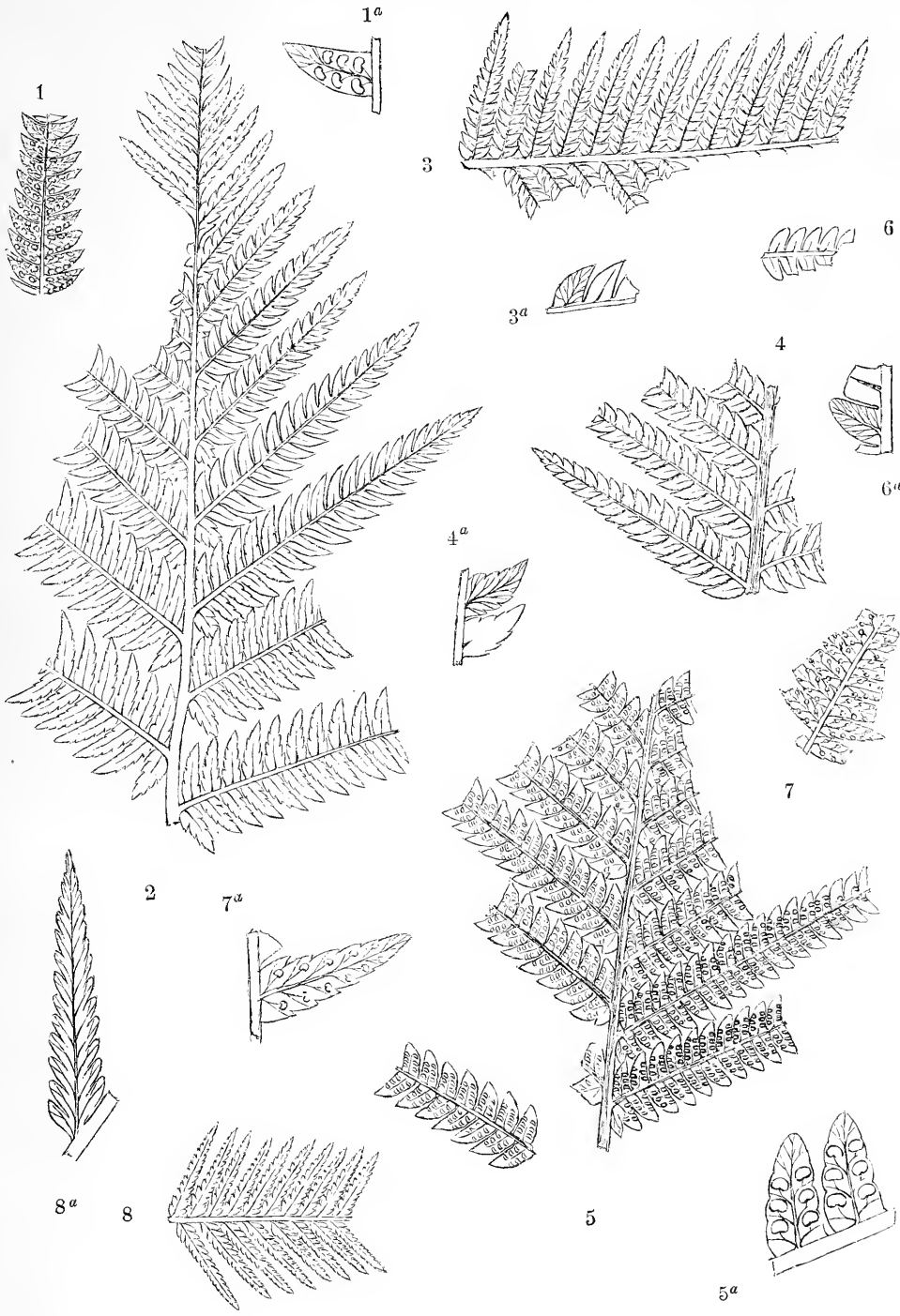


PLATE XVI.

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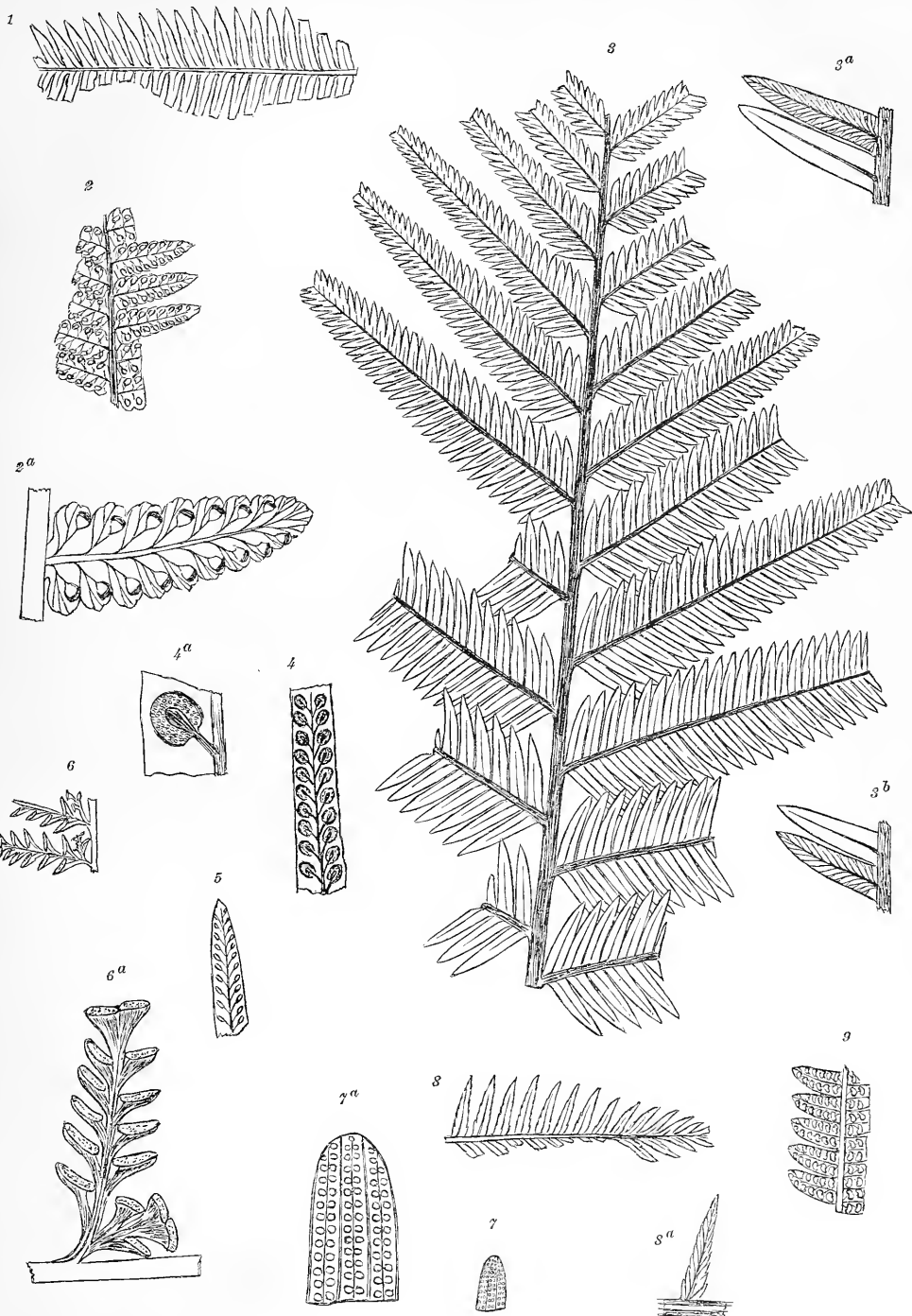
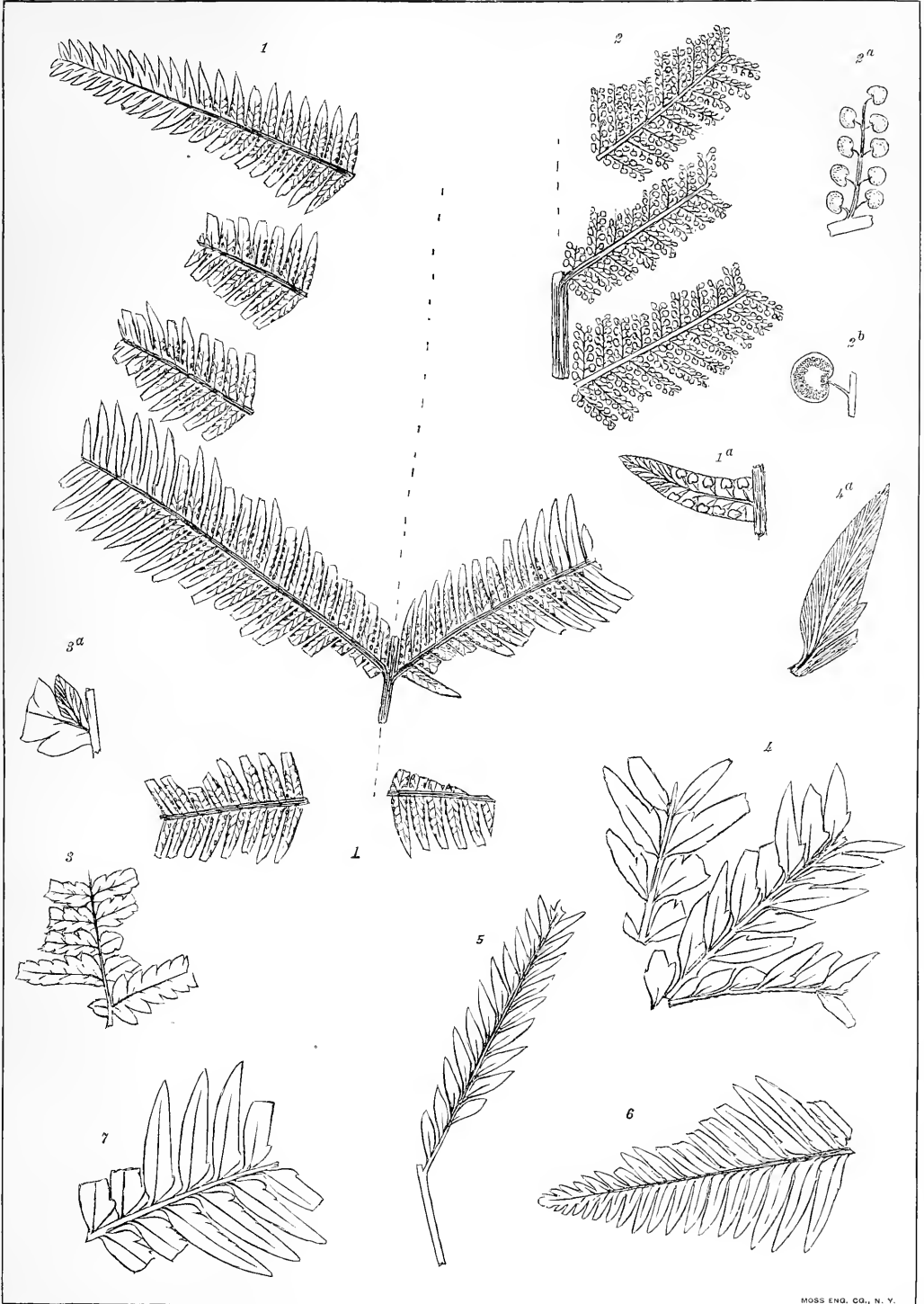


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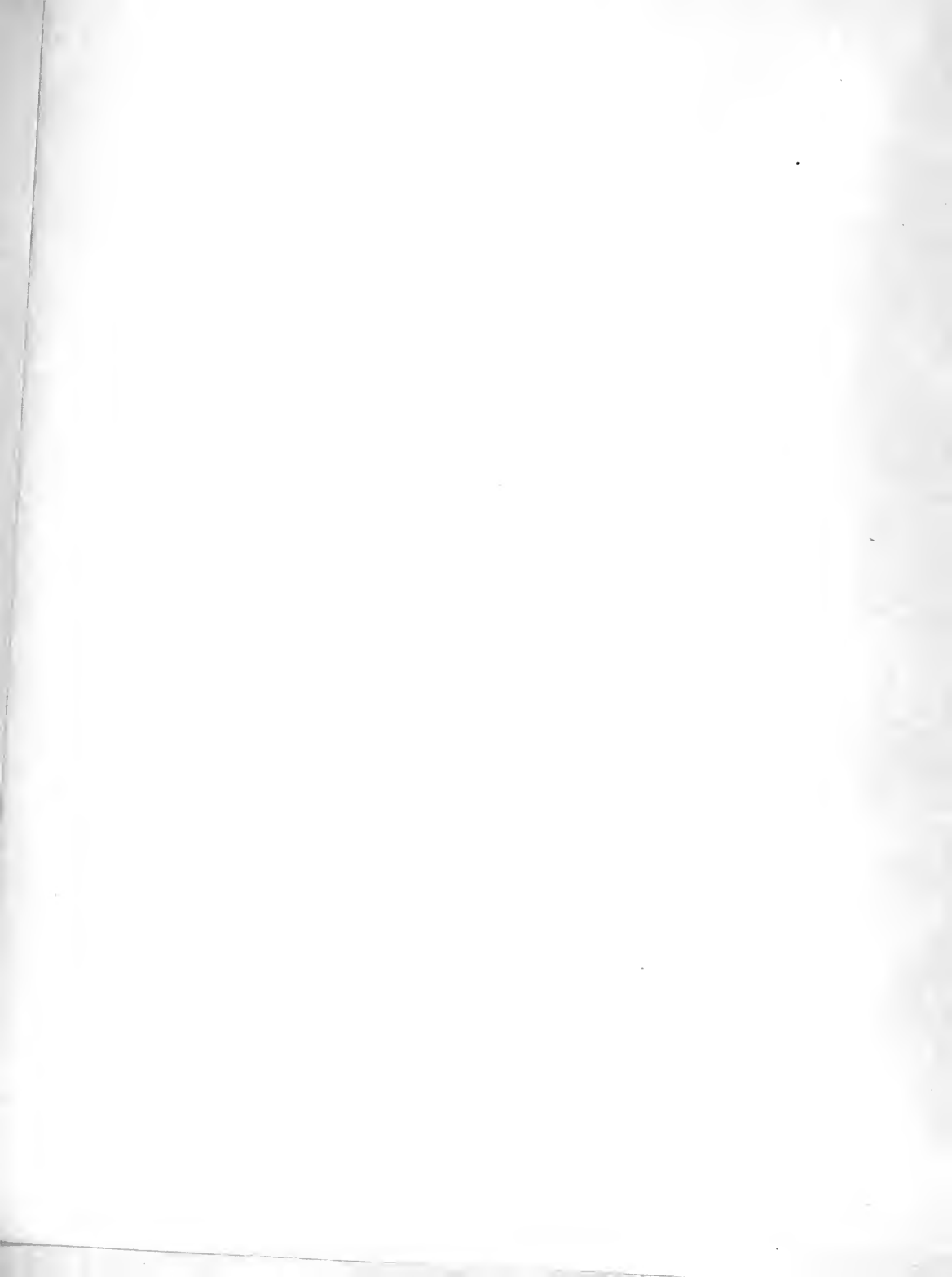


PLATE XVIII.

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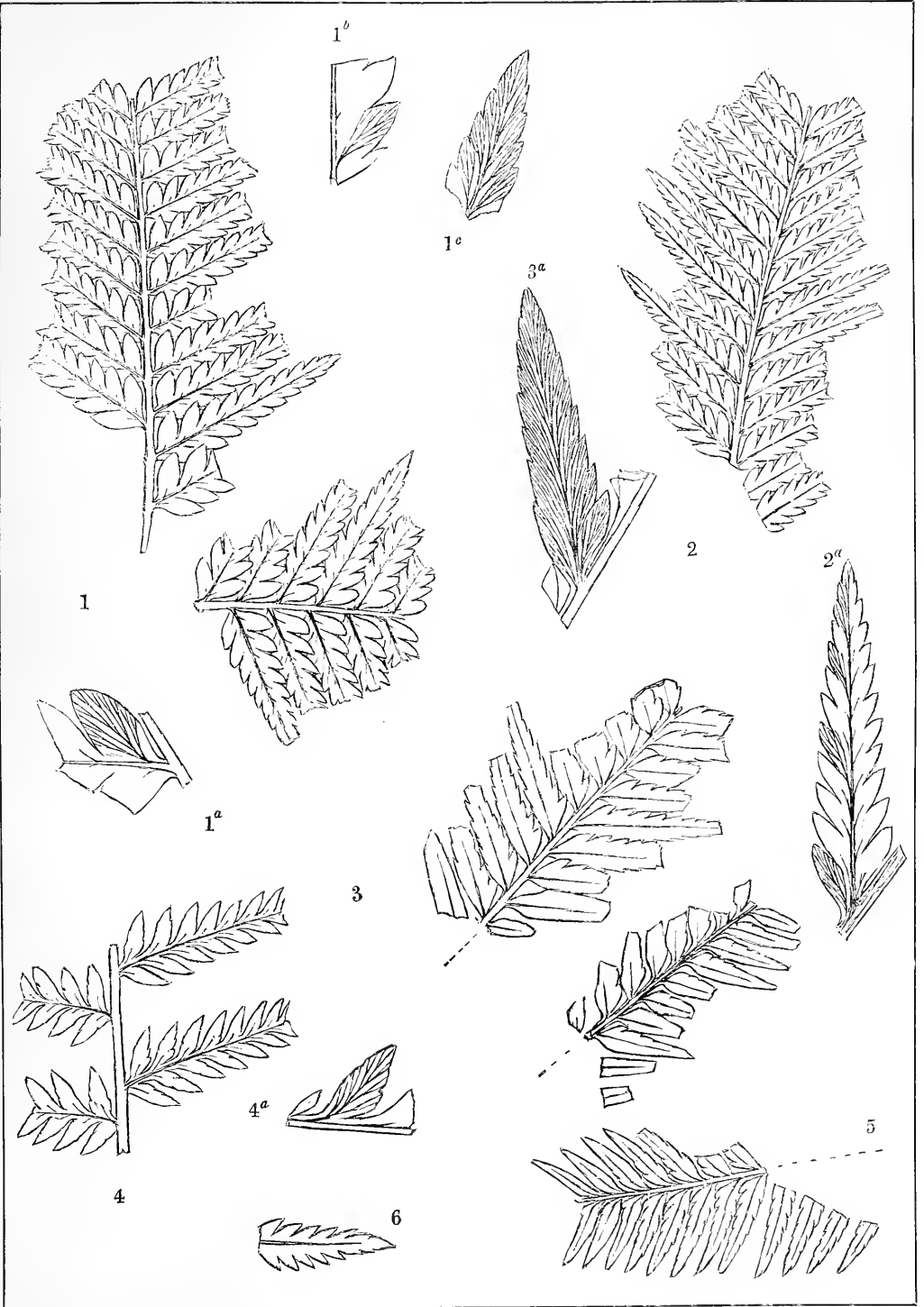


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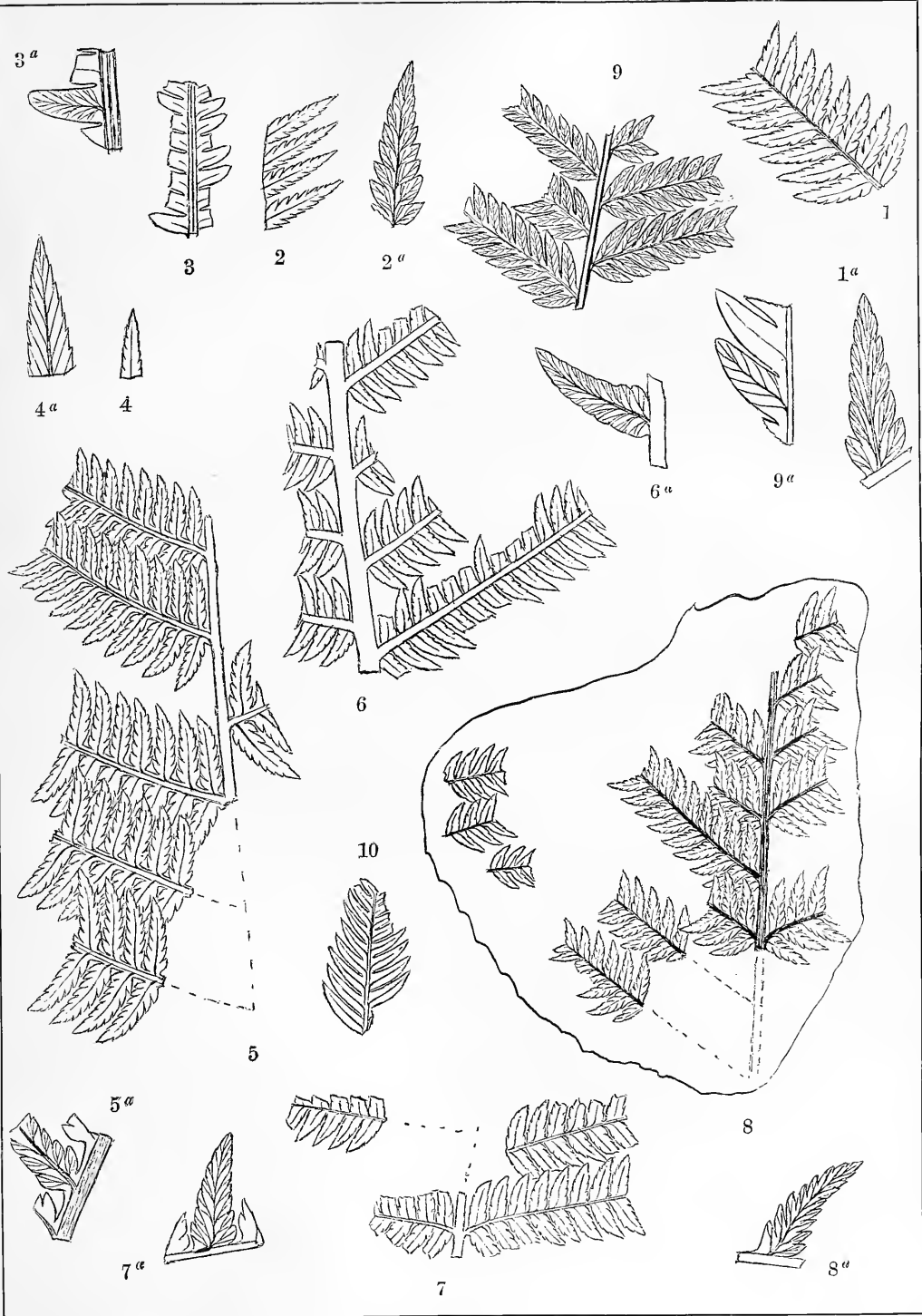


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11 ^a . Pinnule of 11 magnified.....	85
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10 ^a . Pinnule of 10 magnified.....	78

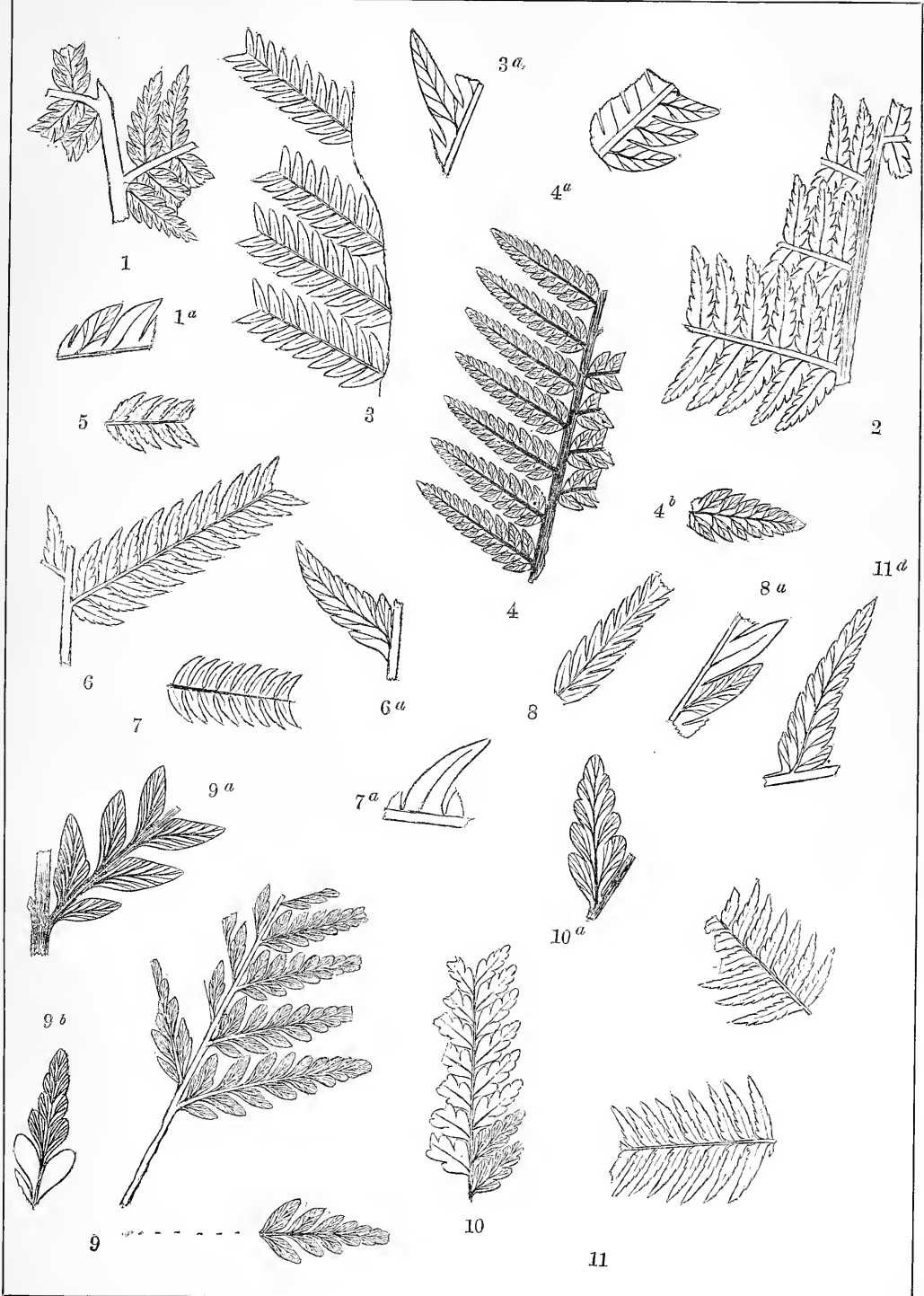




PLATE XXI.

PLATE XXI.

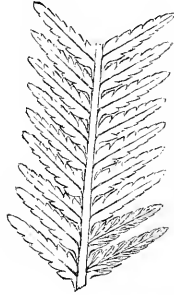
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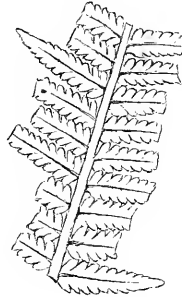
4



4^a



2



1



6^a



3



3



2^a



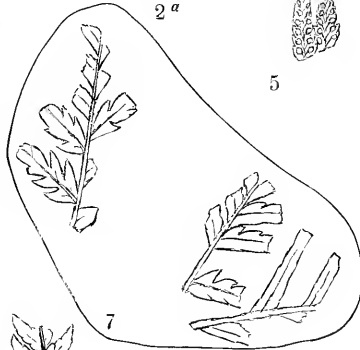
1^a



15



6



7

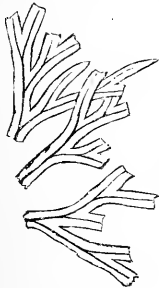
5



14^b



6^b



8



9



10^a



10



14



15^a



12



11



11^a



13

14^a



14^a

PLATE XXII.

PLATE XXII.

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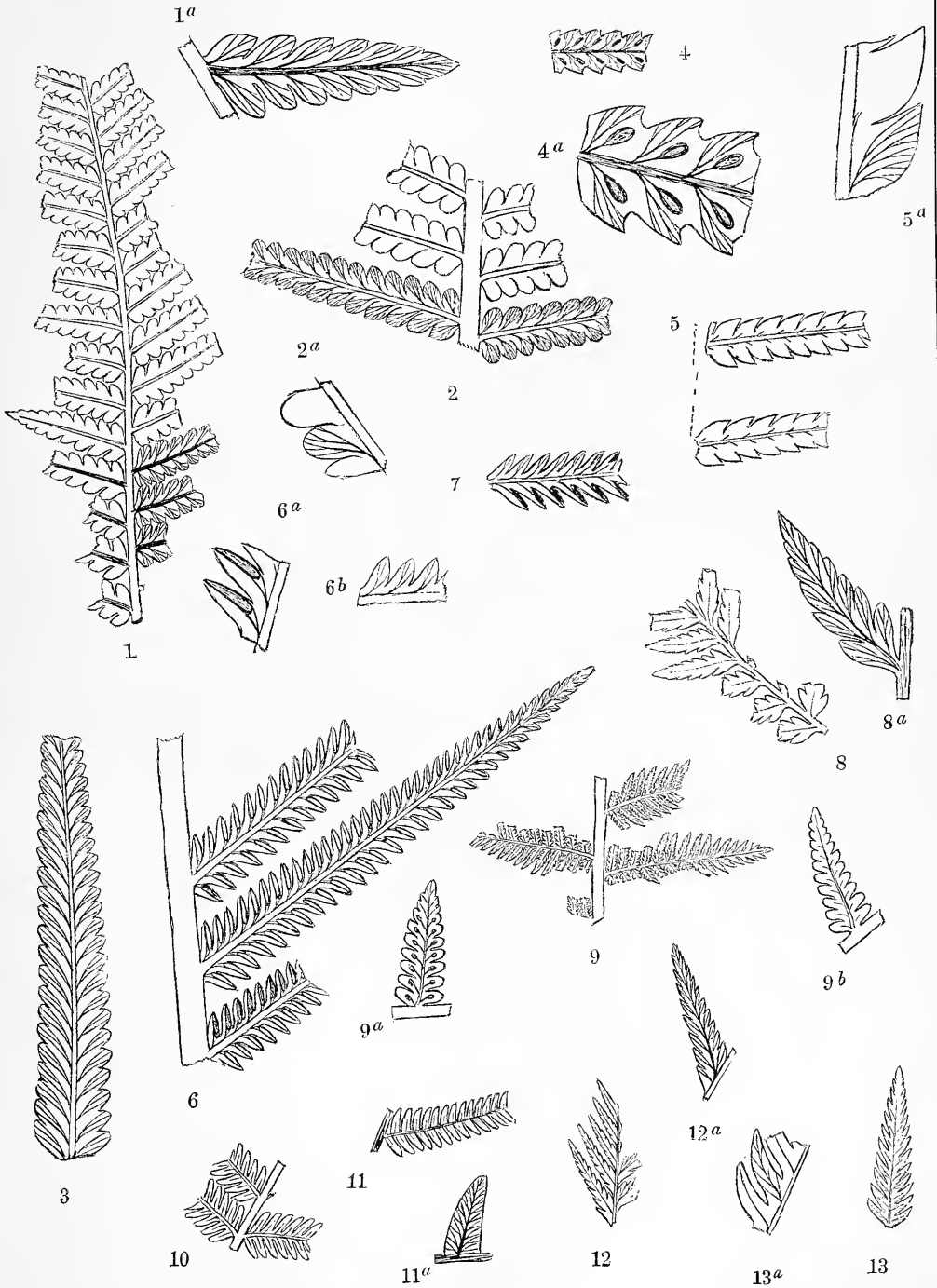




PLATE XXIII.

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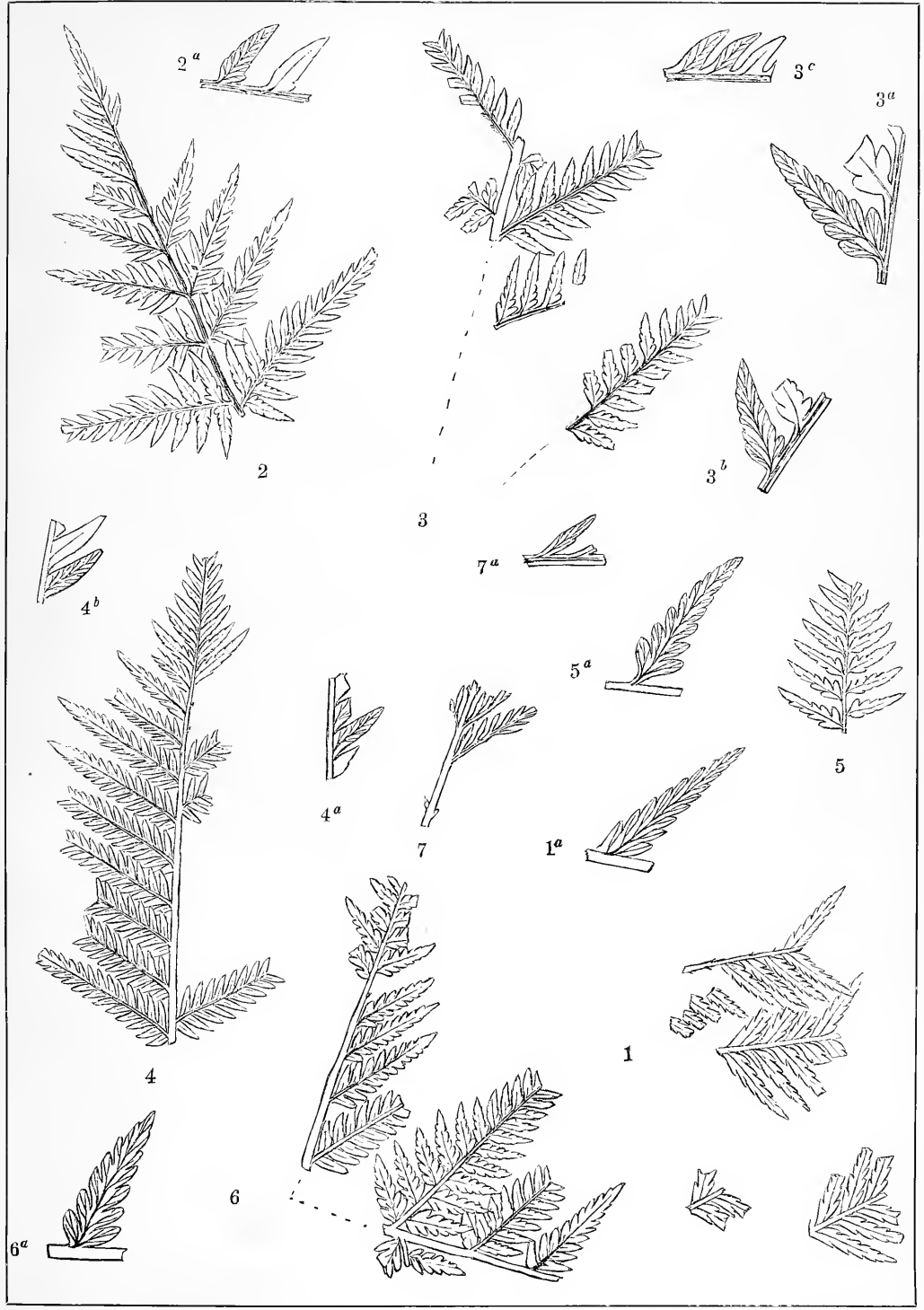
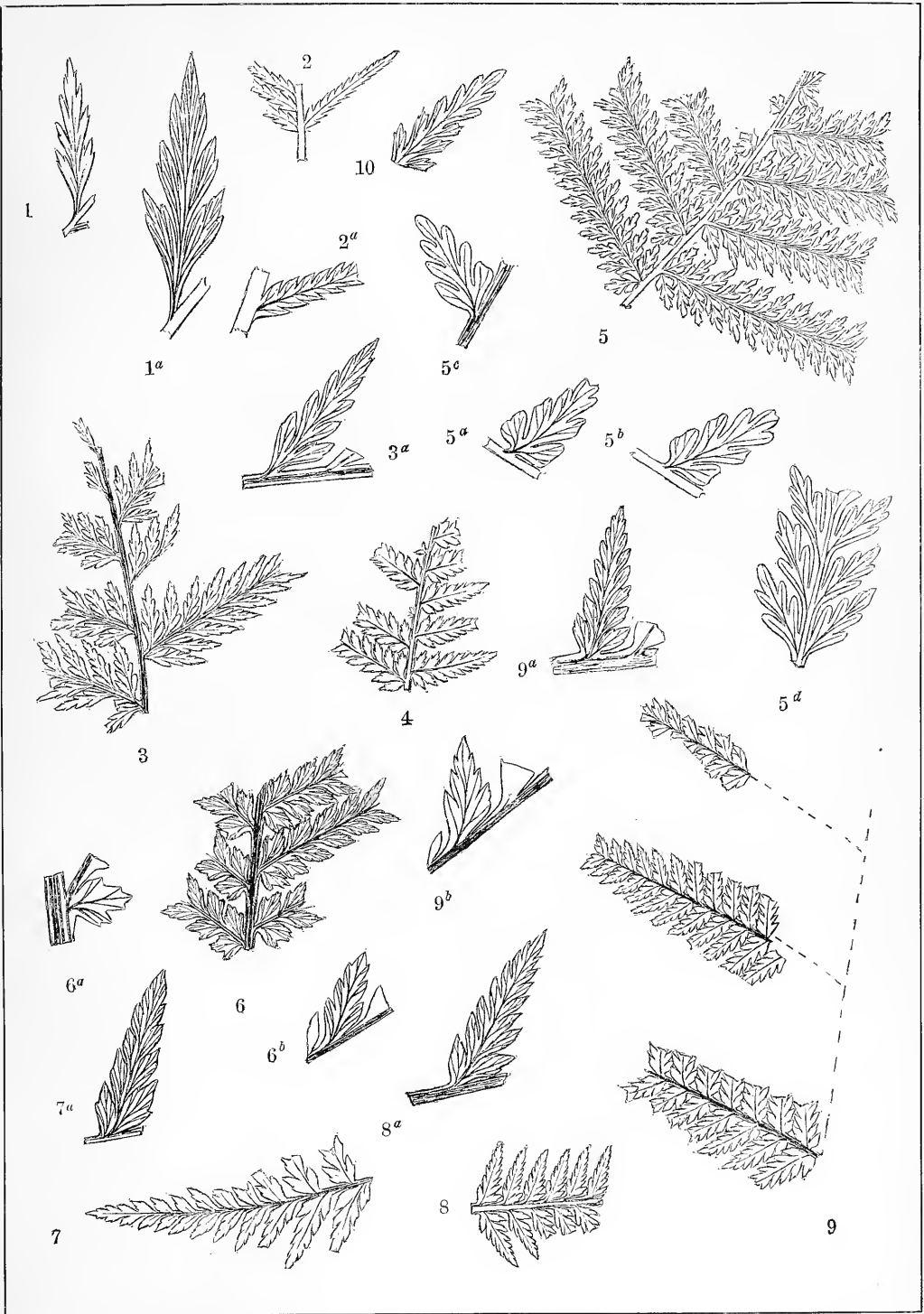




PLATE XXIV.

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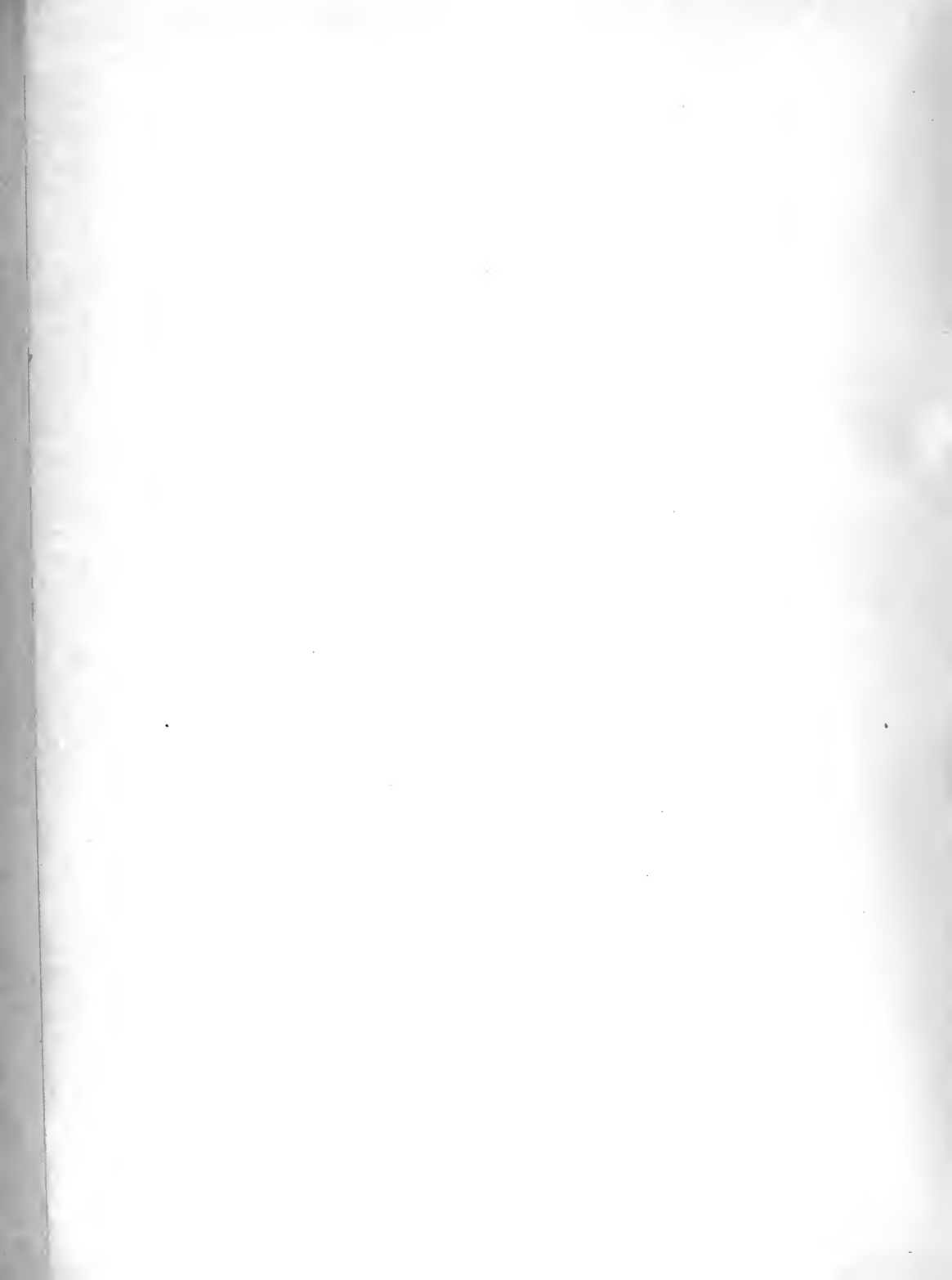


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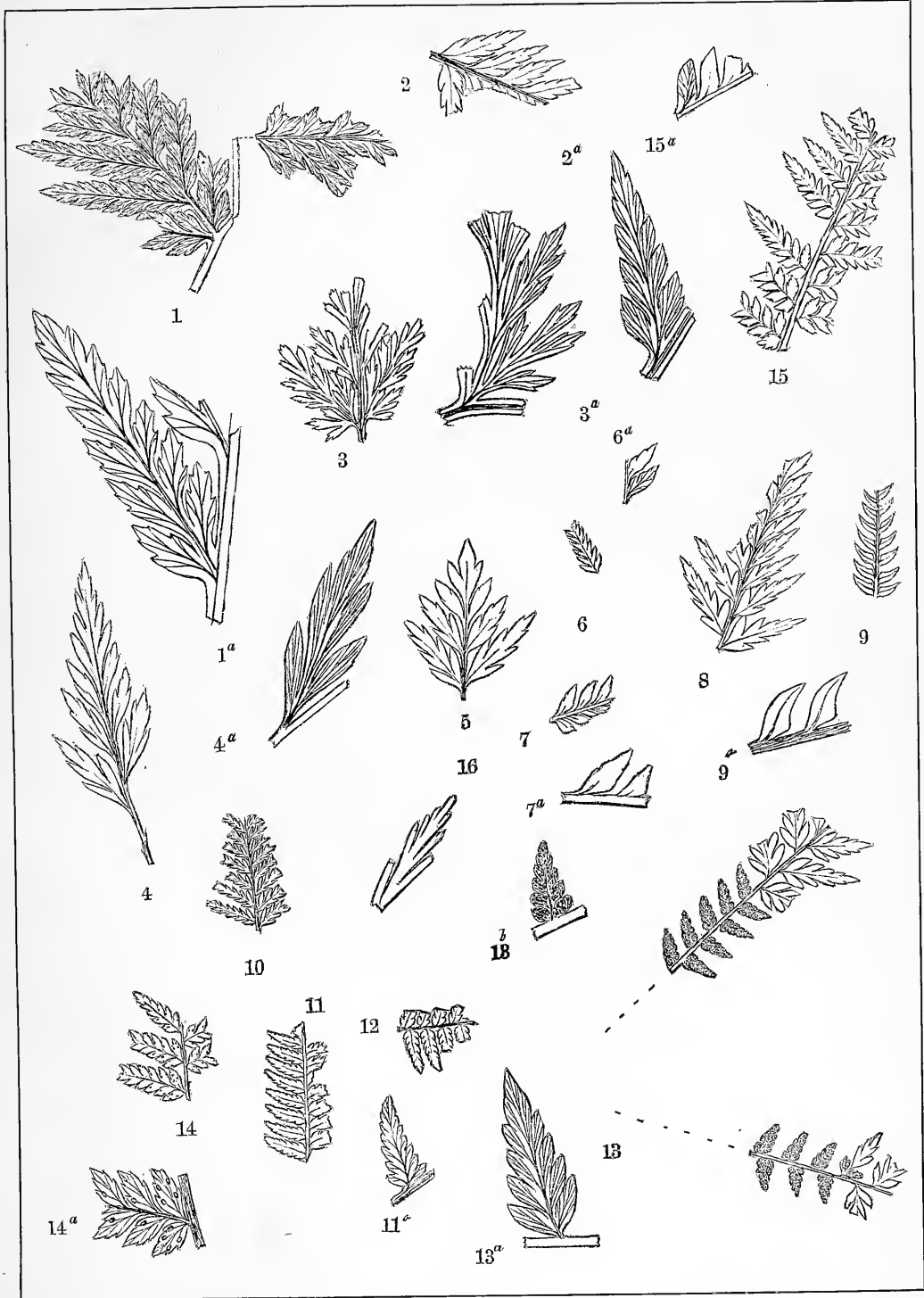


PLATE XXVI.

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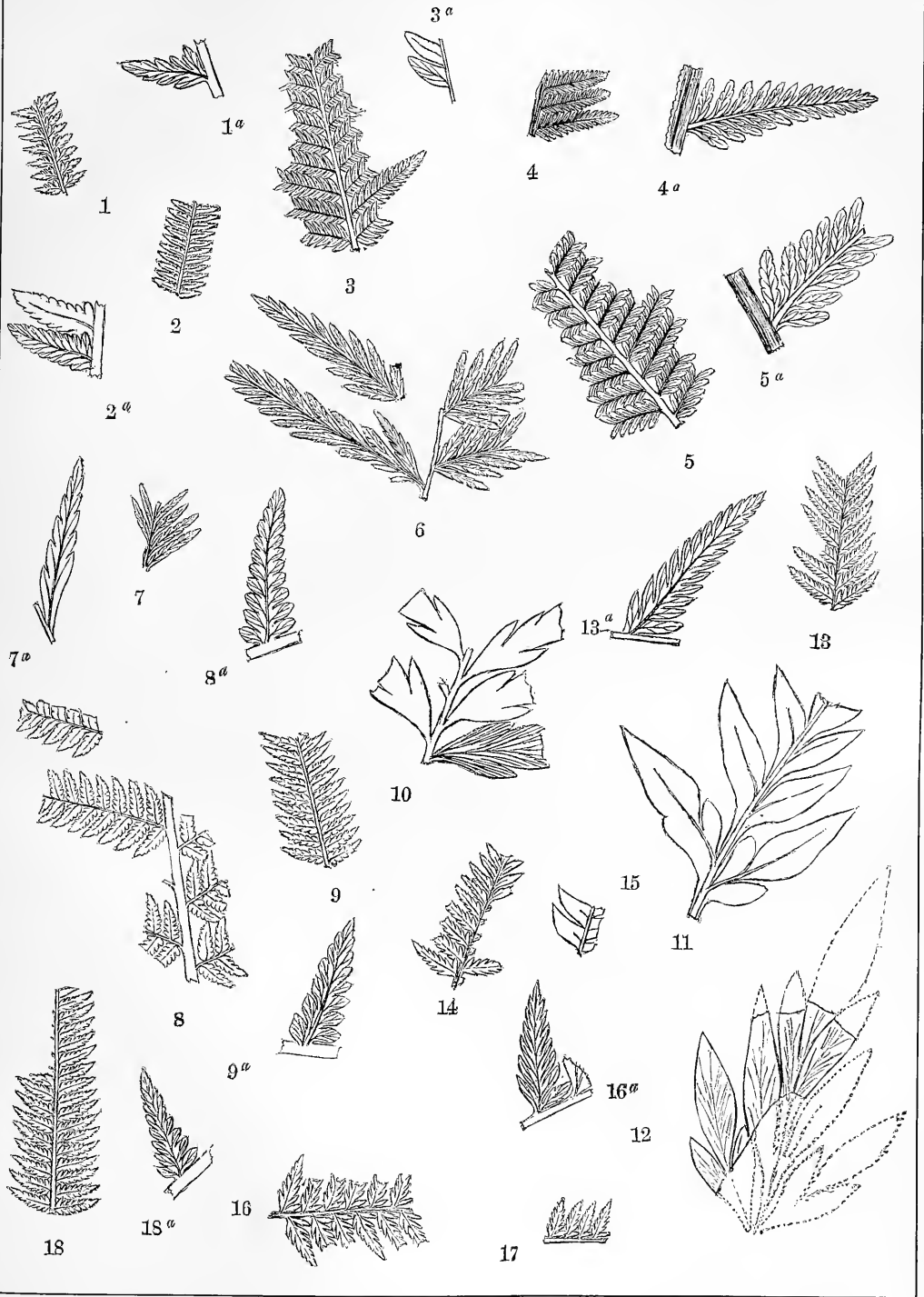


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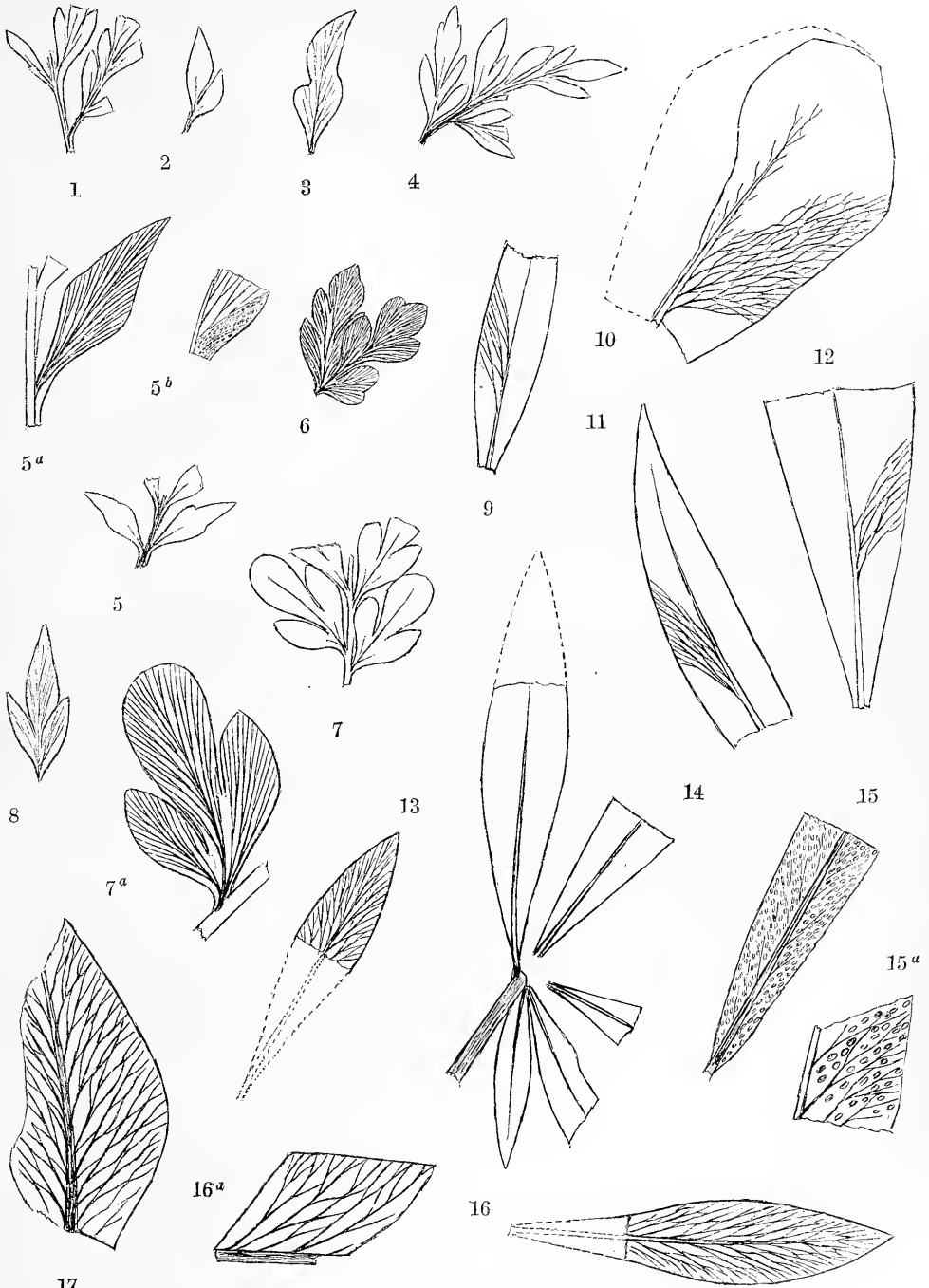


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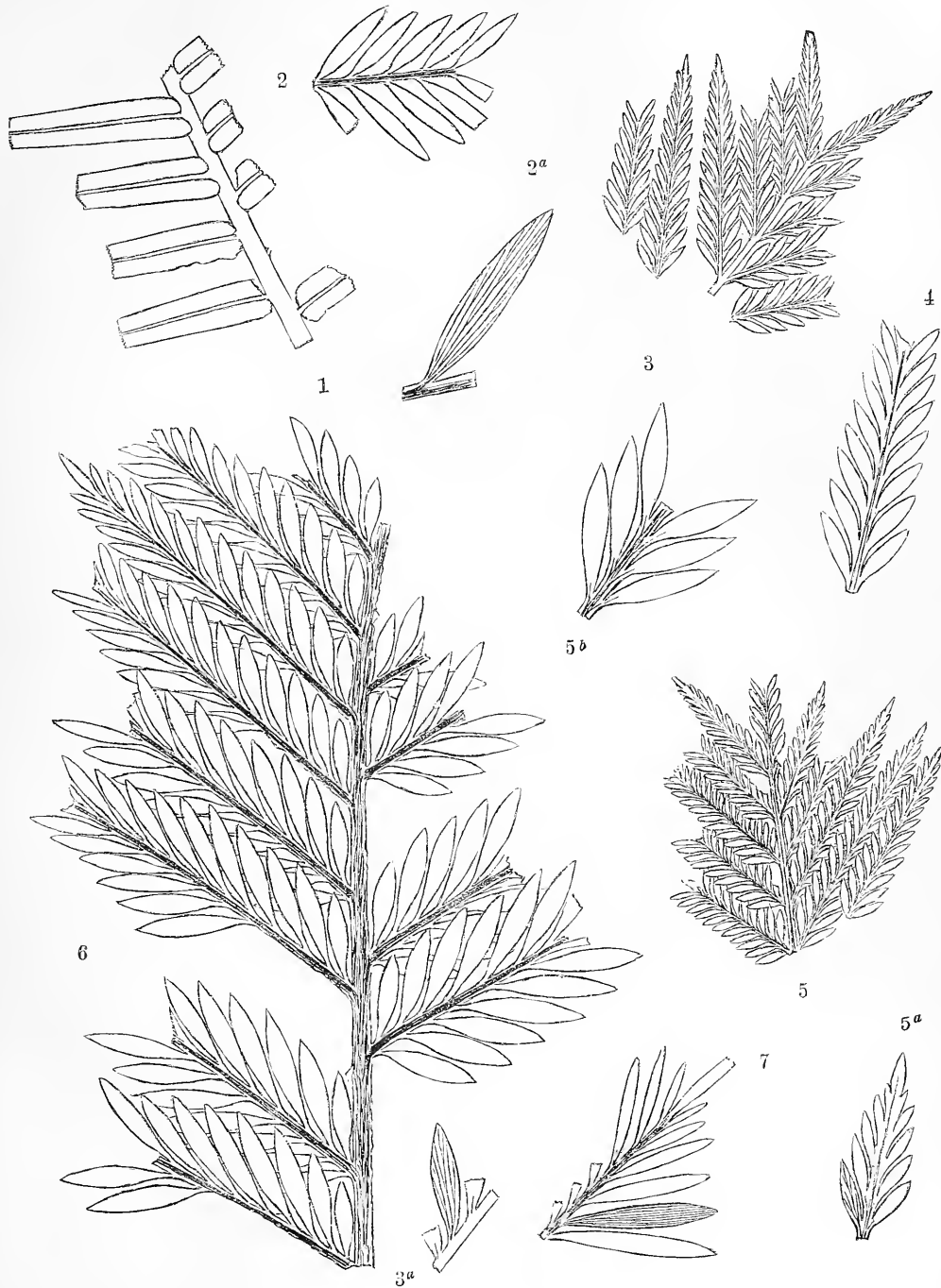


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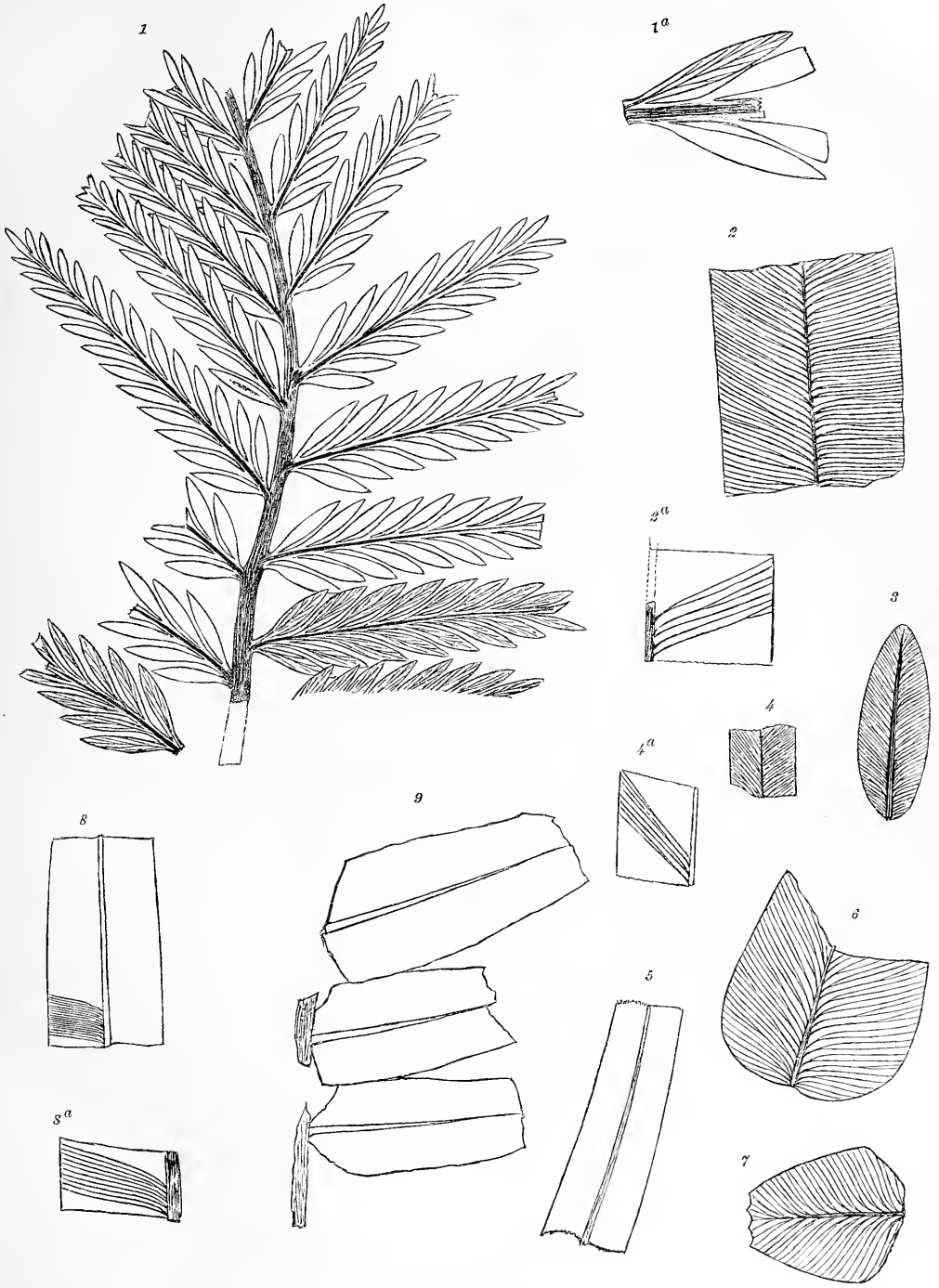
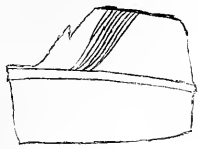




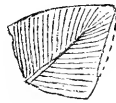
PLATE XXX.

P L A T E X X X .

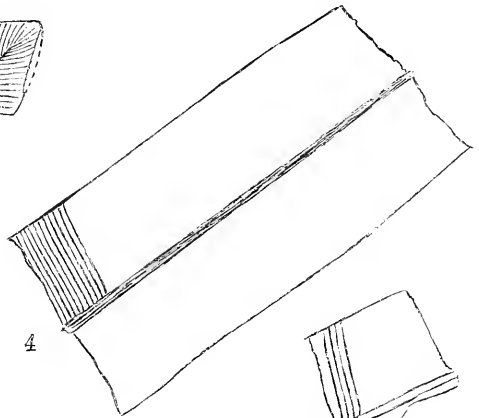
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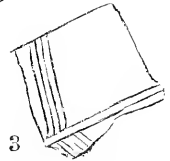
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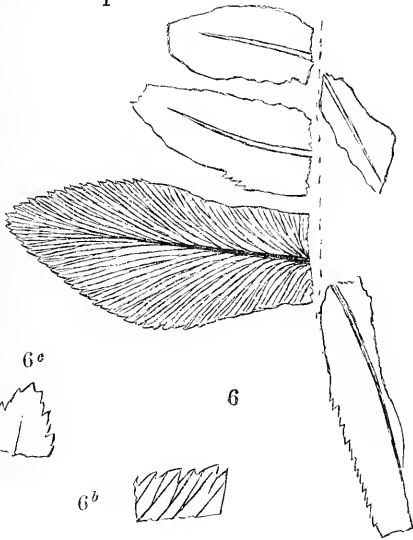
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6



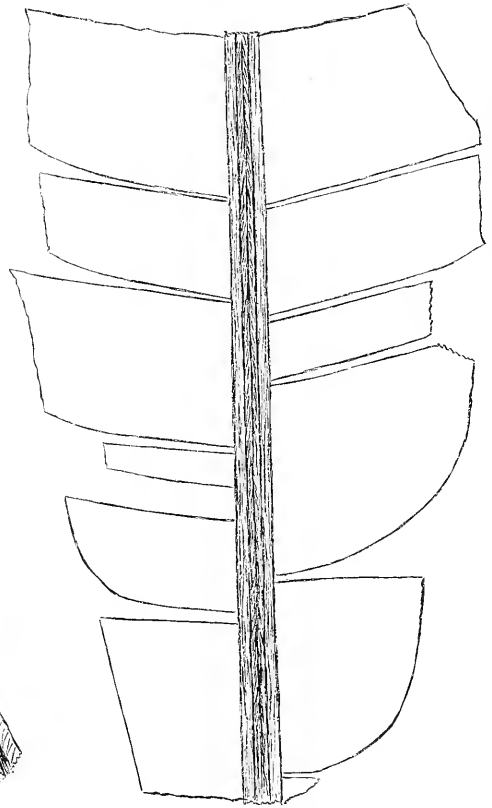
6^c



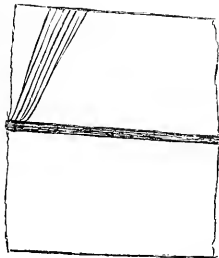
6^b



6^a



8



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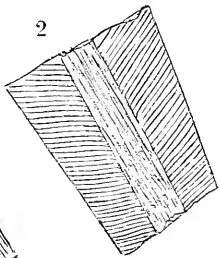
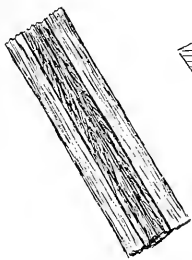
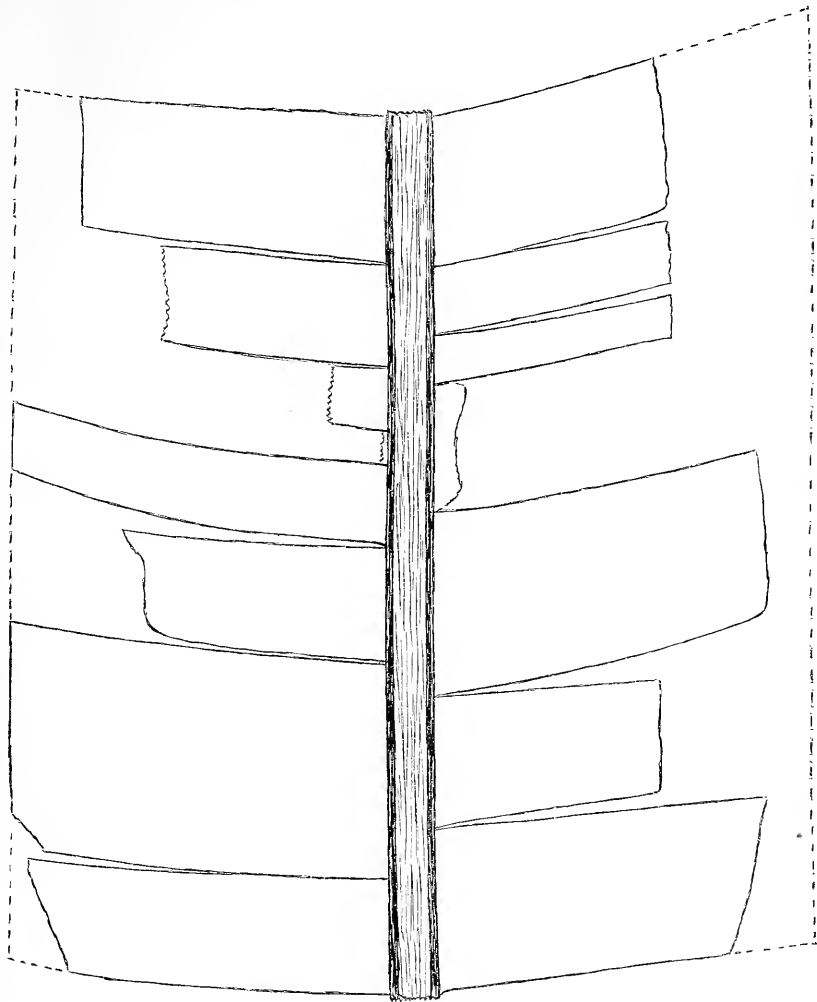


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PLATE XXXI.

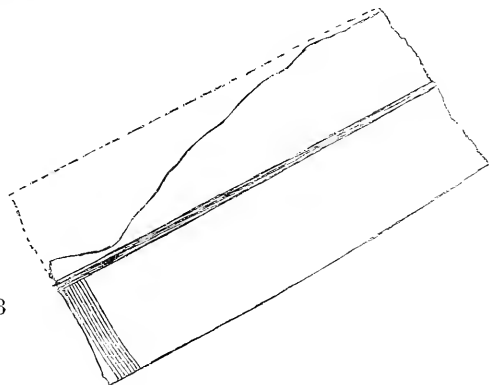
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1

3



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PLATE XXXII.

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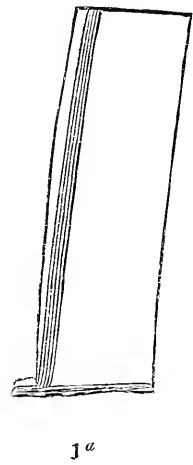
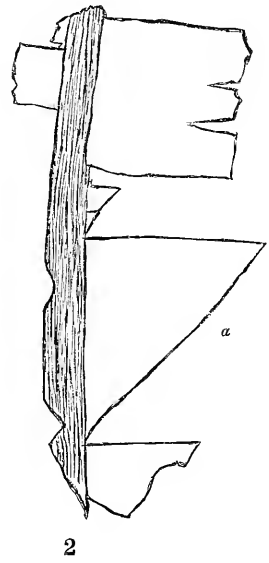
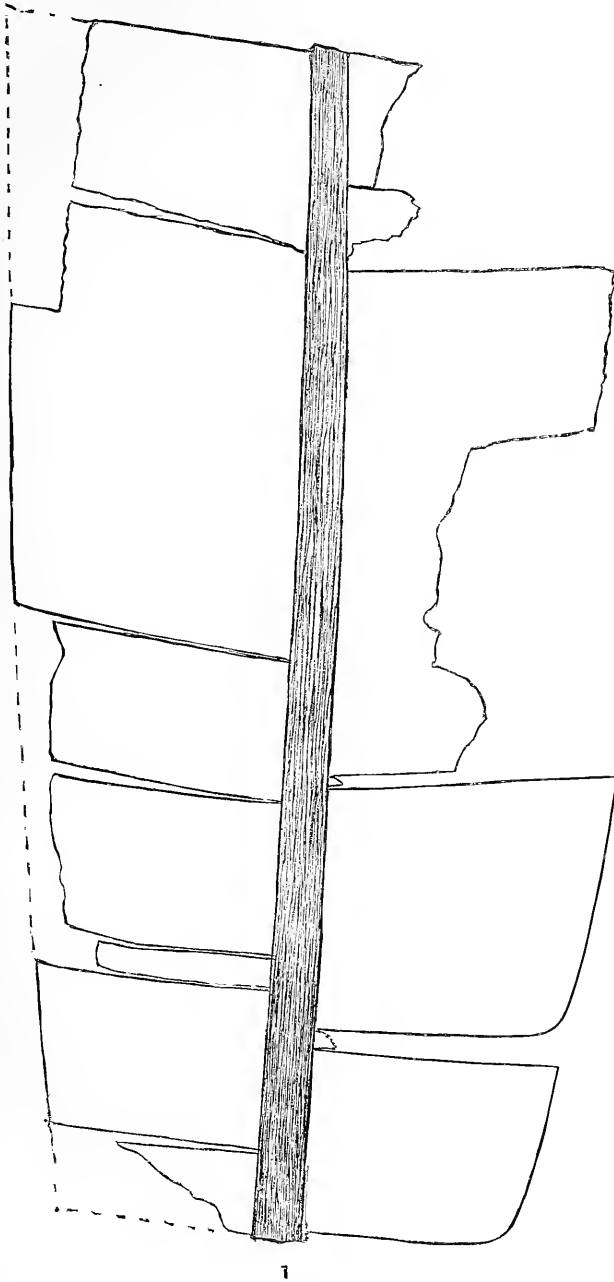


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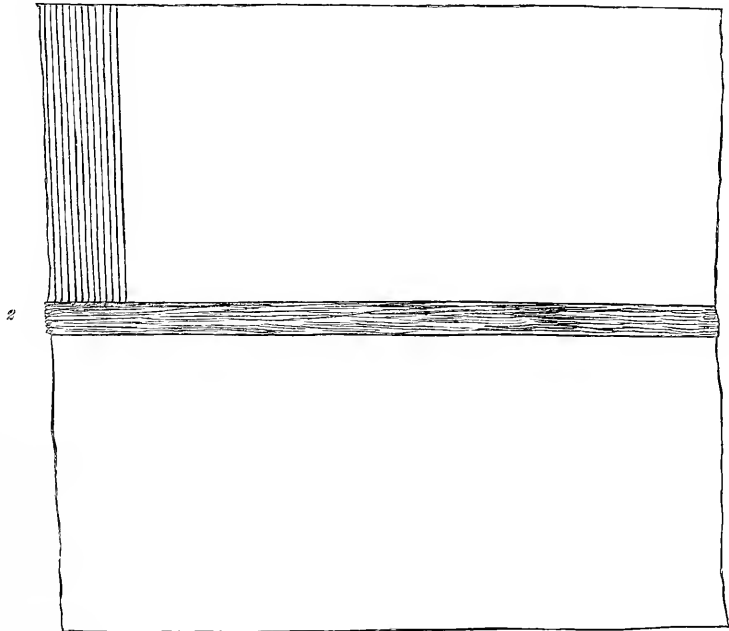
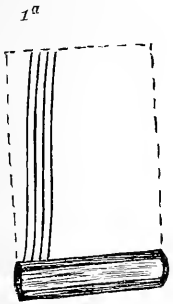
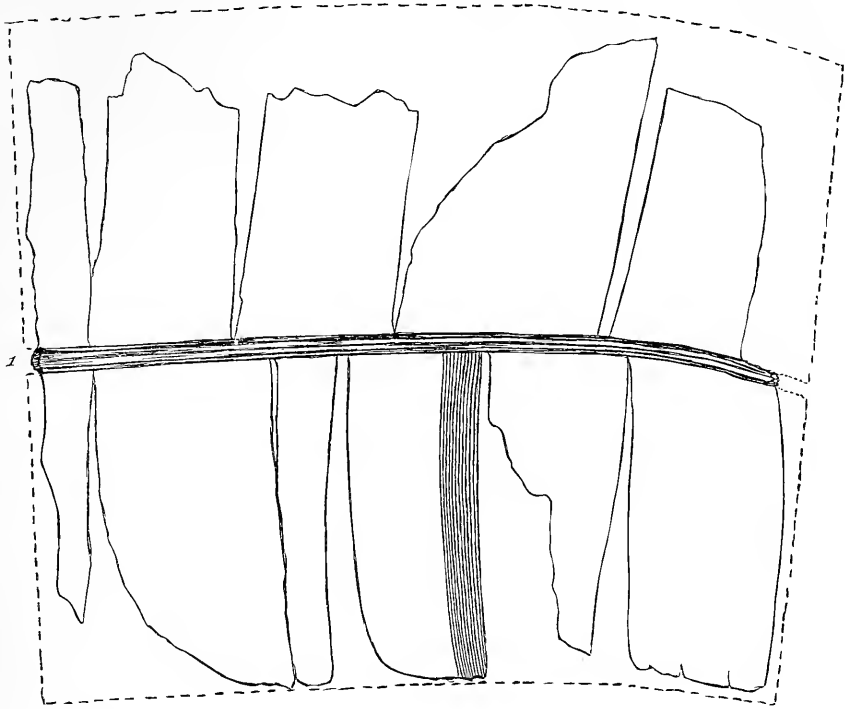
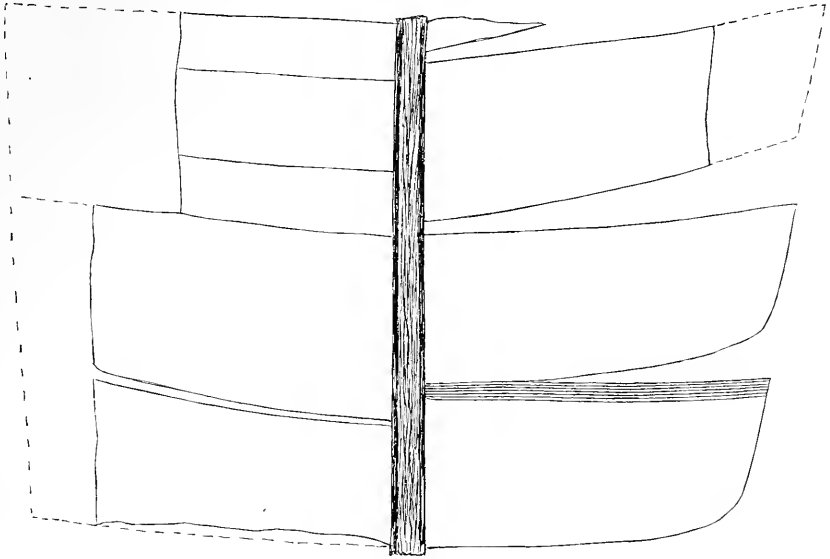


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1



2

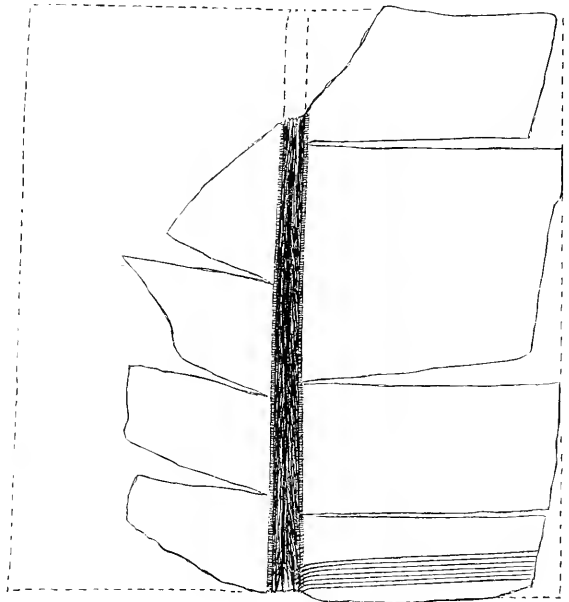




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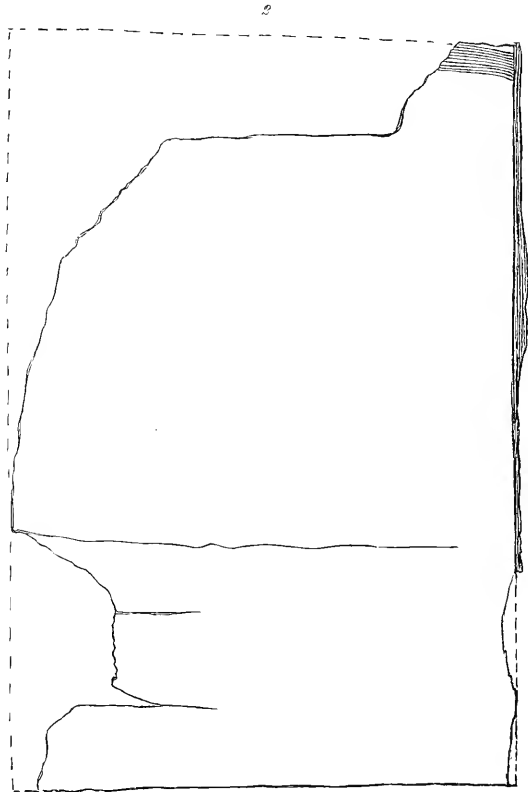
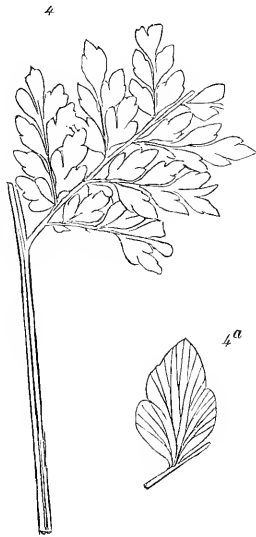
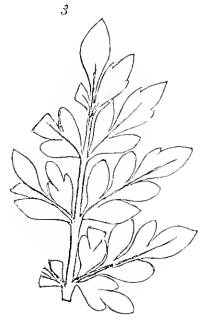
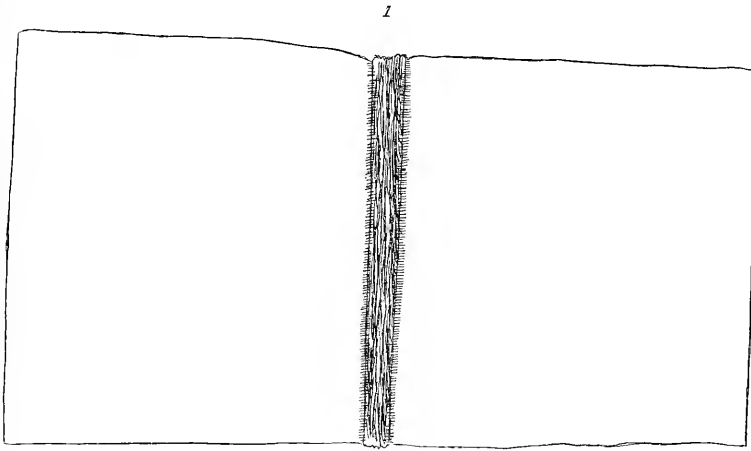




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7. Fragment of a compound pinna	125
7 ^a . Pinnule of 7 magnified	125
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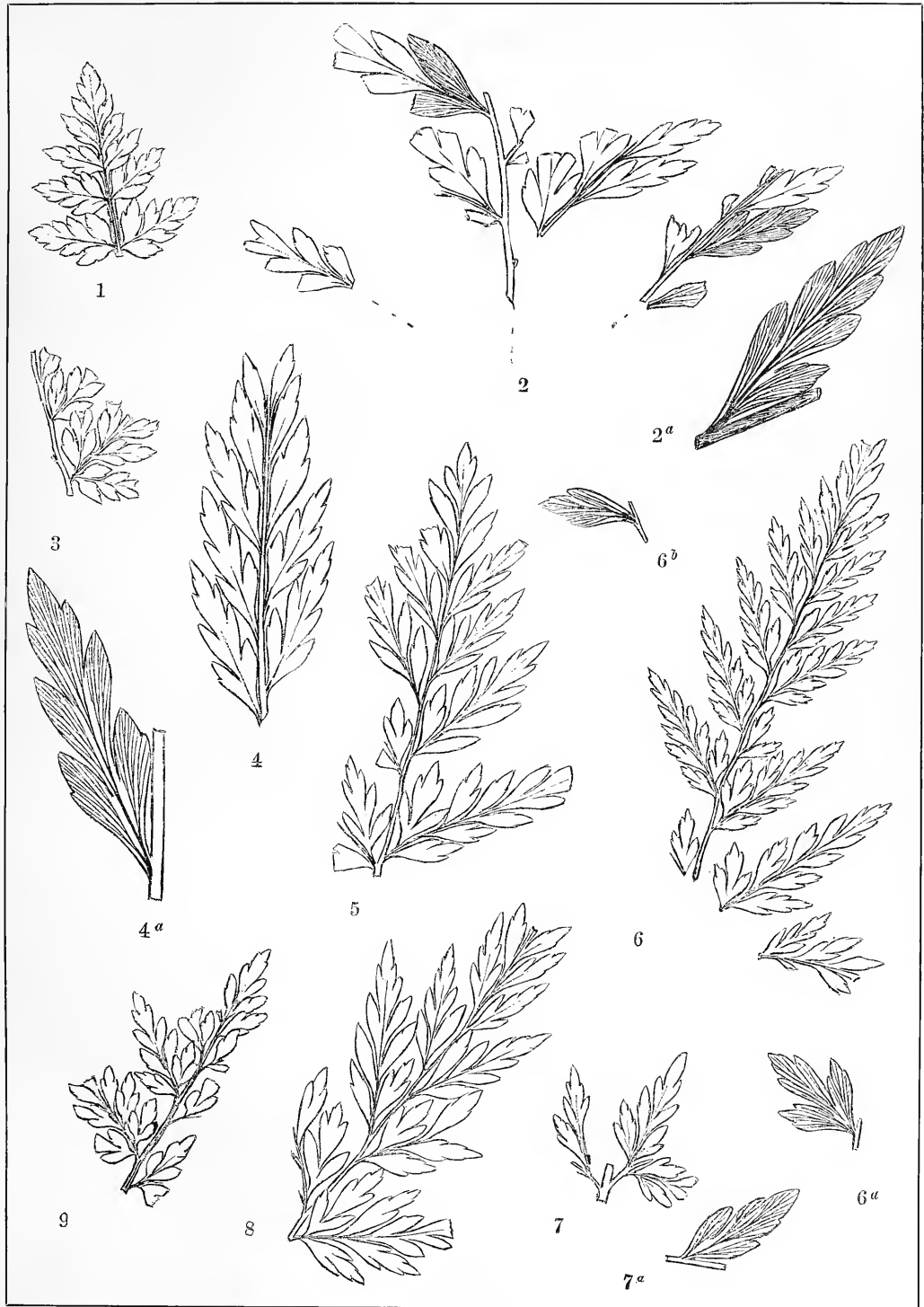


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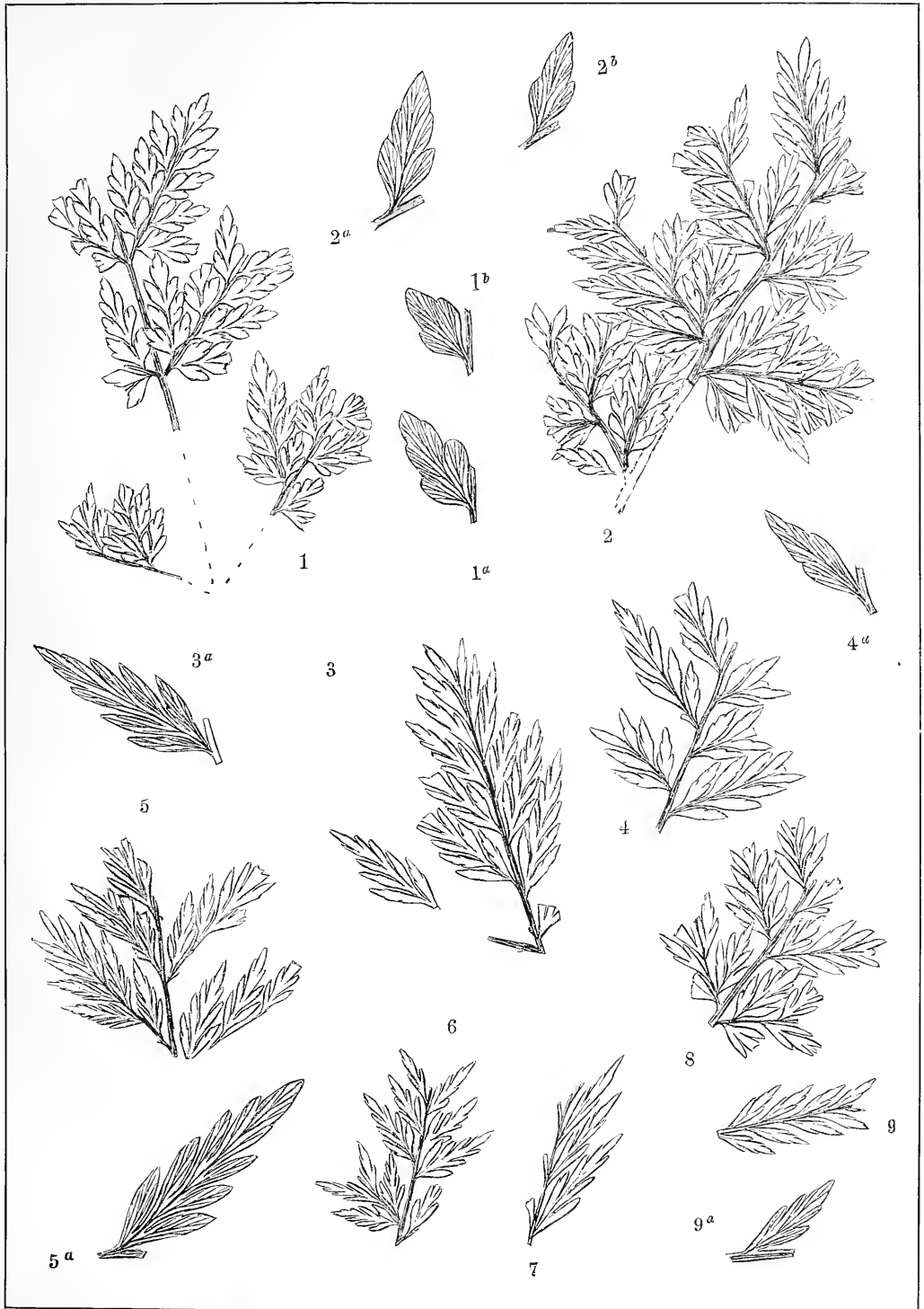


PLATE XXXIX.

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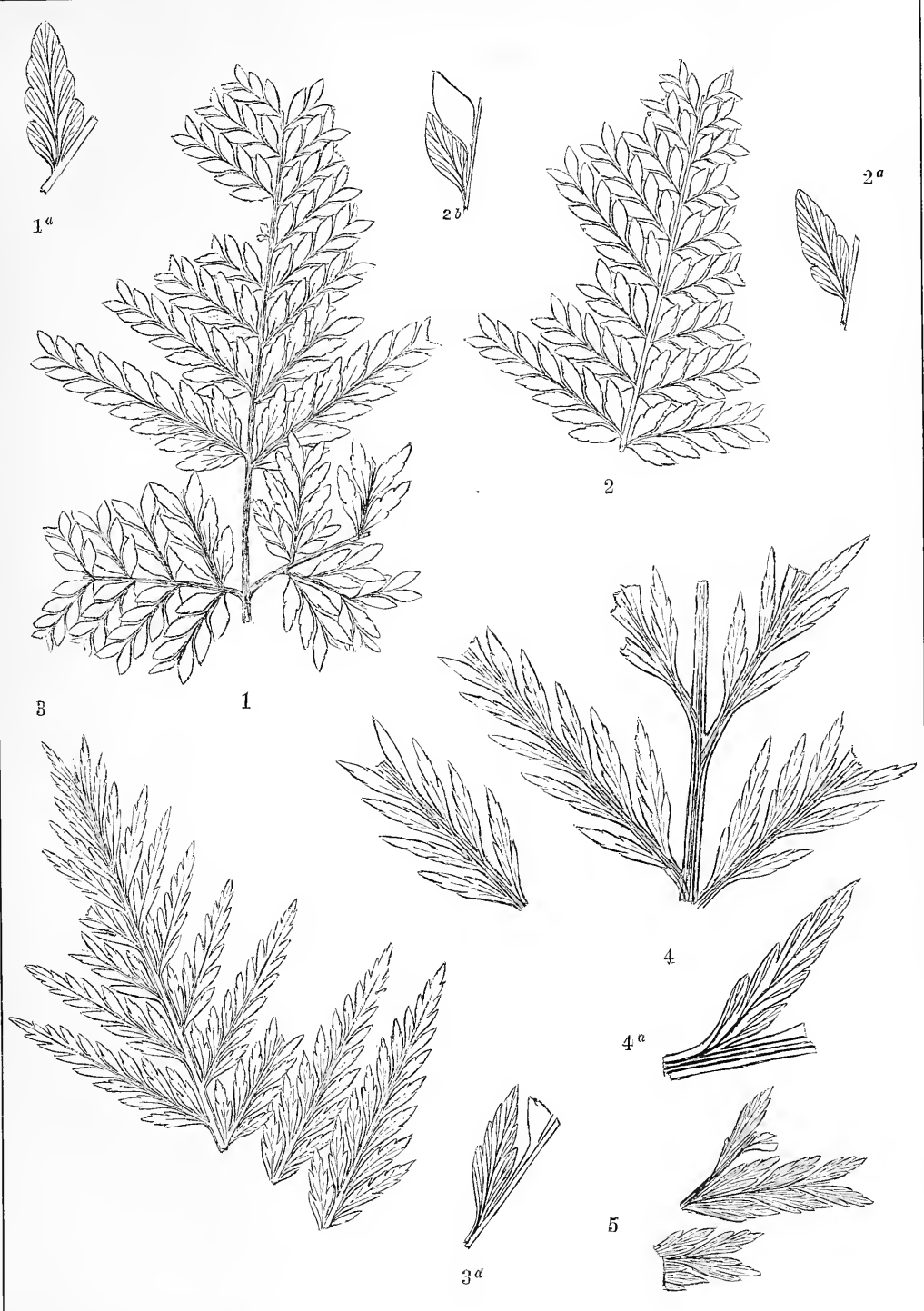


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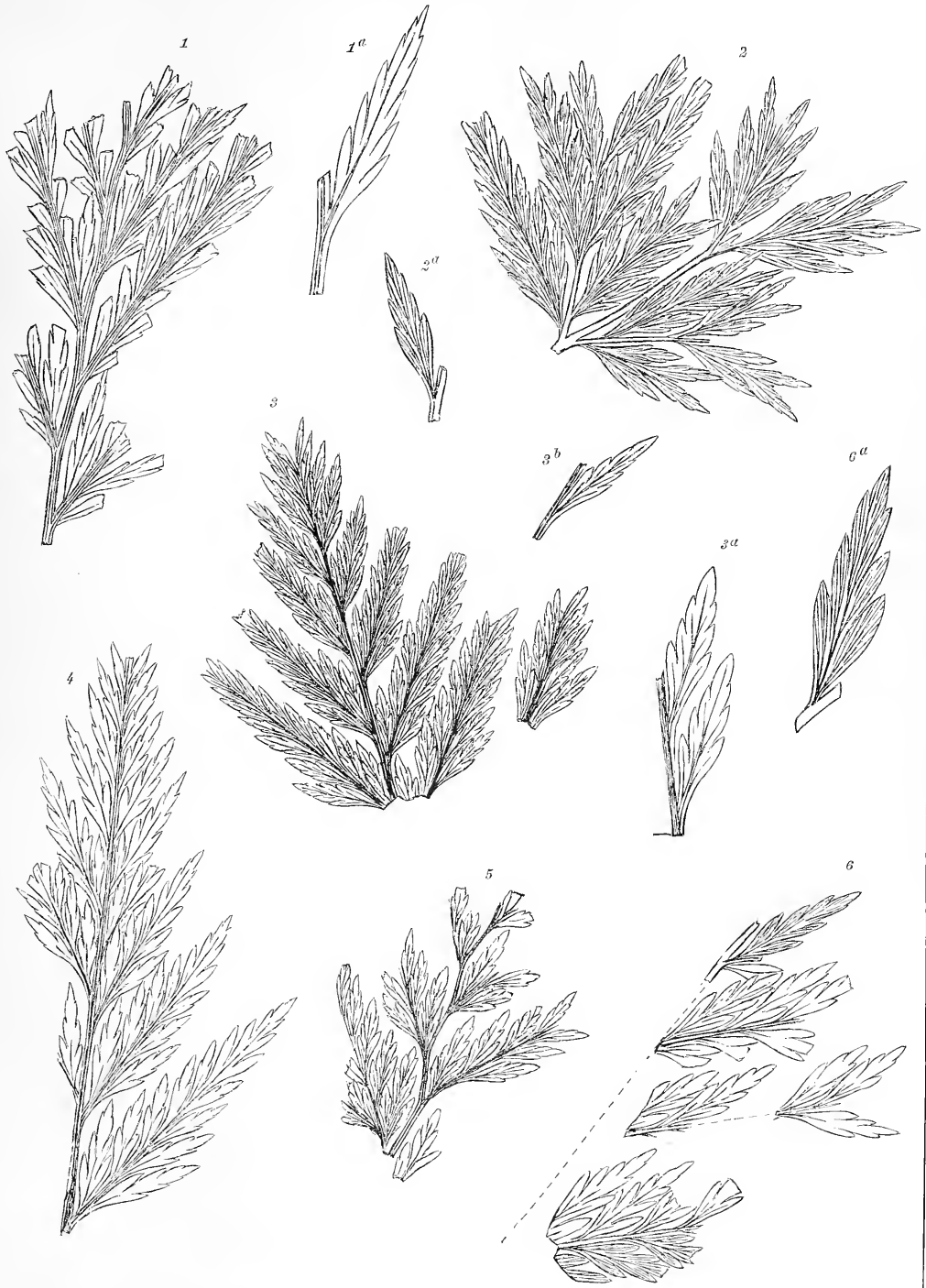


PLATE XLI.

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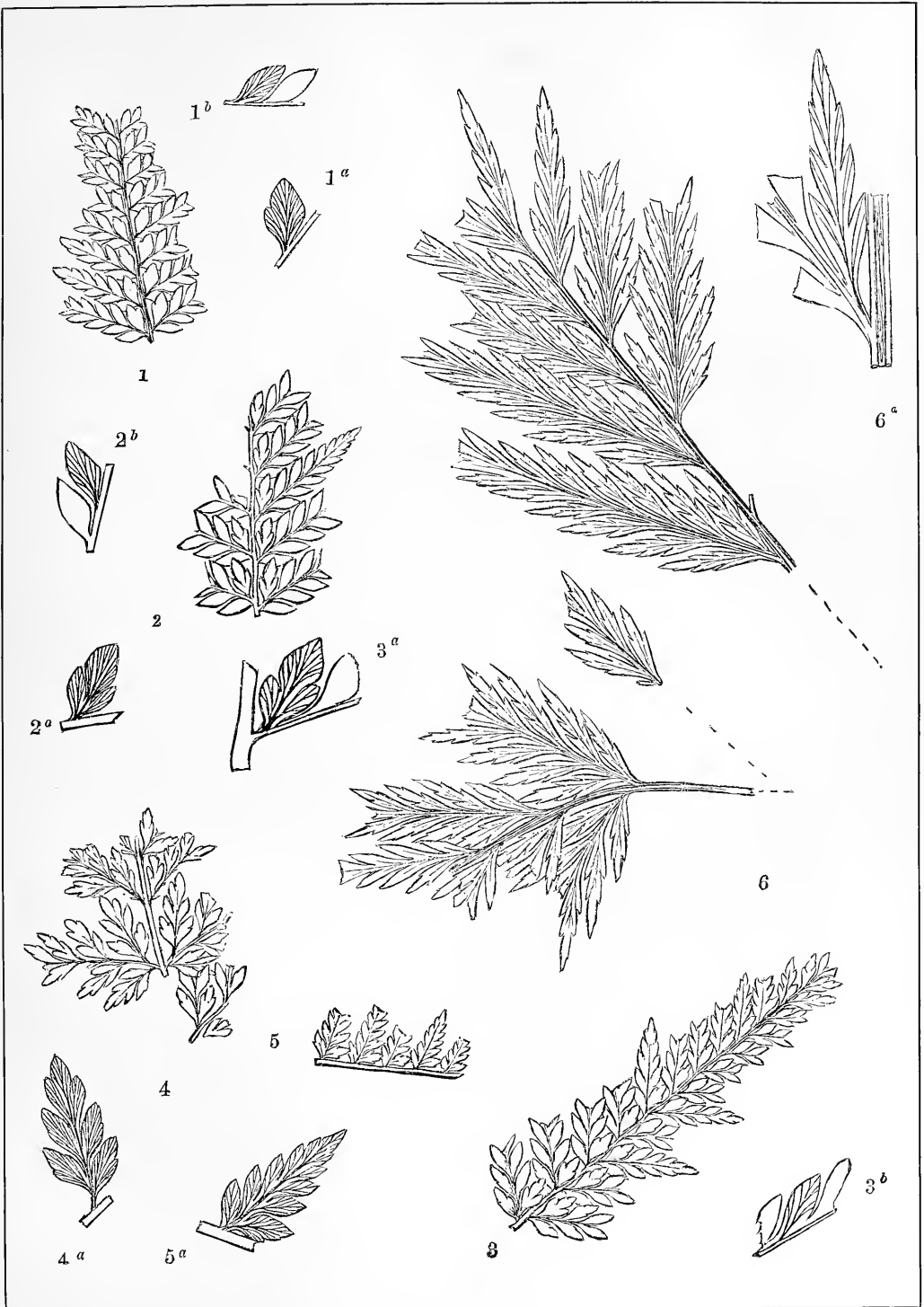


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1



3^b



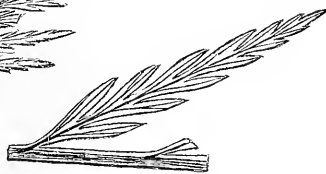
3^a



2



3



2^a



4



4^a

PLATE XLIII.

PLATE XLIII.

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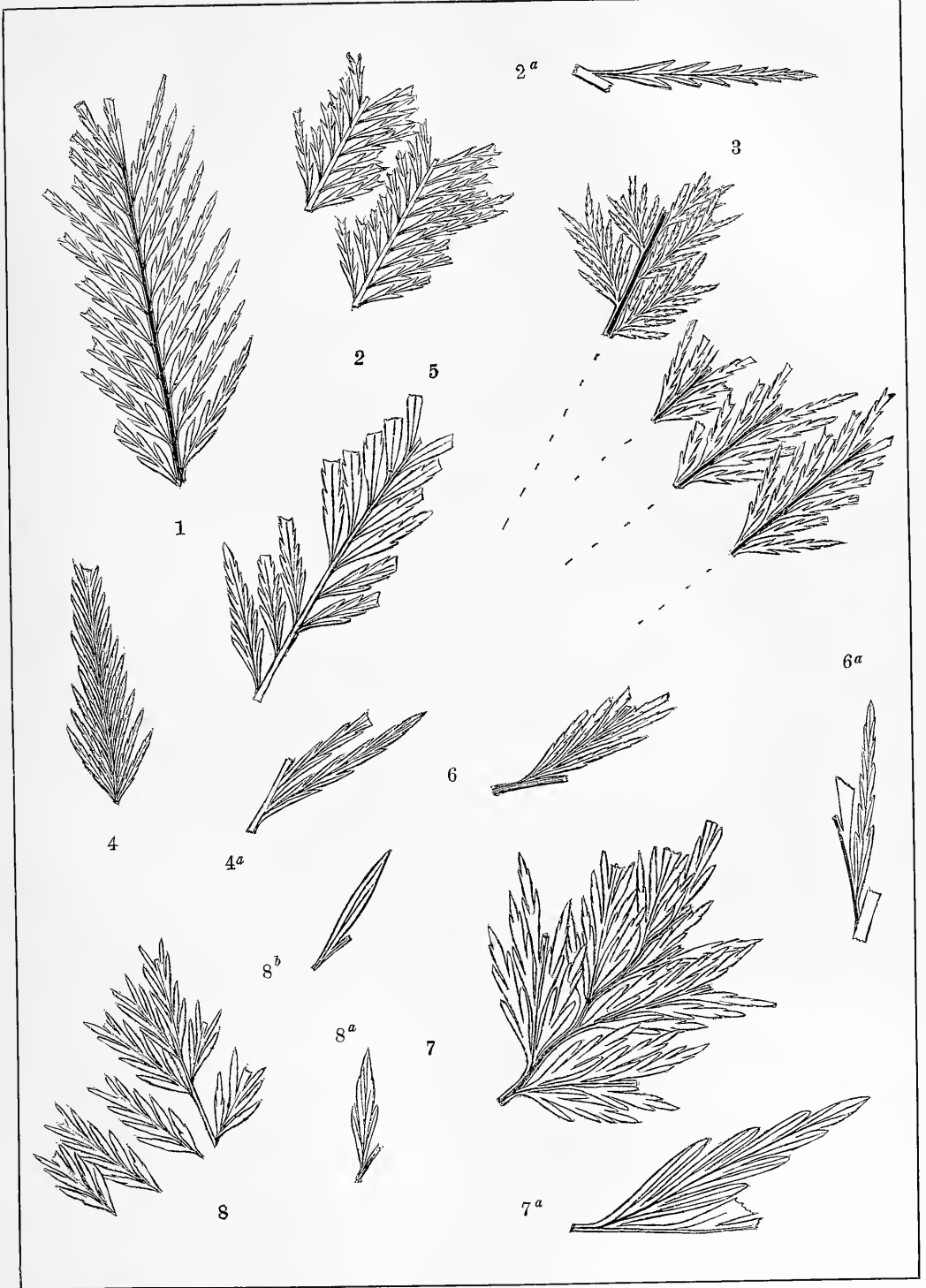




PLATE XLIV.

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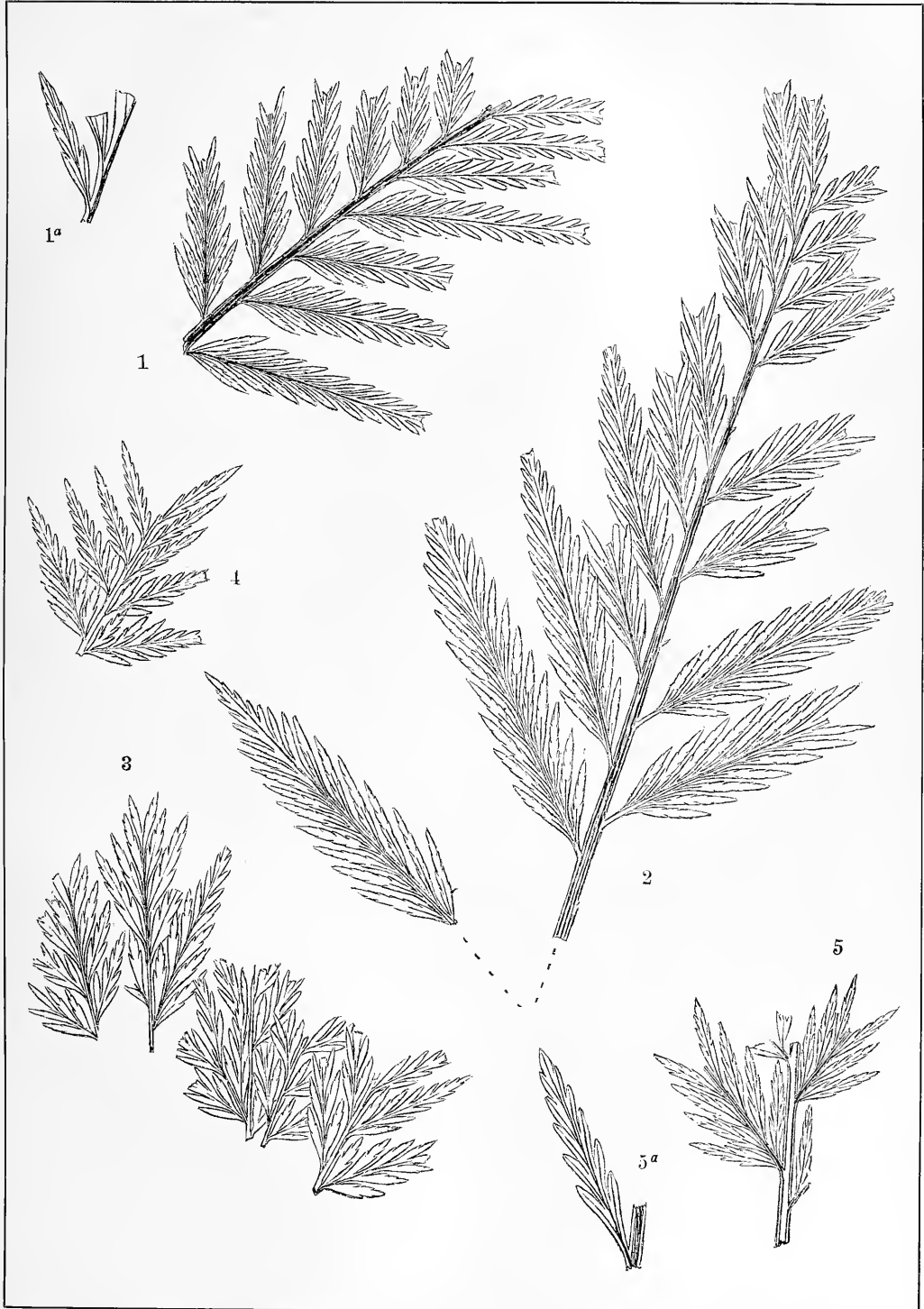


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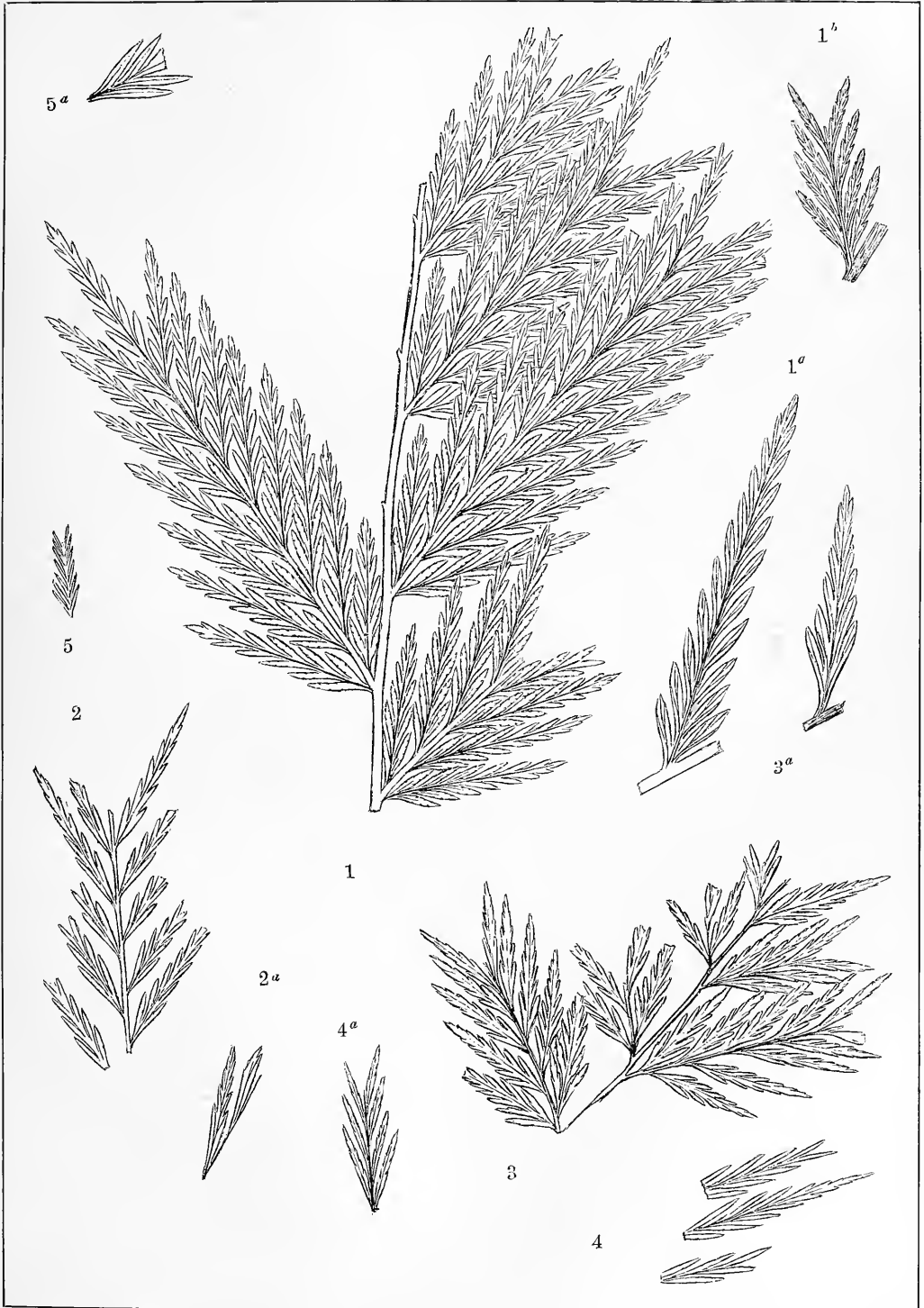


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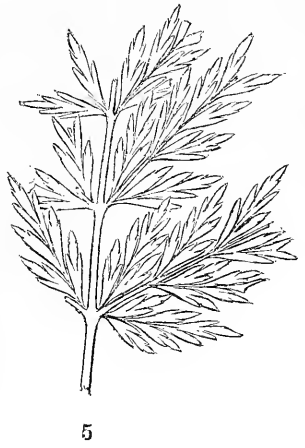
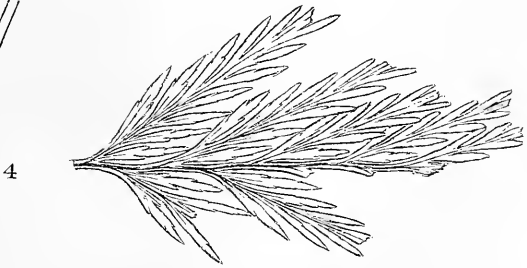
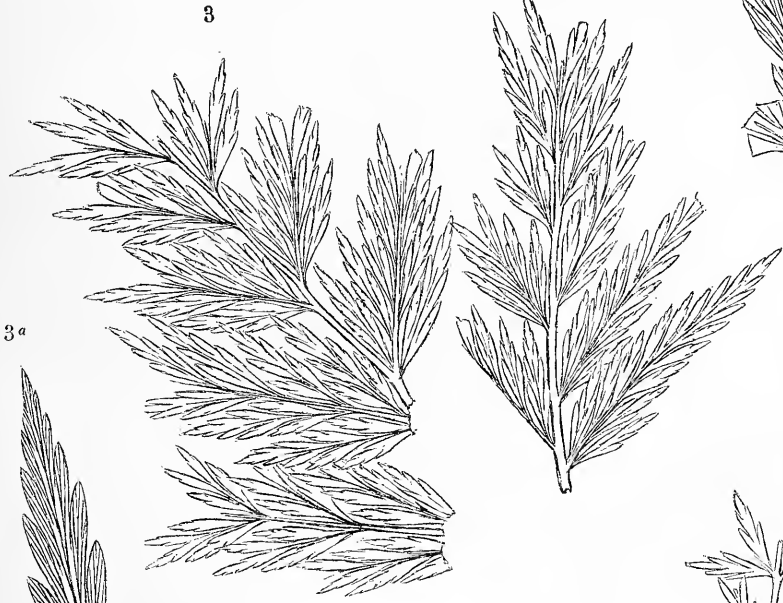
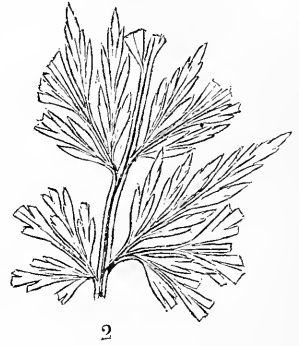
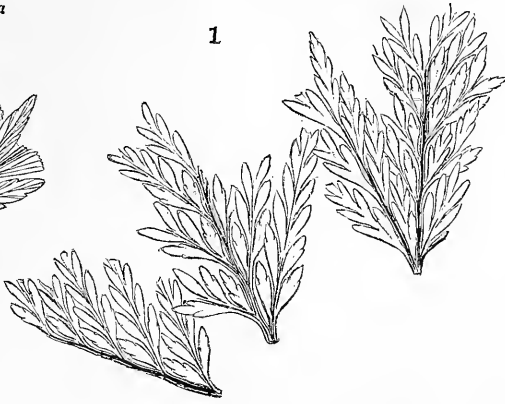


PLATE XLVII.

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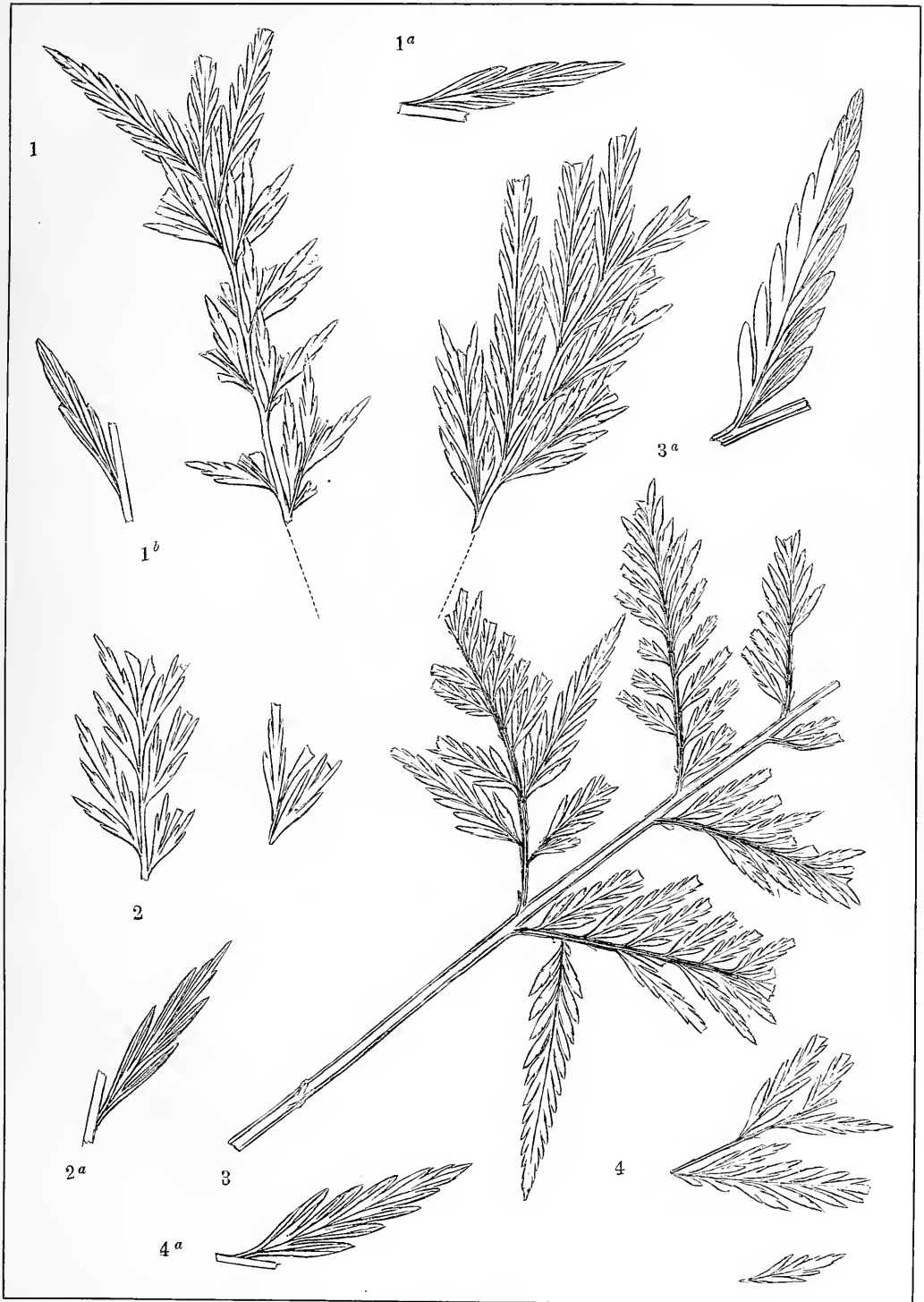


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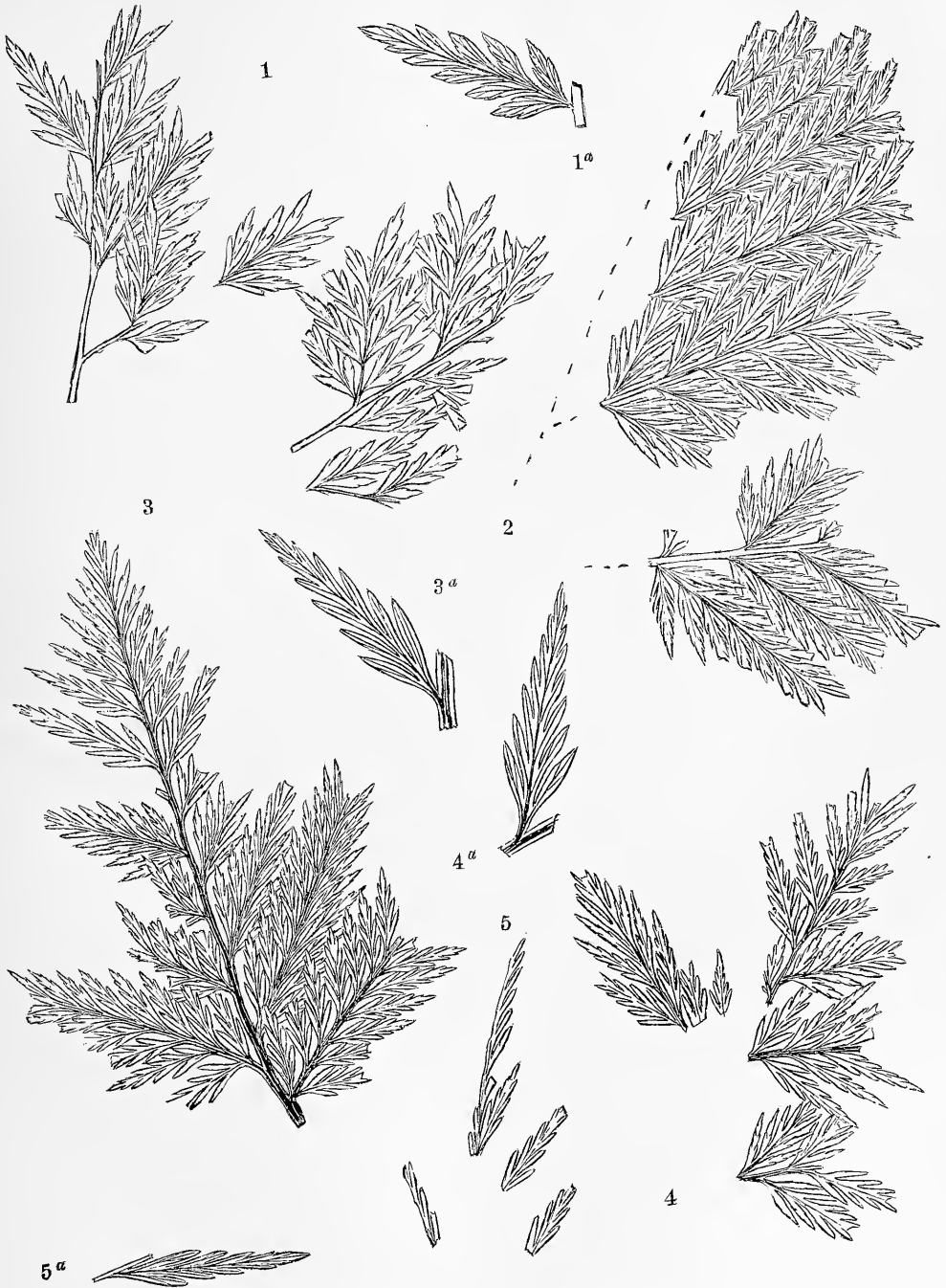
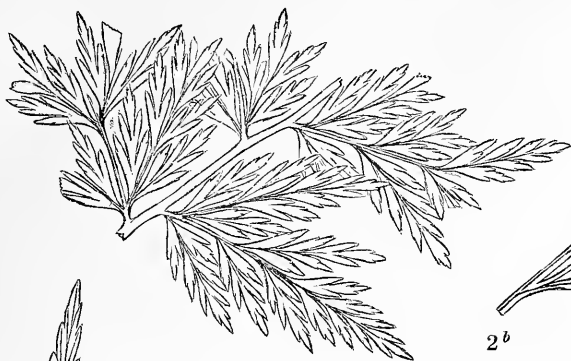


PLATE XLIX.

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1



1^a

2^a



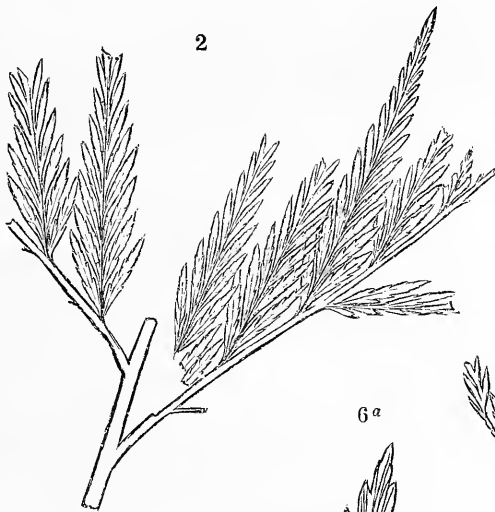
2^b



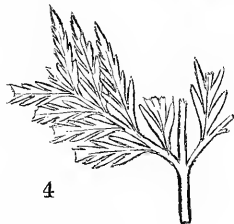
3



2



4



6^a



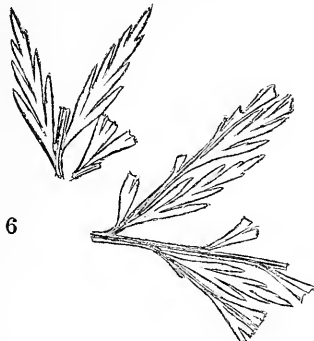
5



5^a



6



7



PLATE I.

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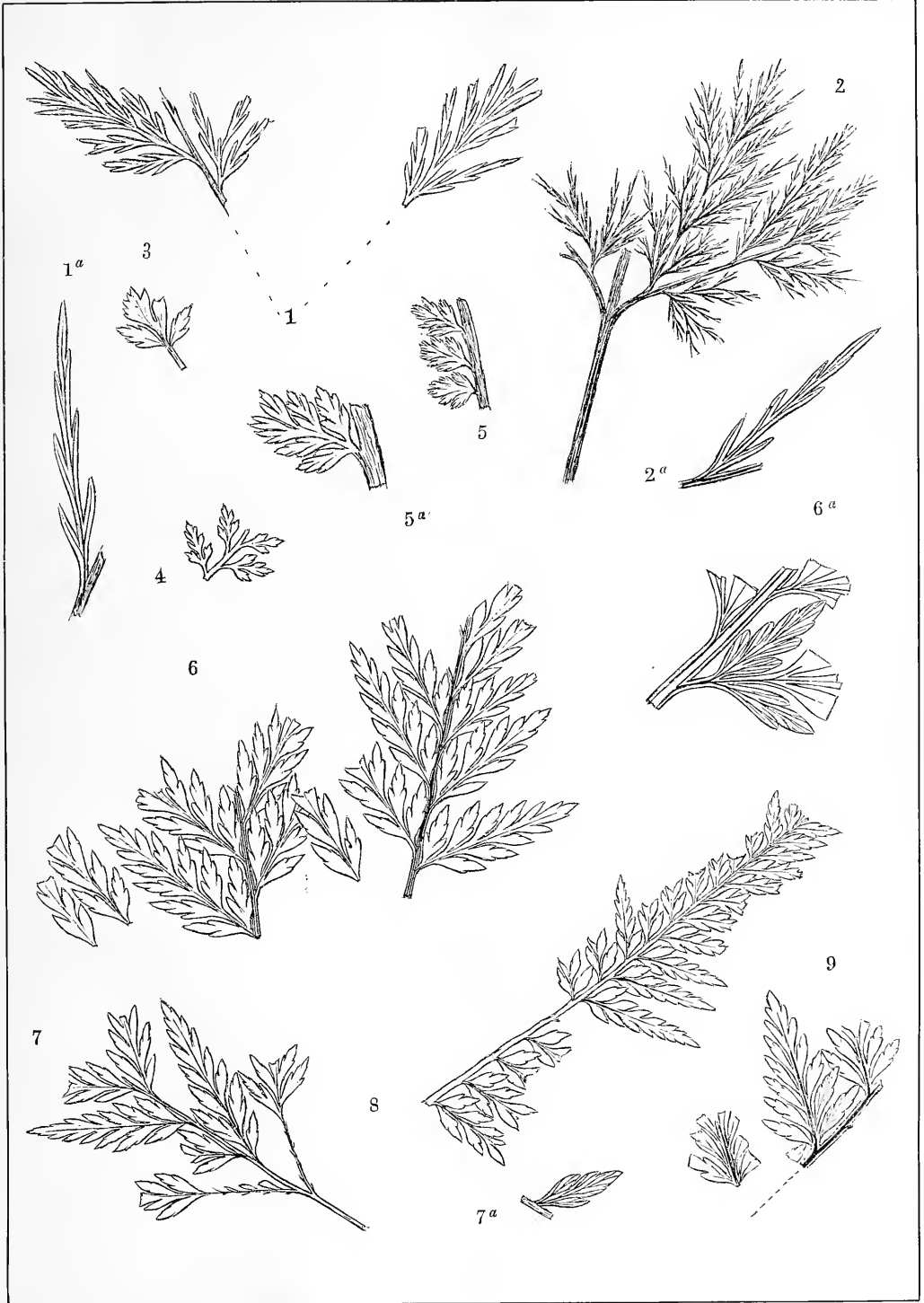


PLATE LI.

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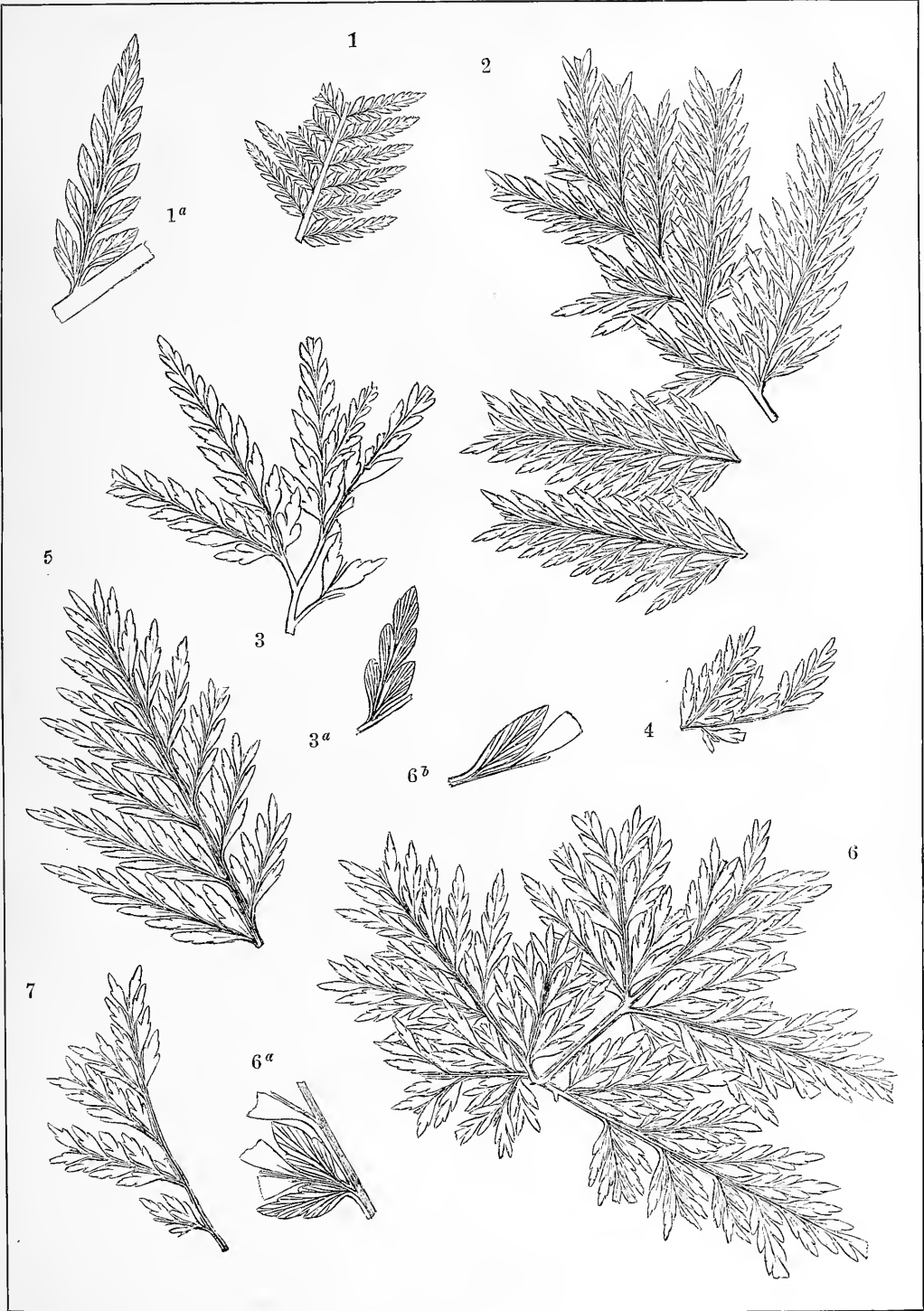


PLATE LII.

PLATE LII.

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5. Portions of compound pinnae, apparently radiating from a common point, as in a frond palmately divided.	138
5 ^a . Ultimate pinna from the lower portion of a compound pinna magnified.	138
5 ^b . Upper pinna of the same magnified.	138

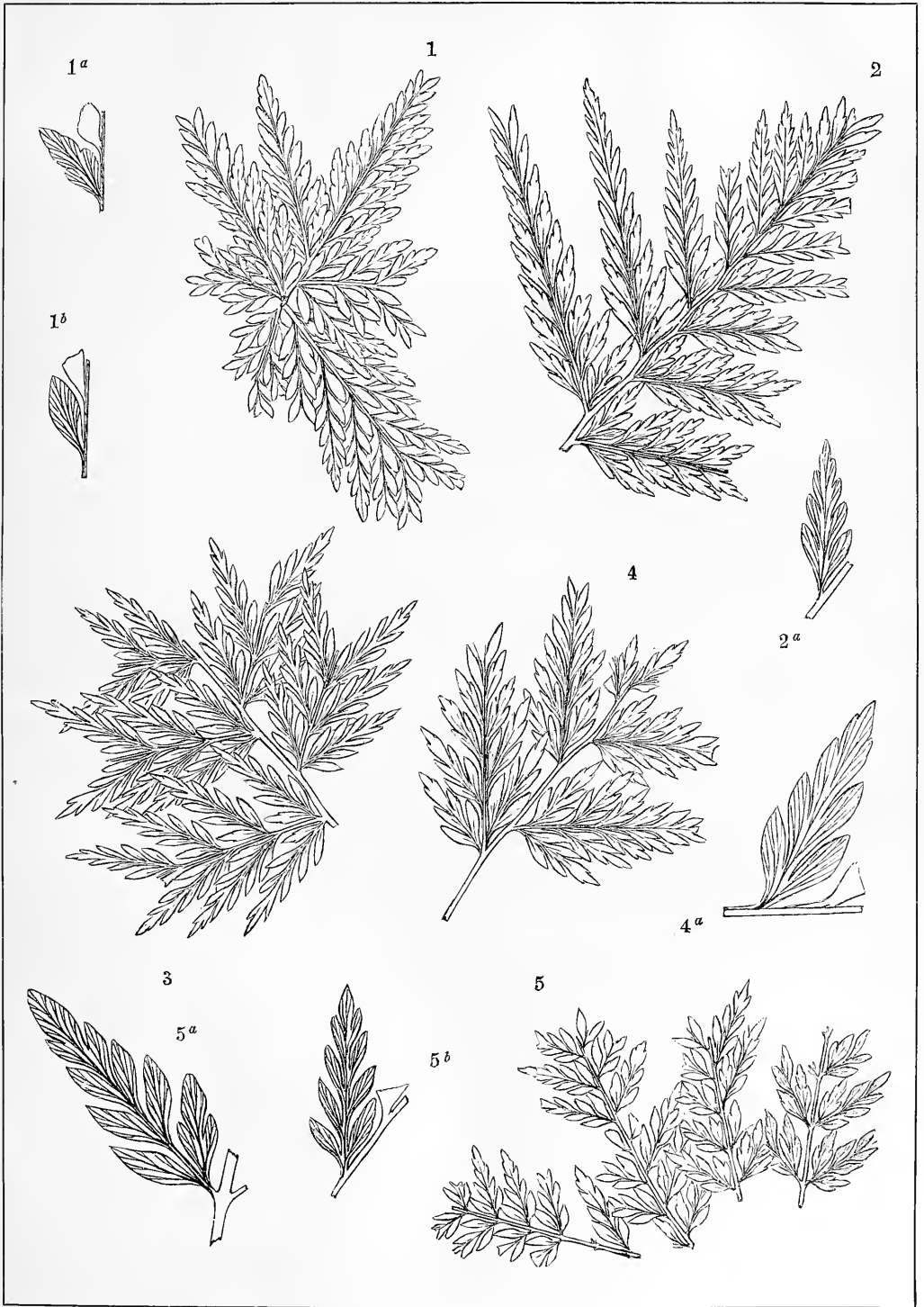


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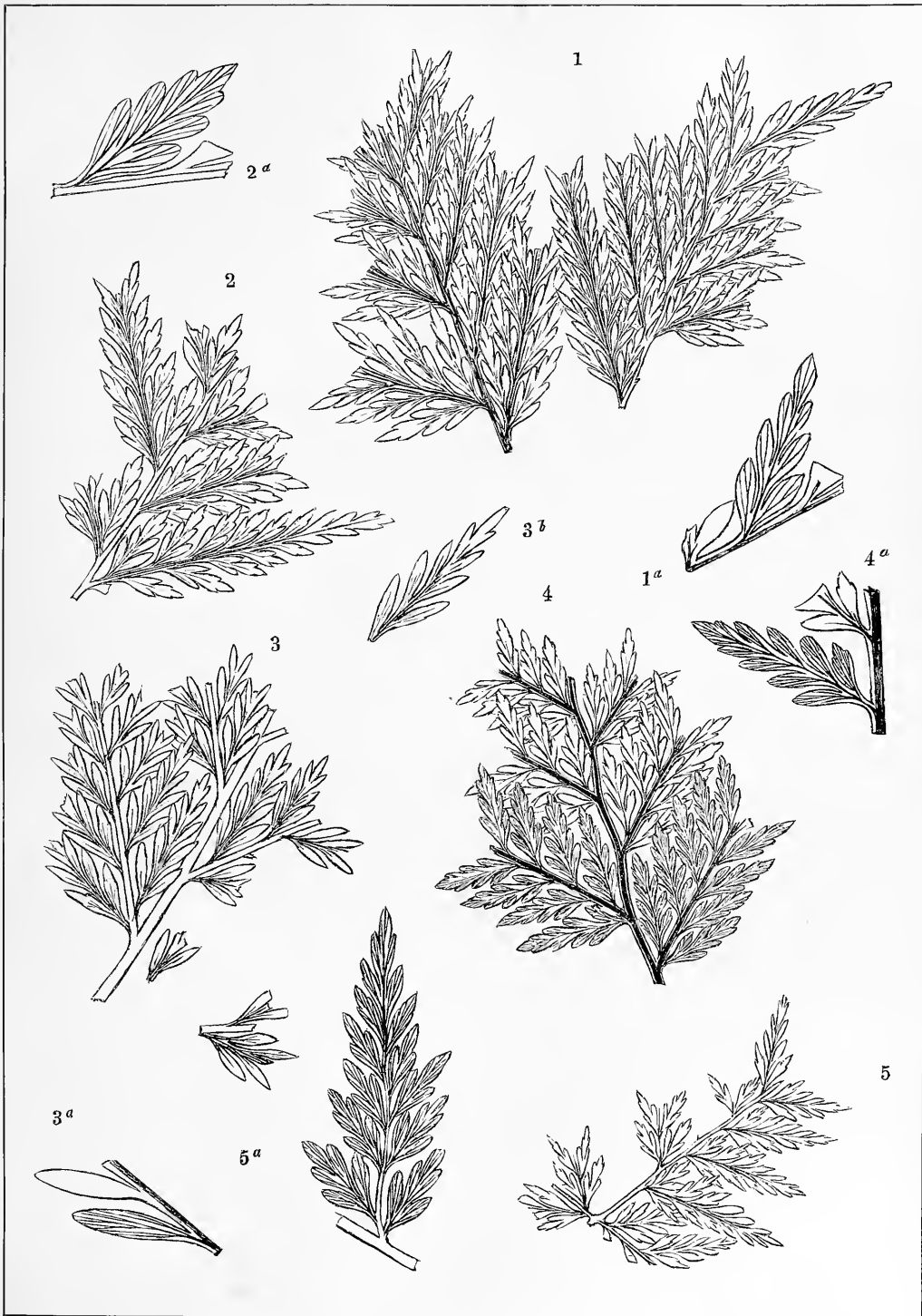




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10 ^a . Pinnules of 10 magnified.....	137

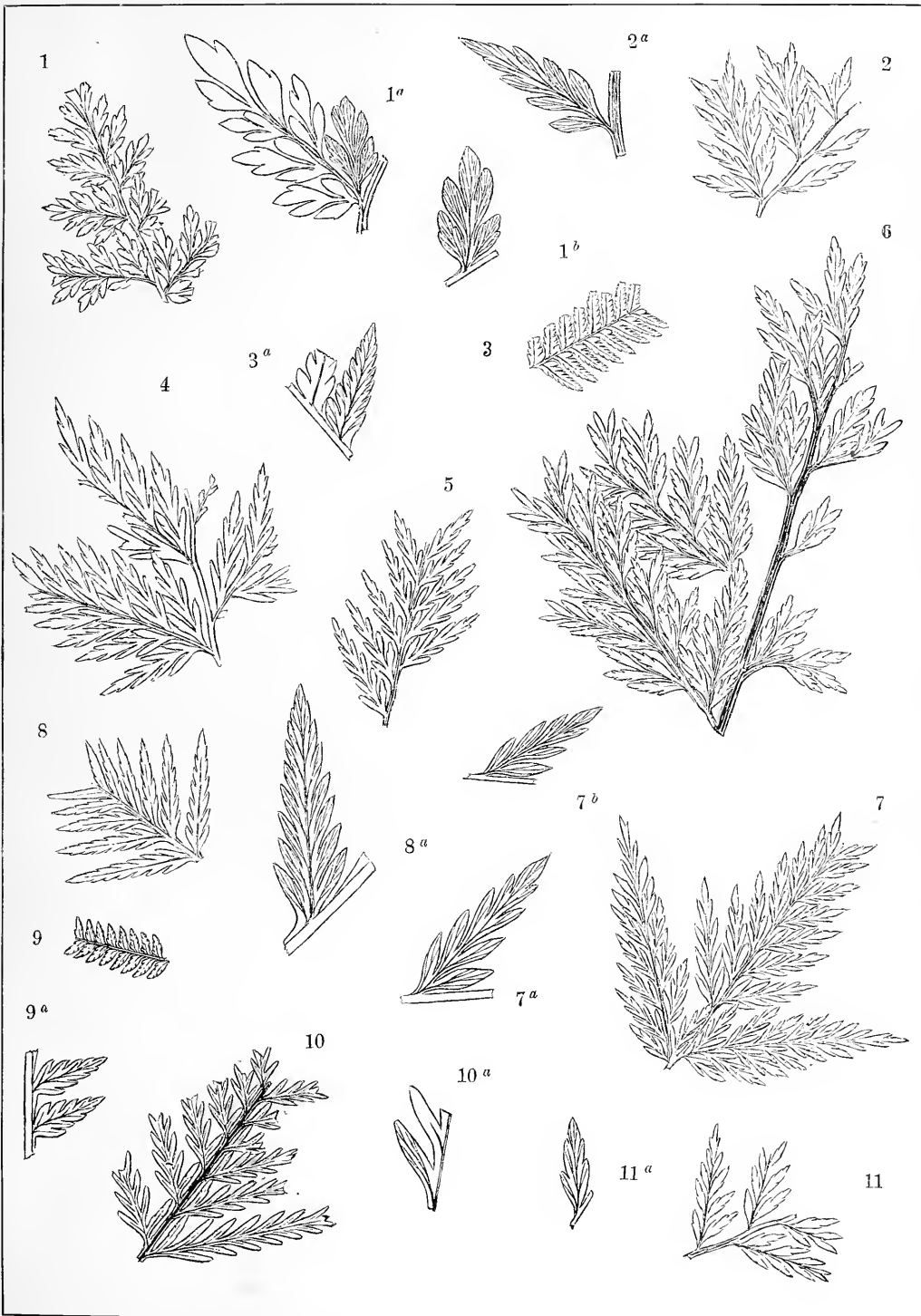




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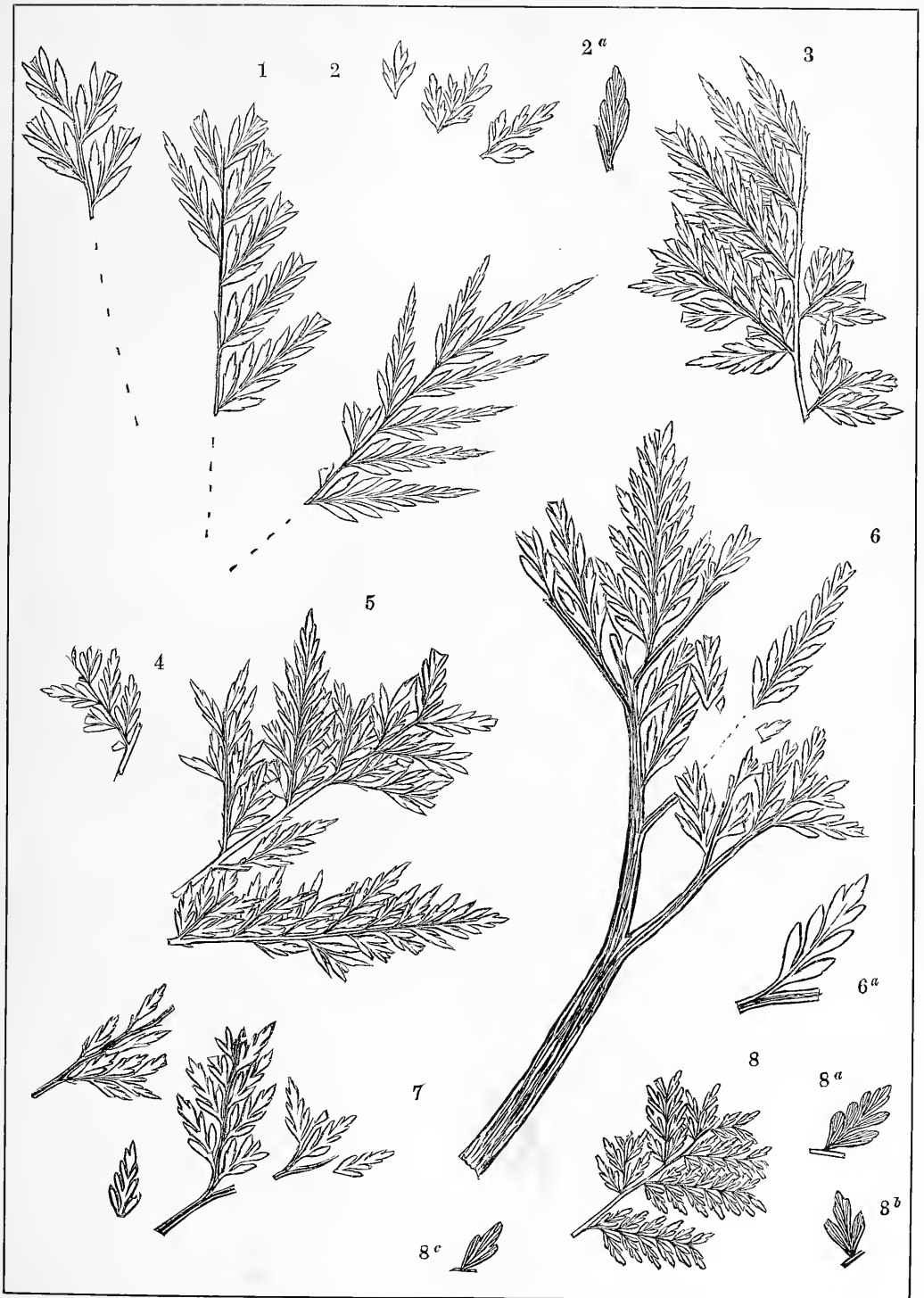




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PLATE LVIII.

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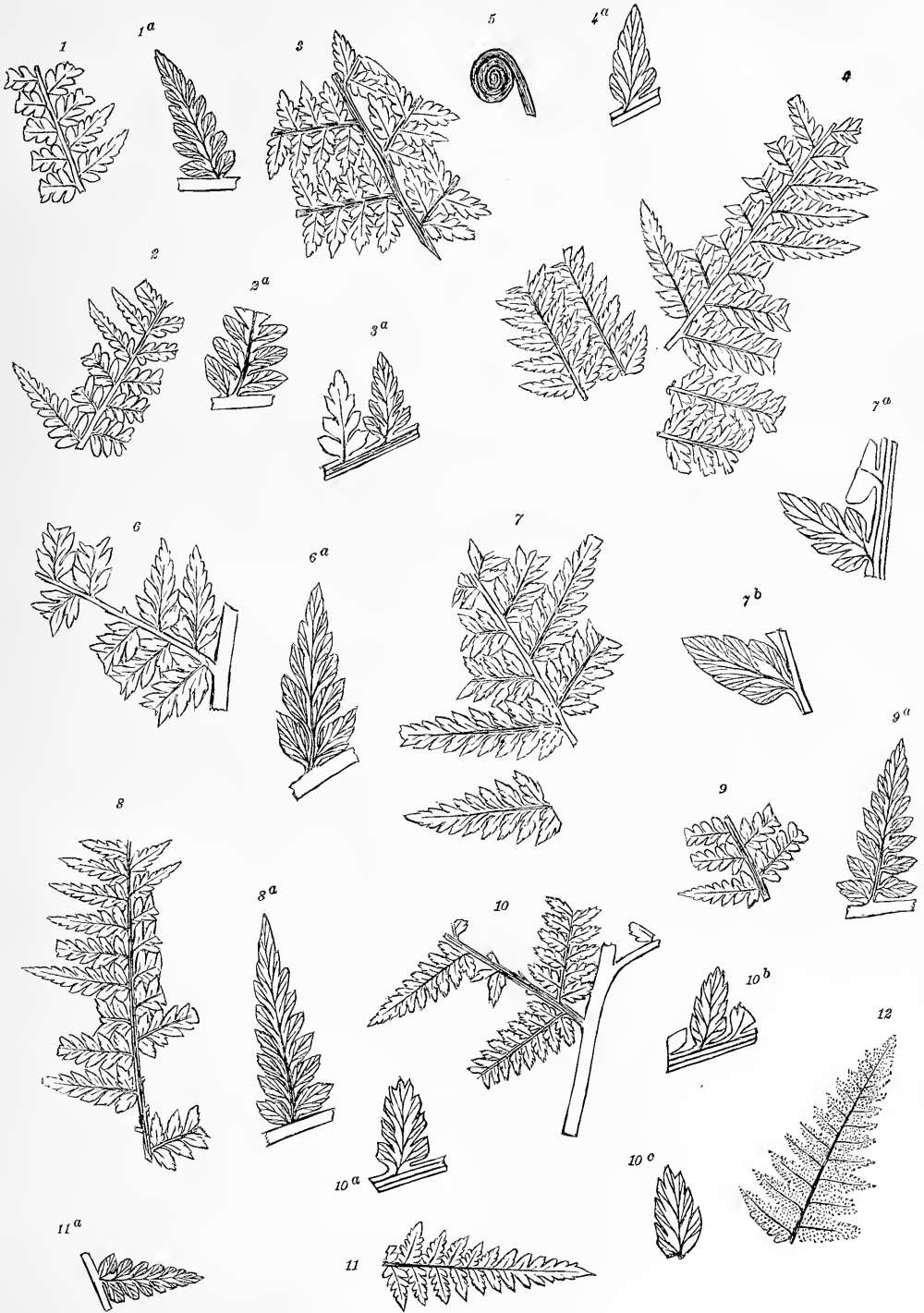


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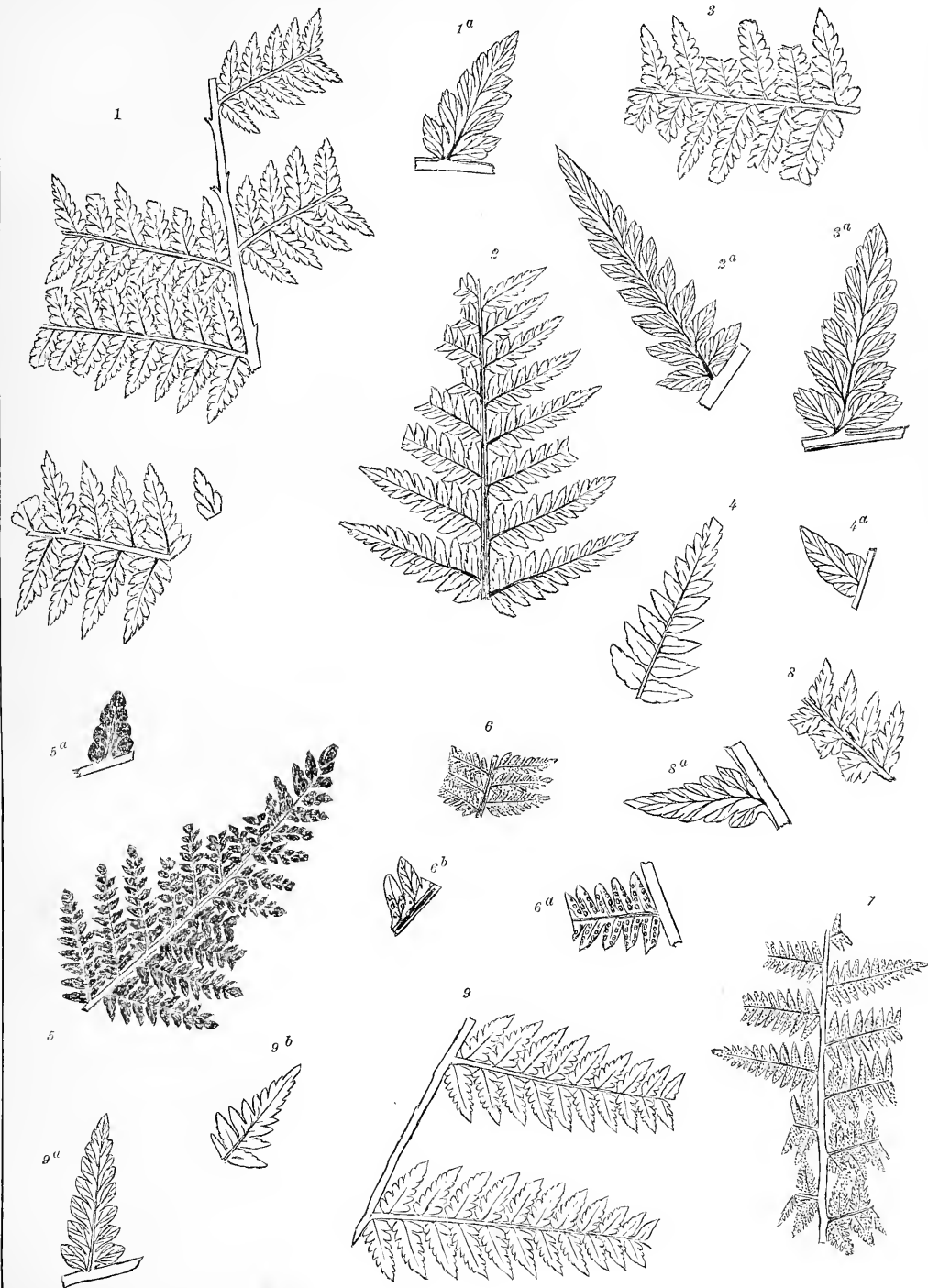


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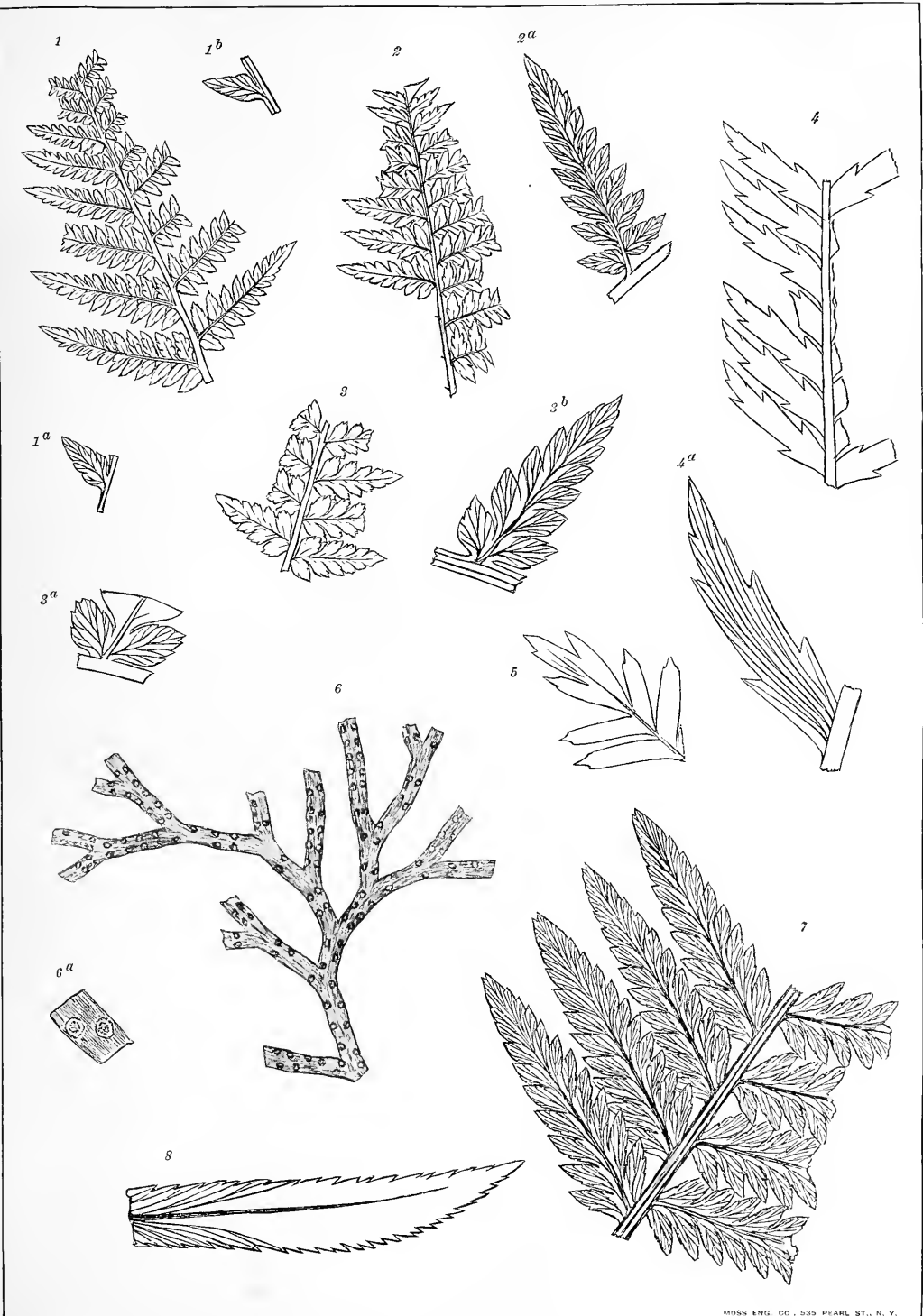


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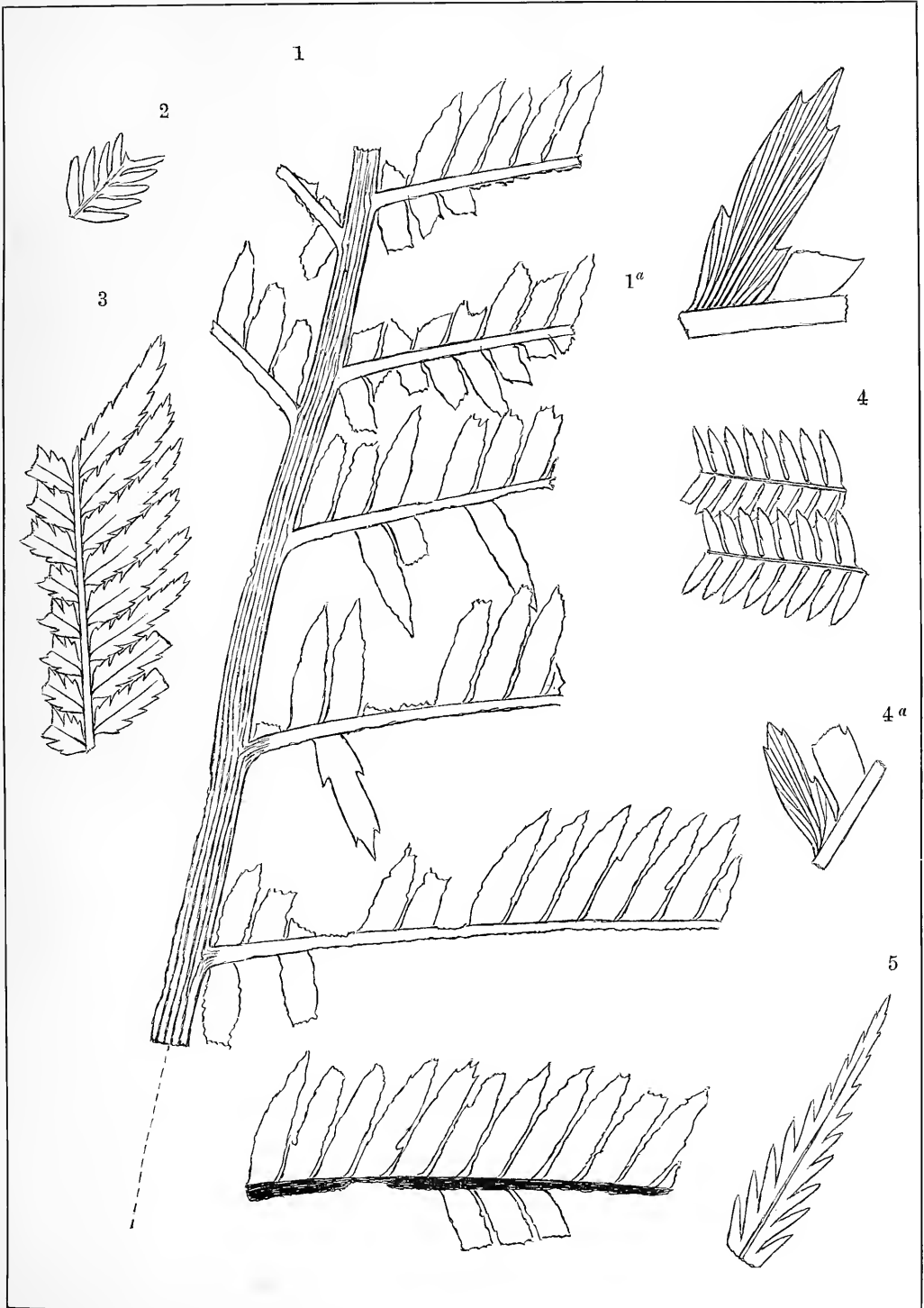


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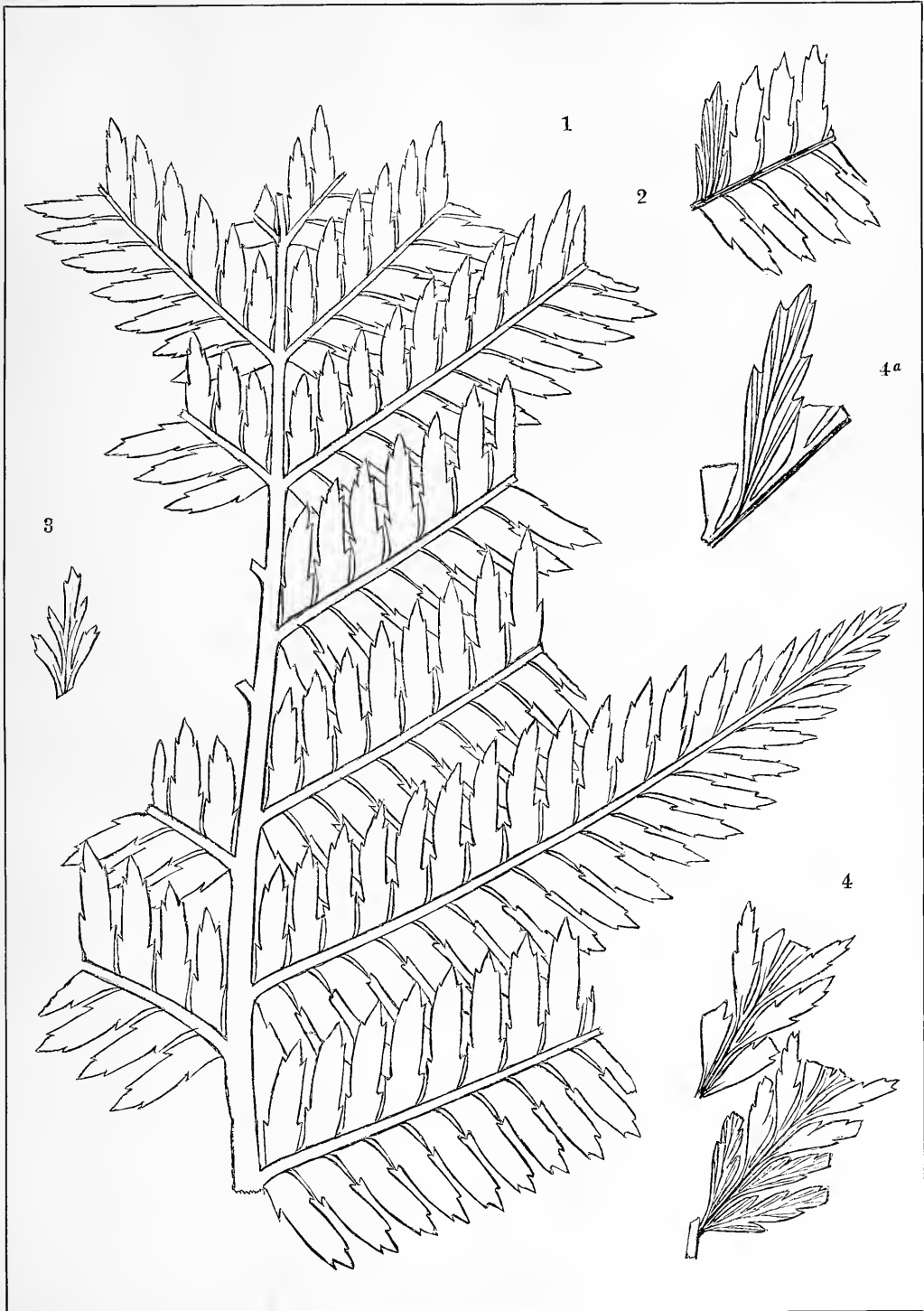




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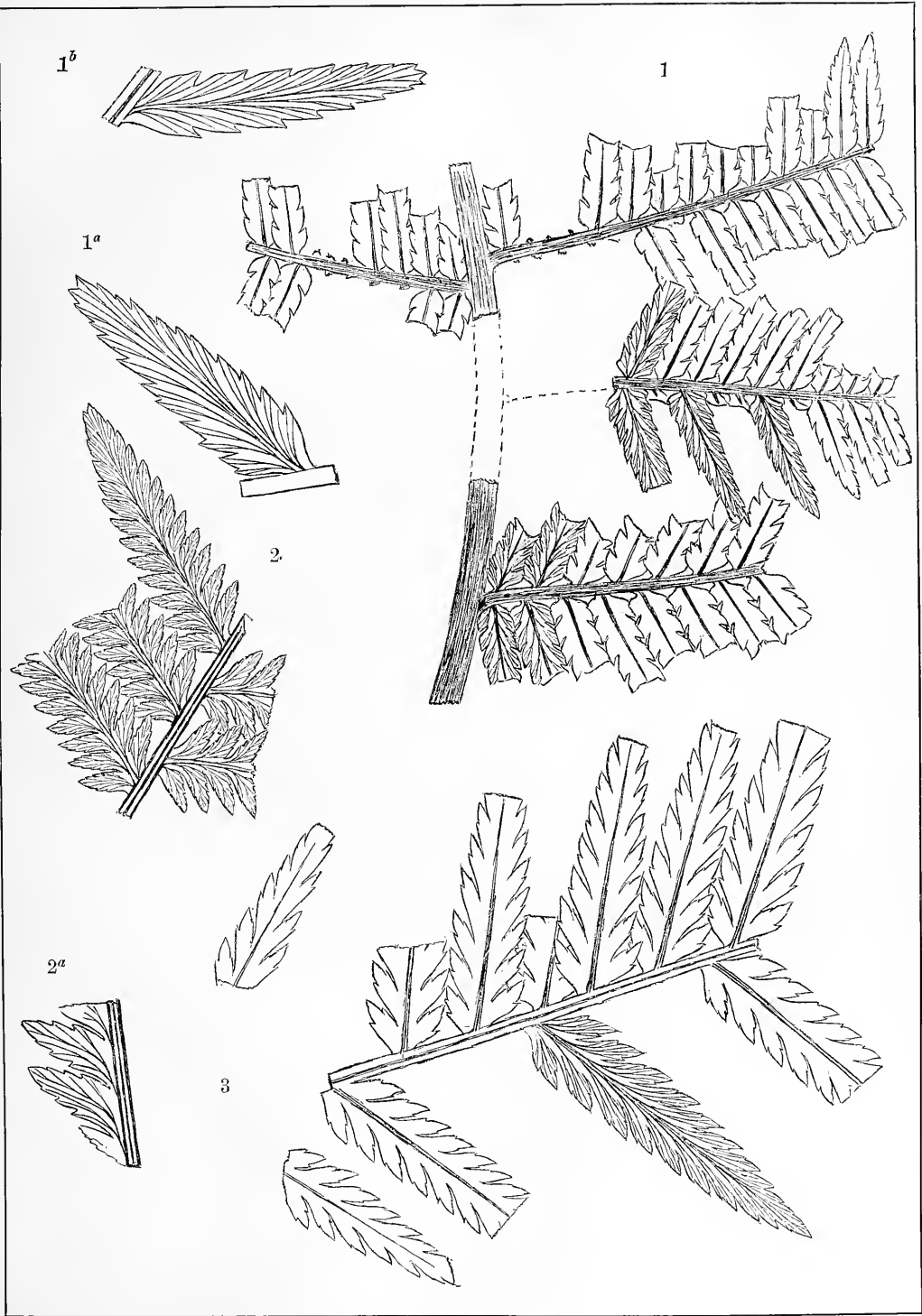




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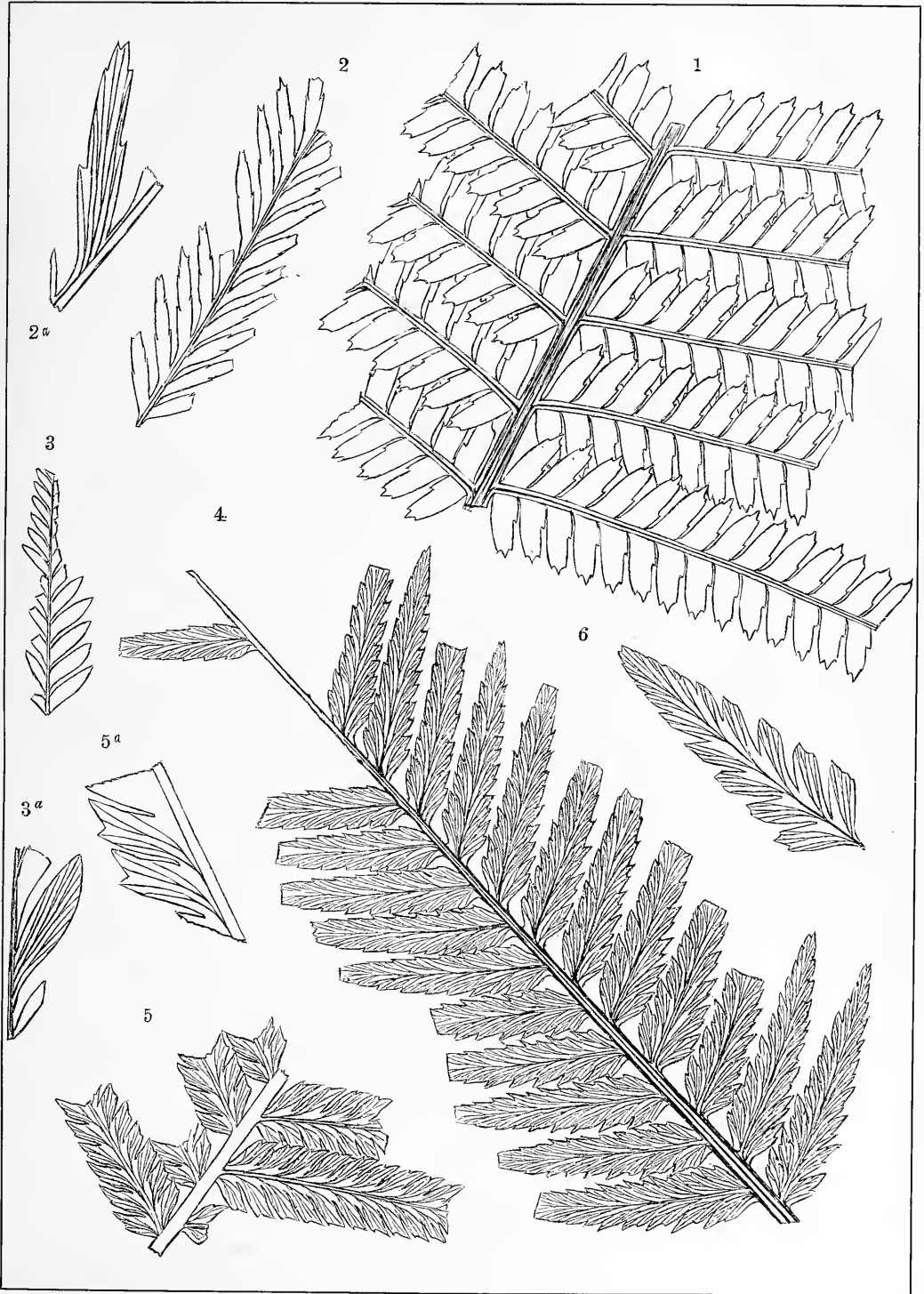


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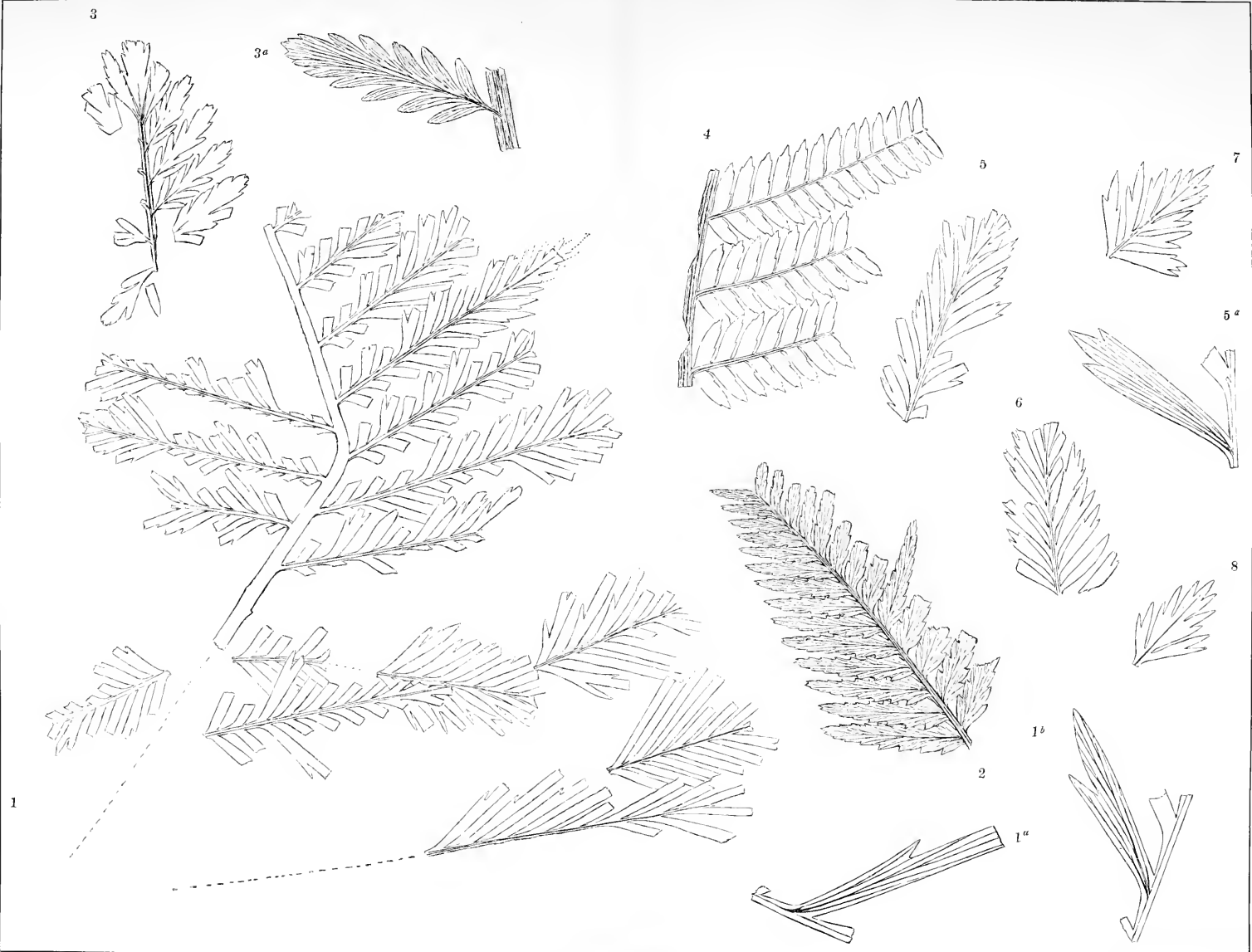






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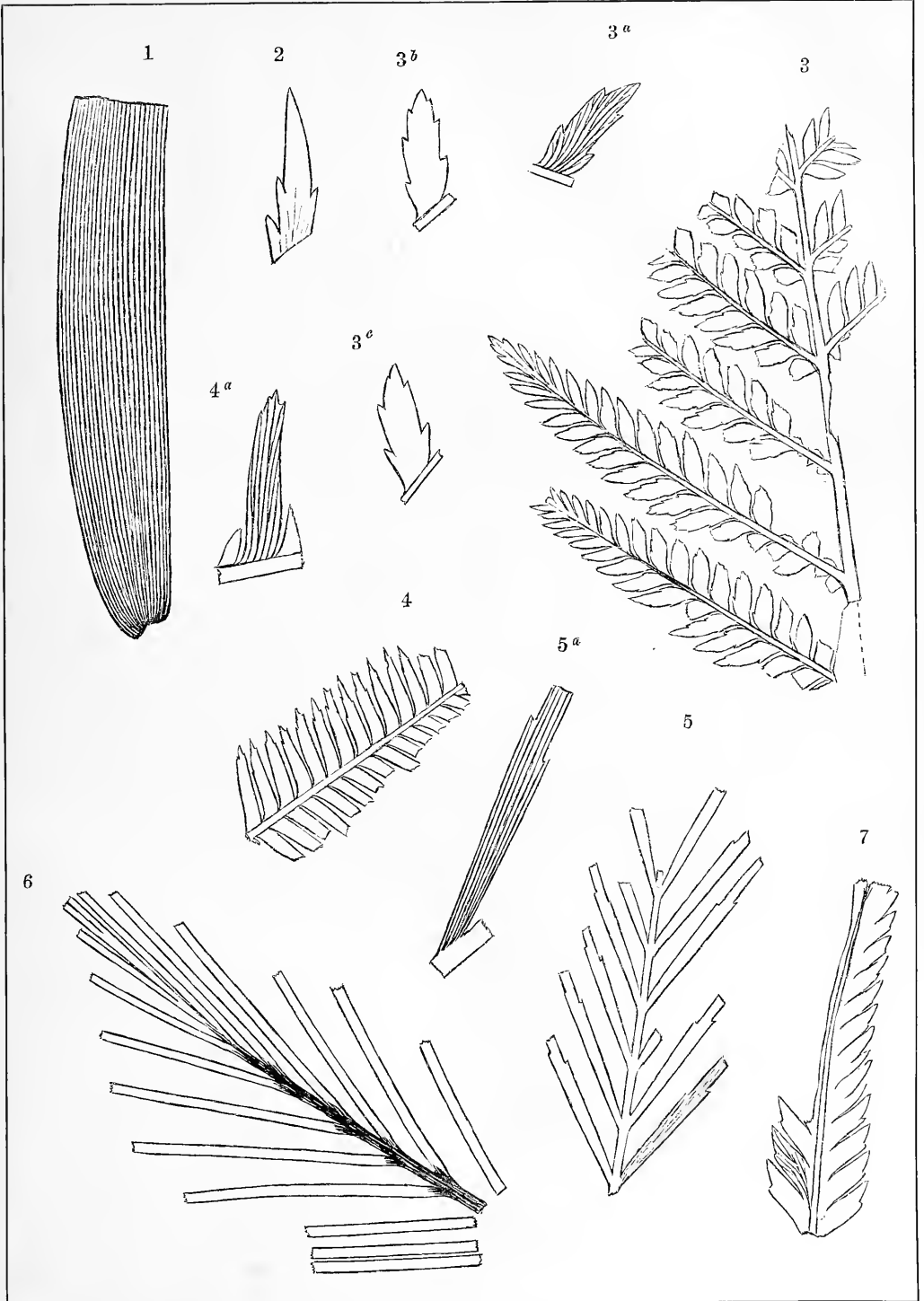




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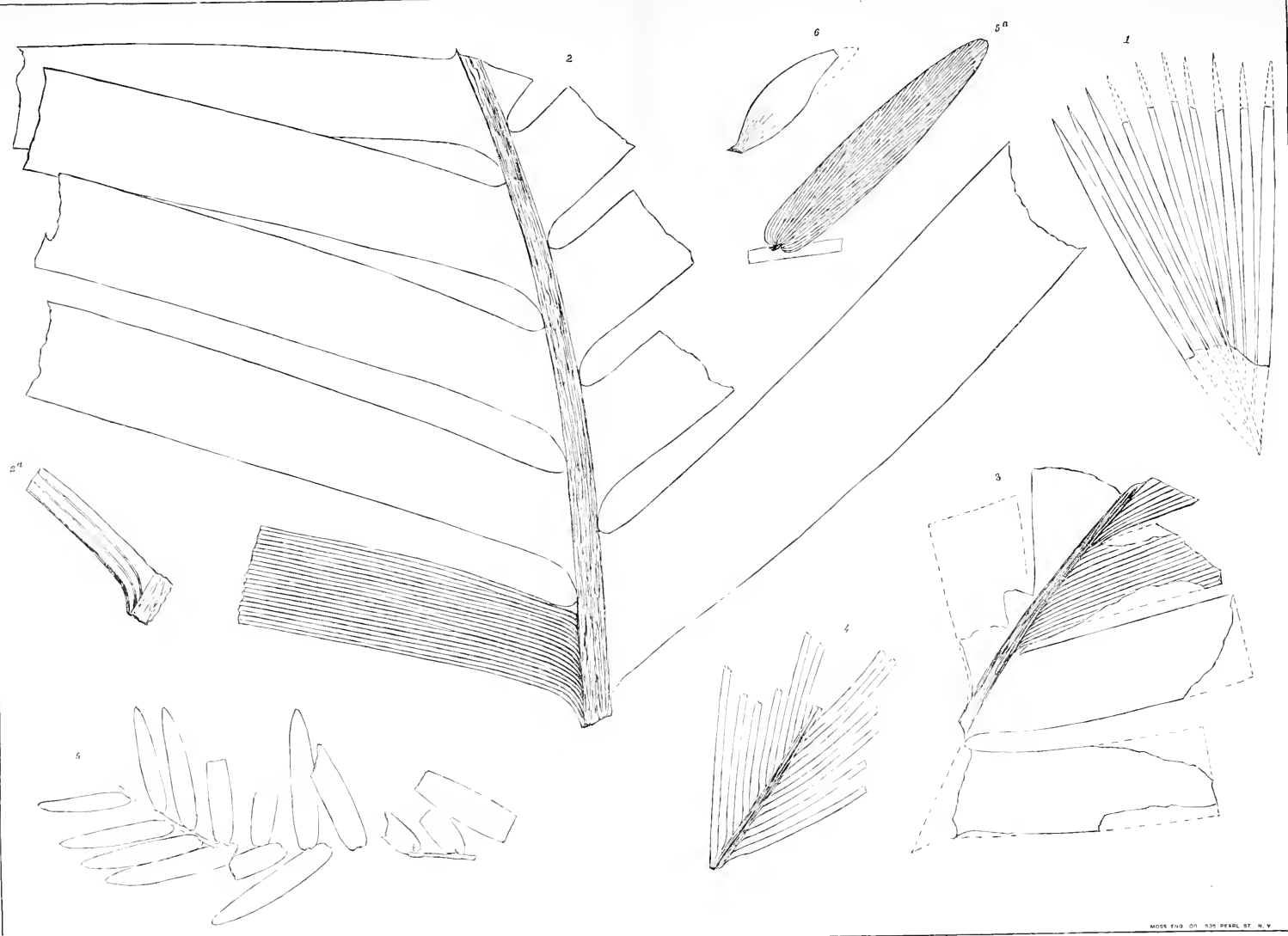






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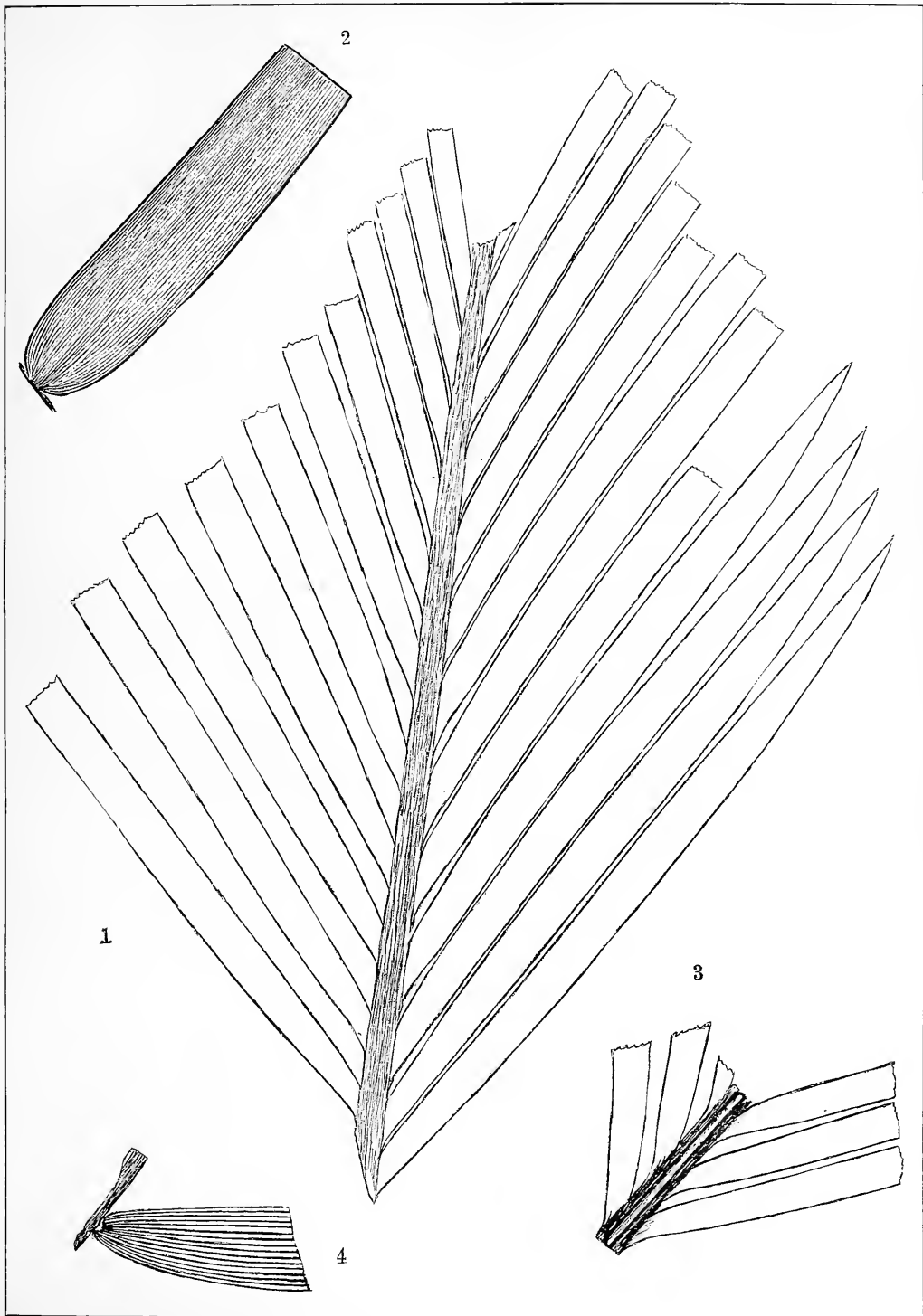


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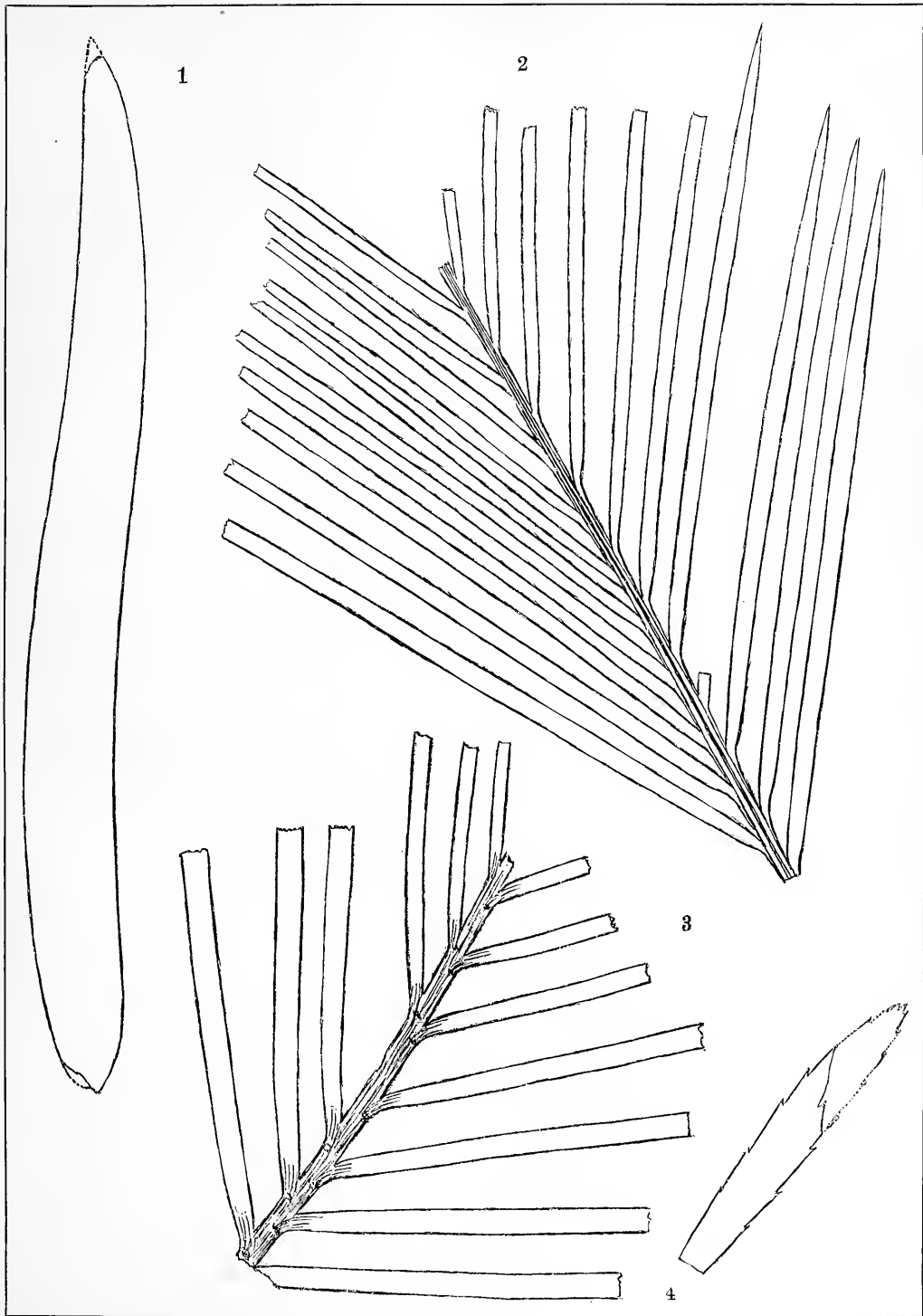


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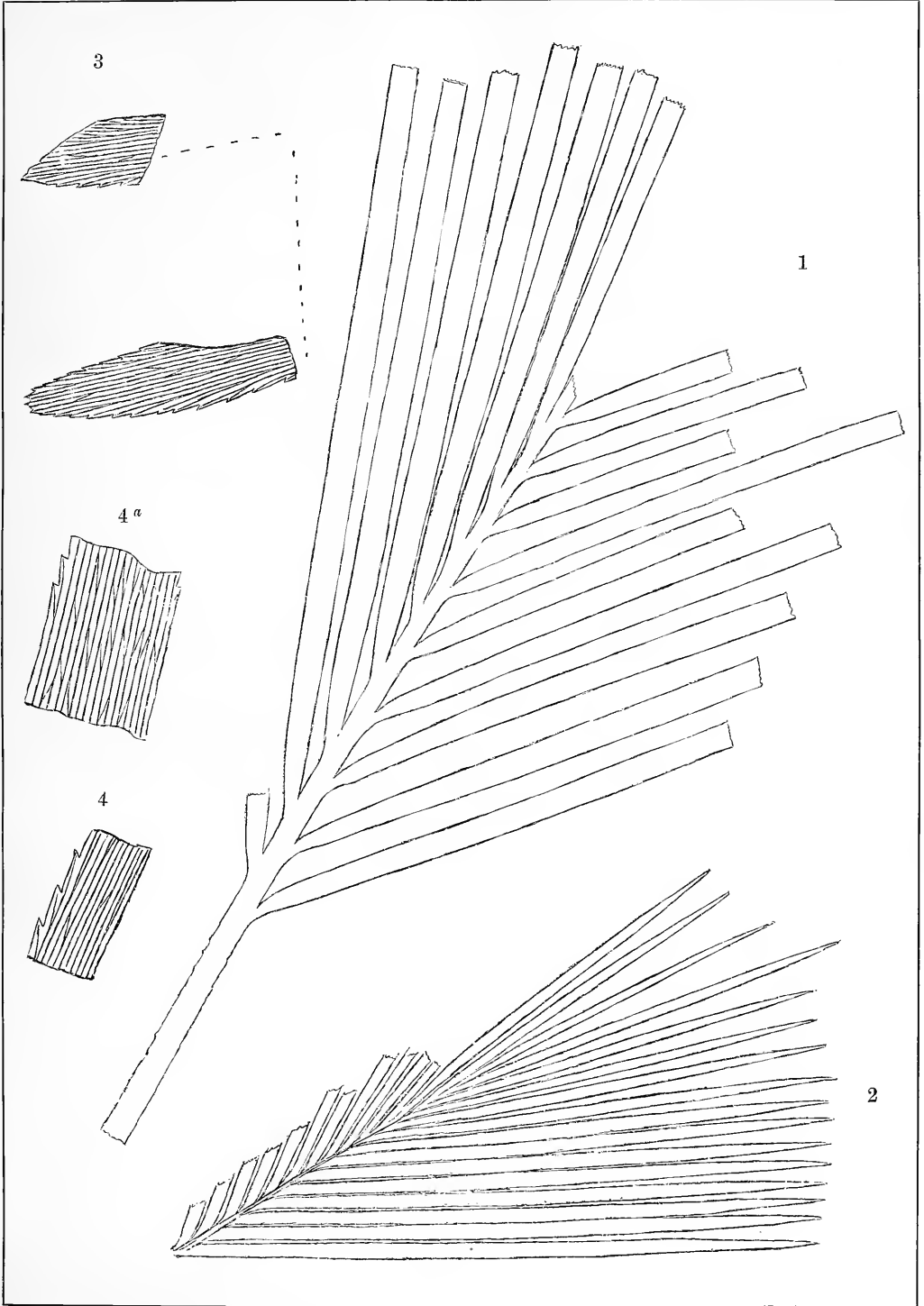


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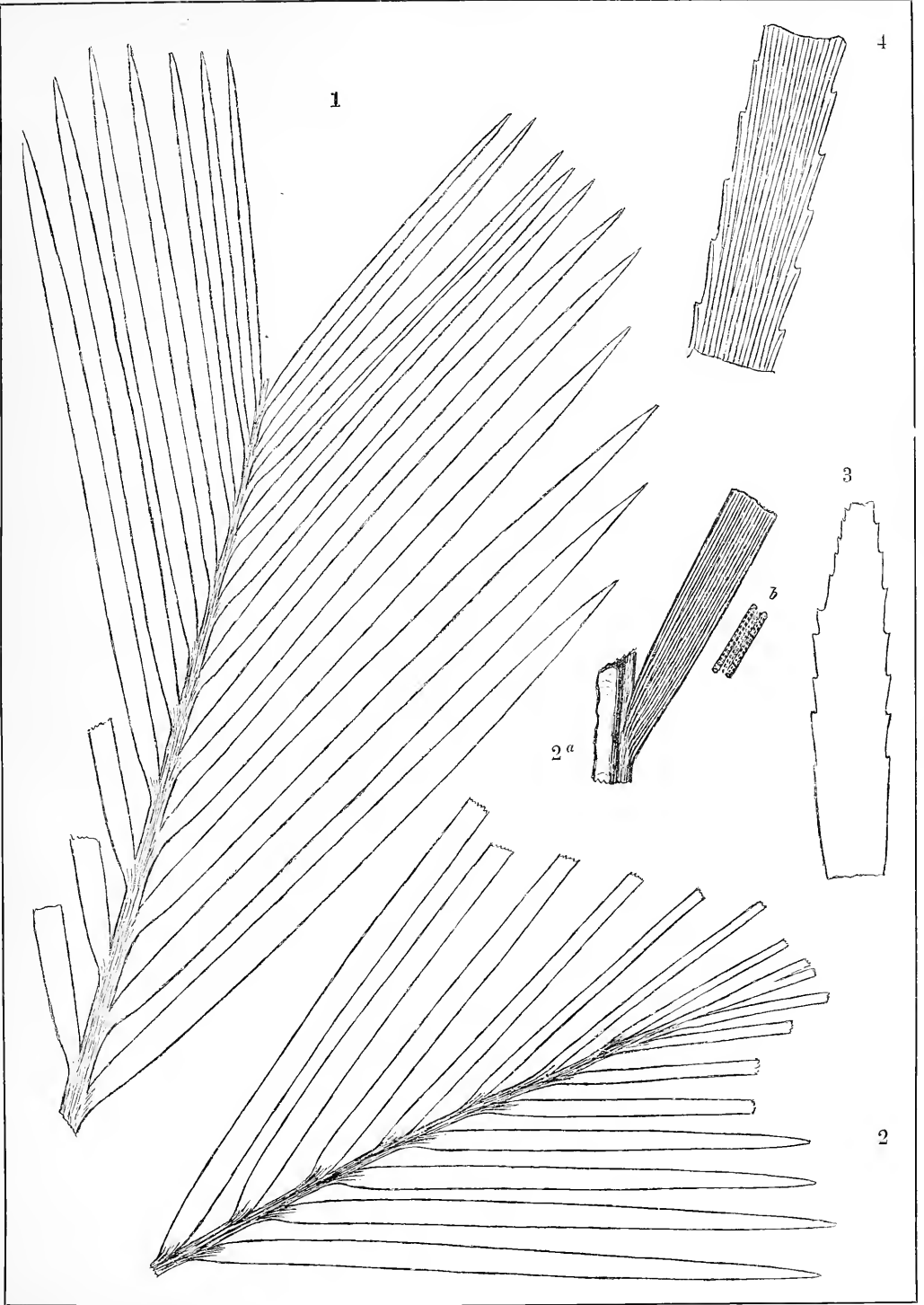


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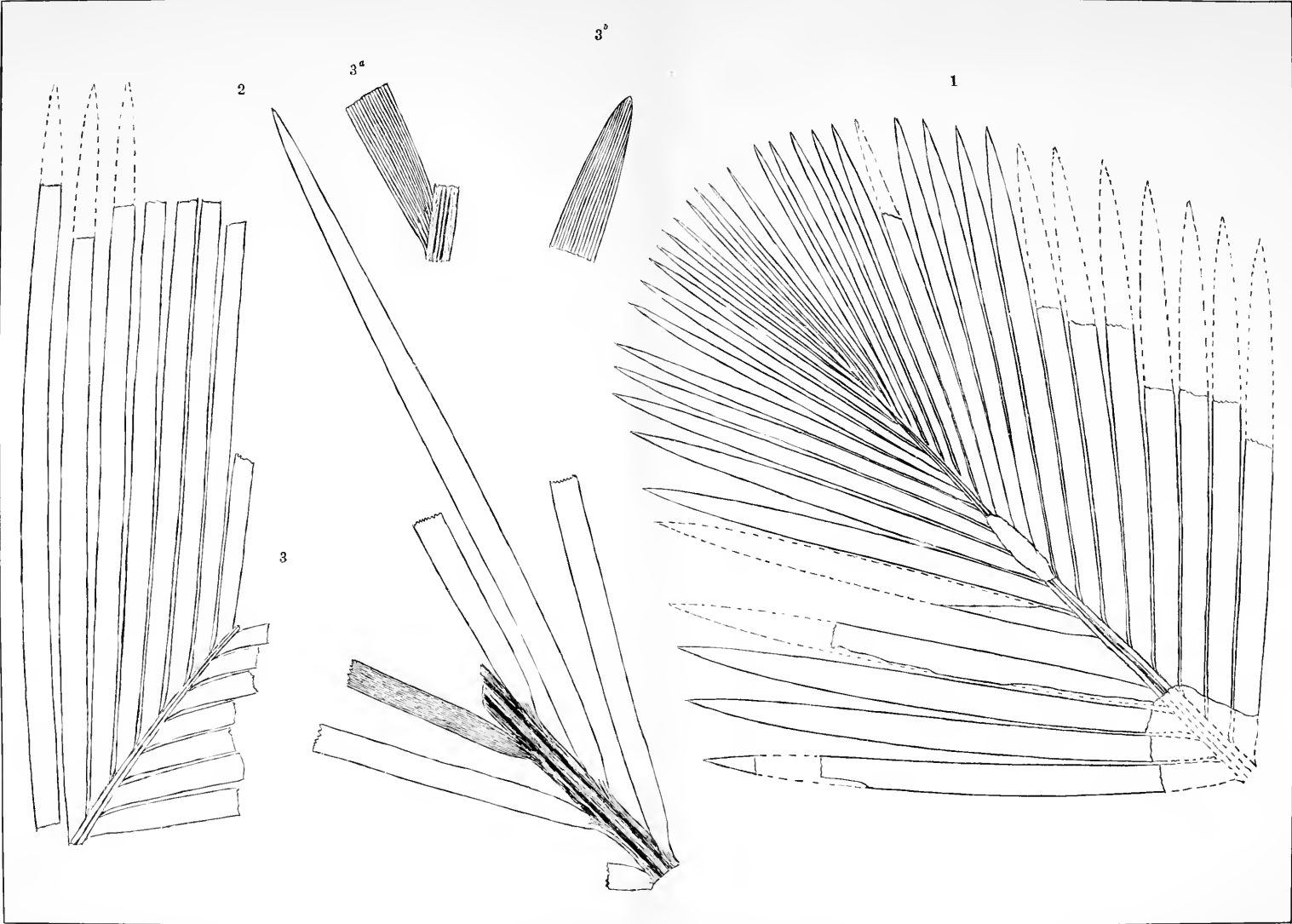






PLATE LXXIV.

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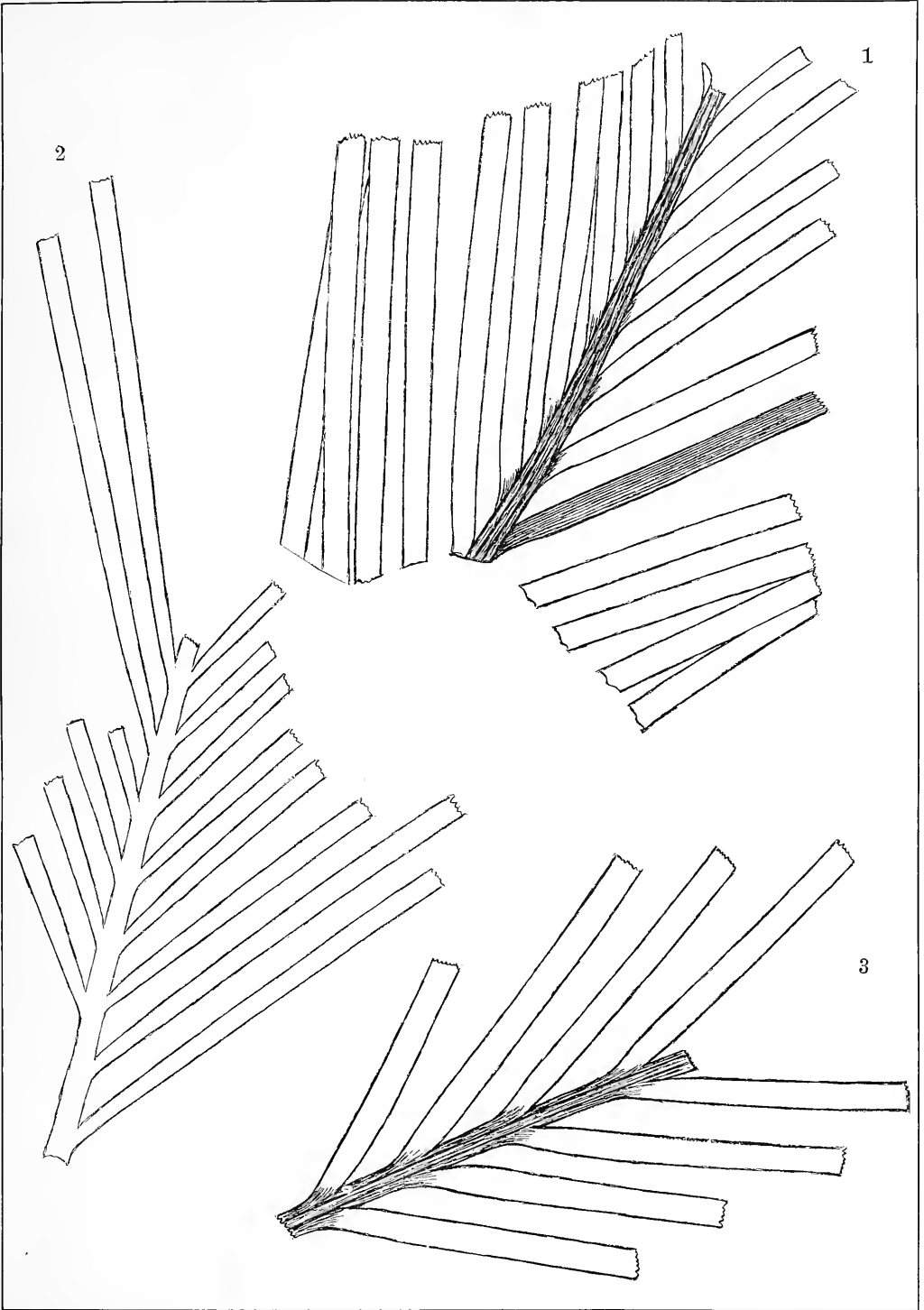




PLATE LXXV.

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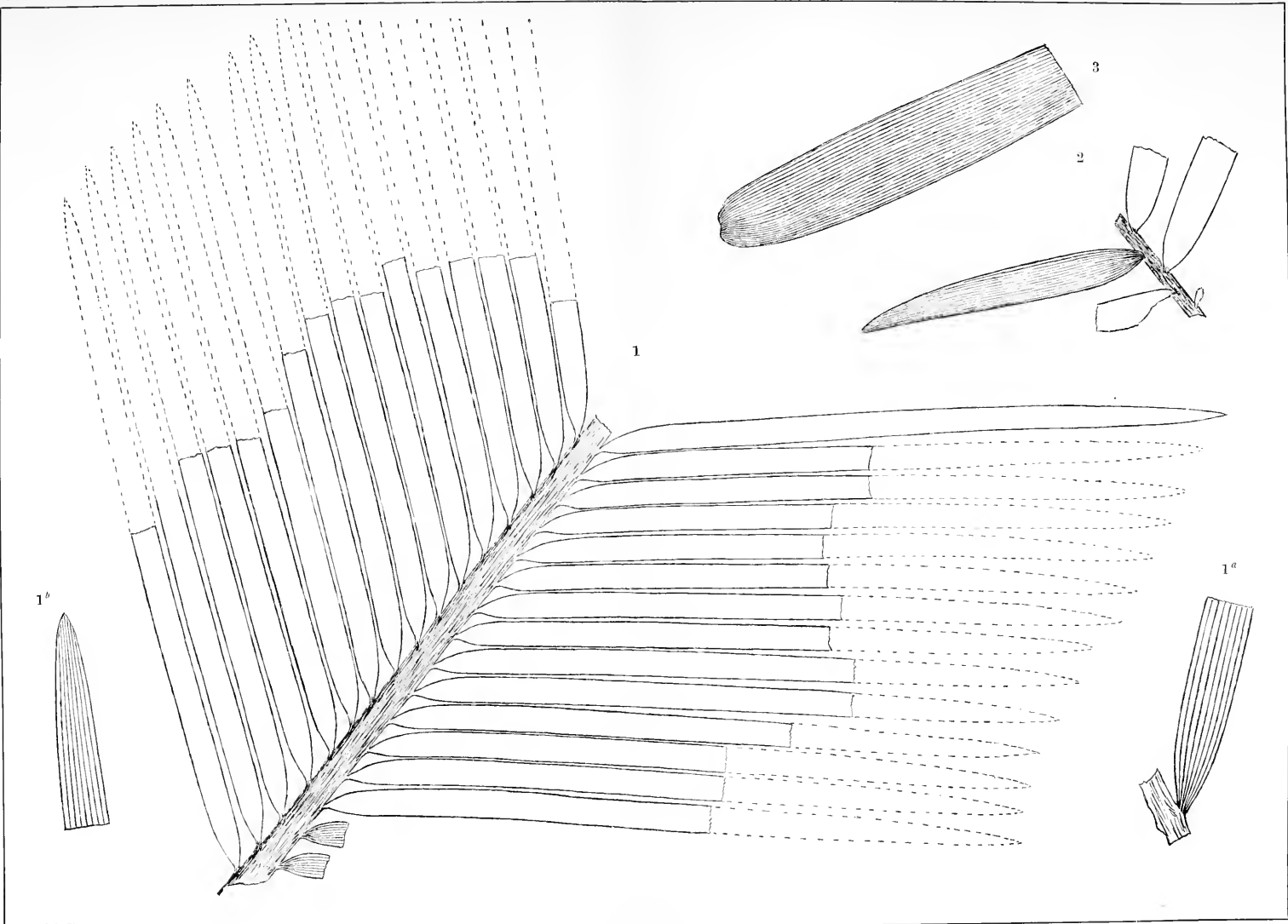




PLATE LXXVI.

PLATE LXXVI.

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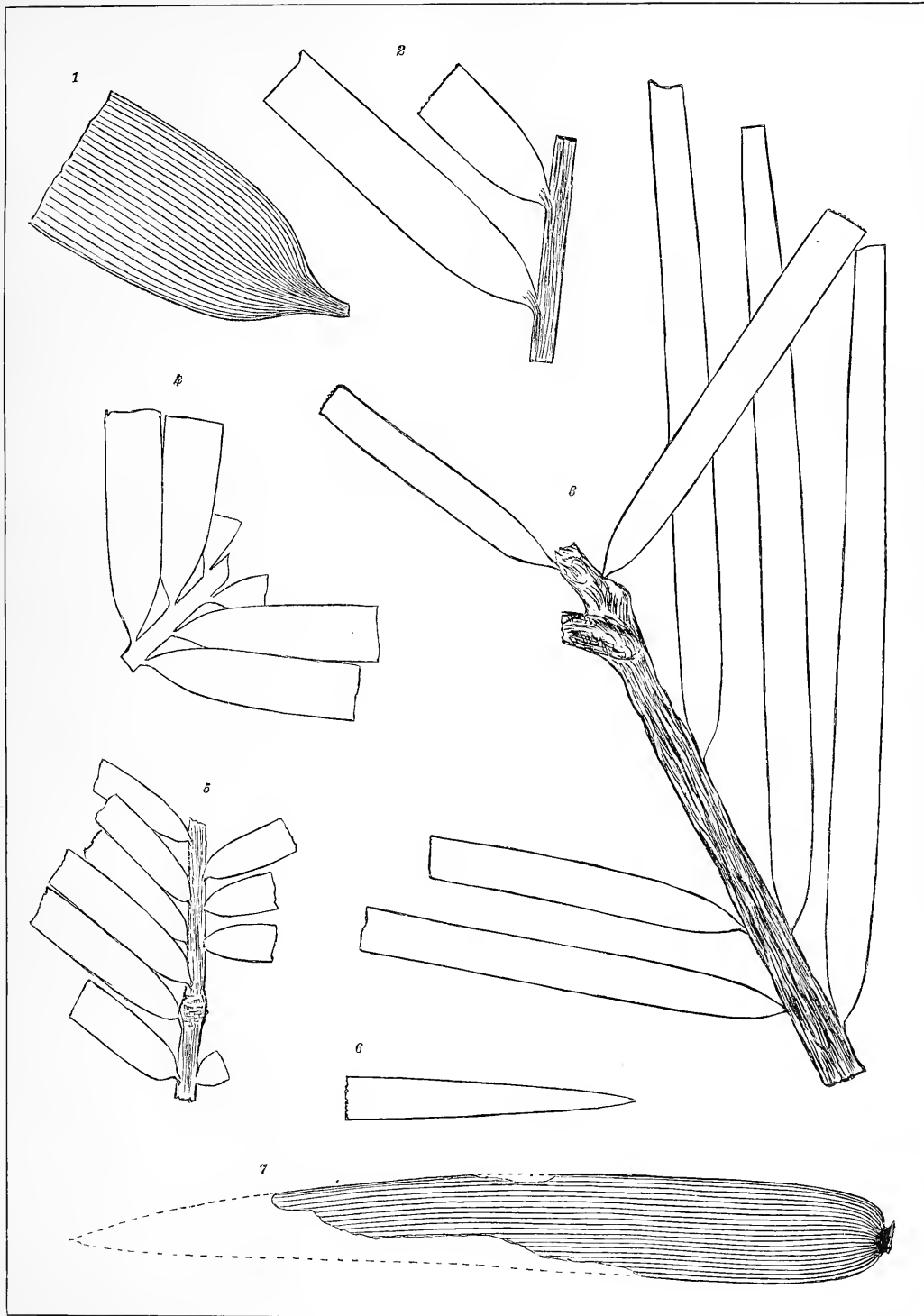
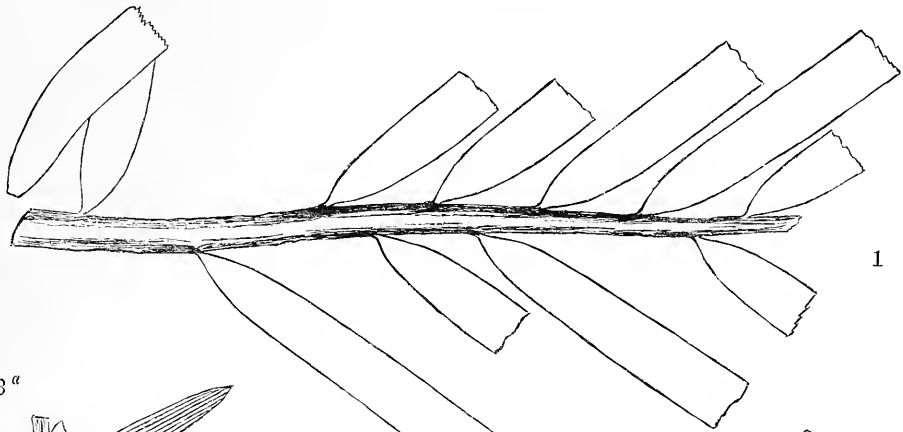


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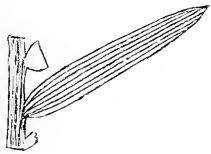
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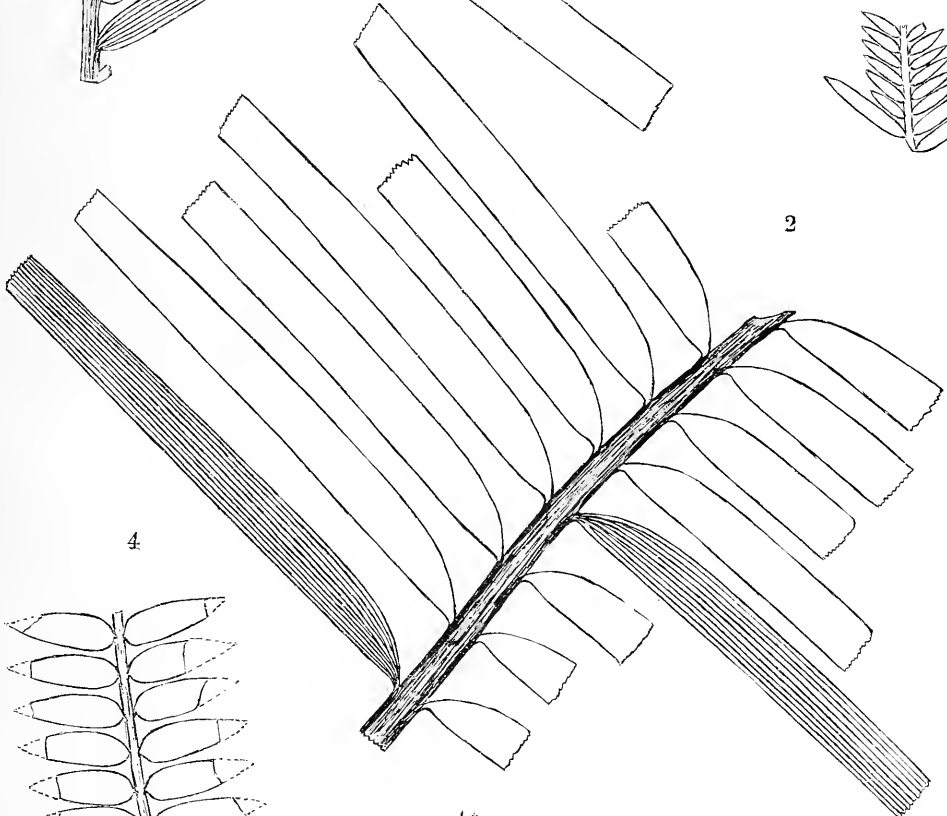
3^a



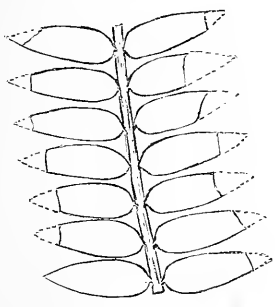
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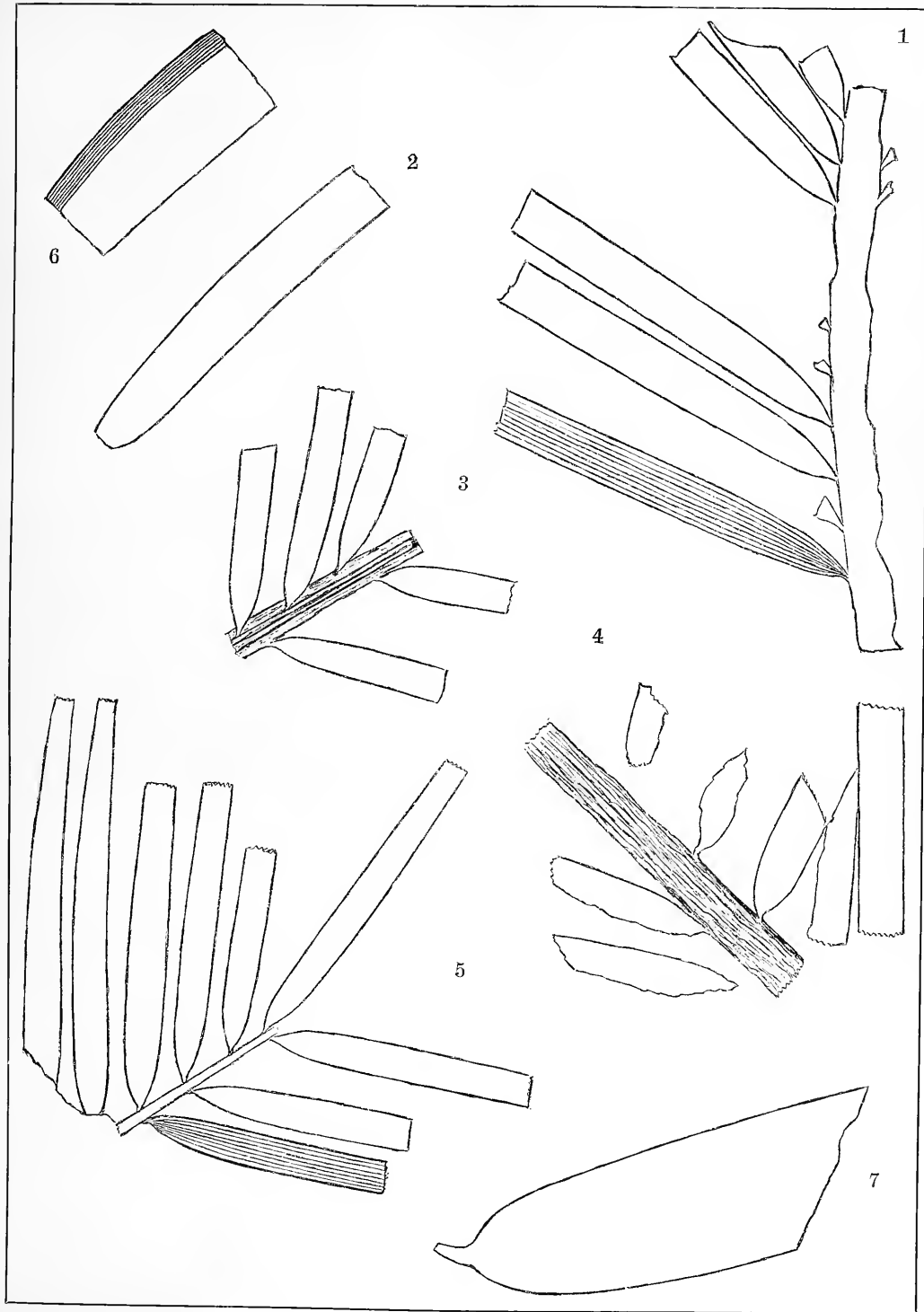




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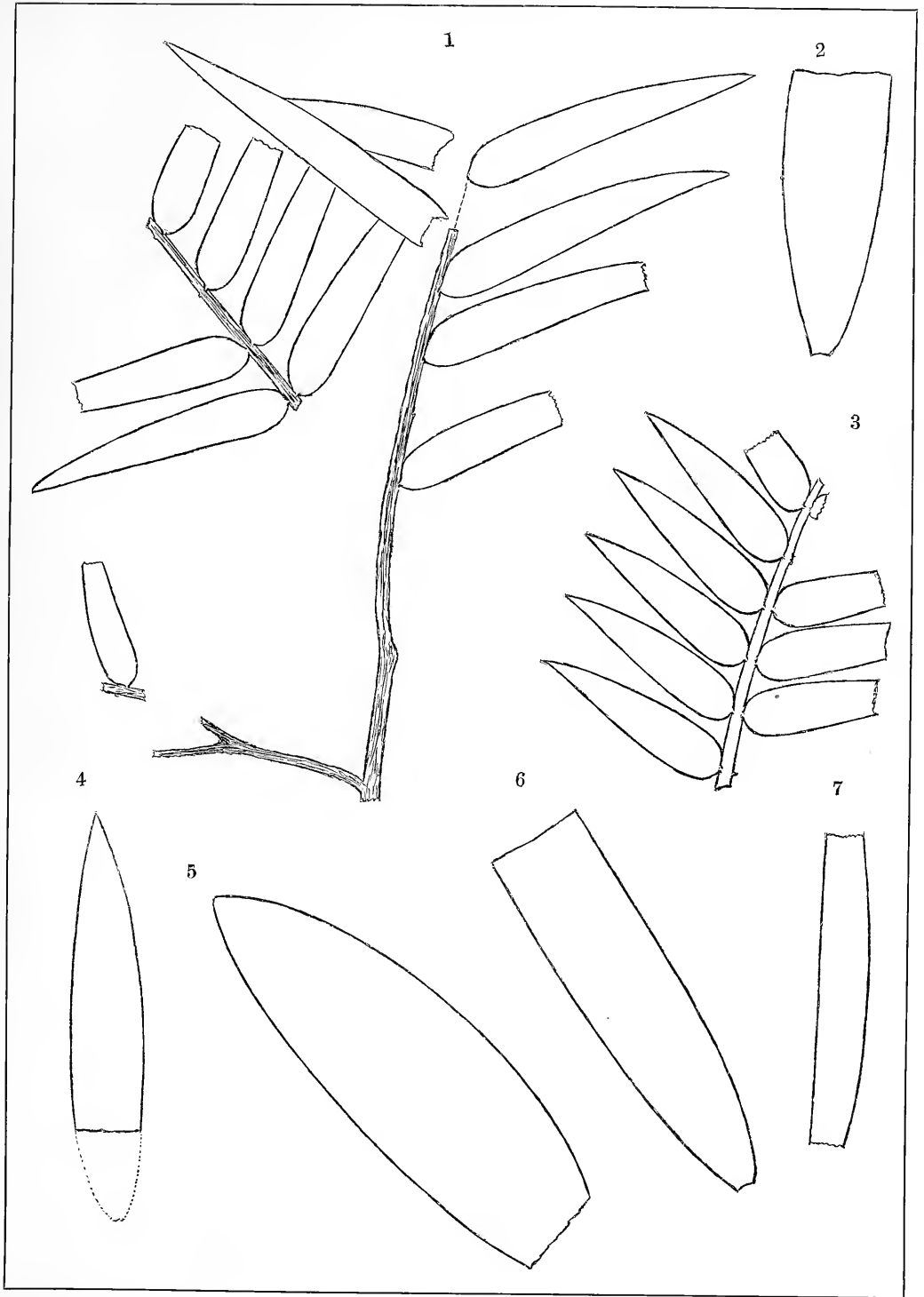




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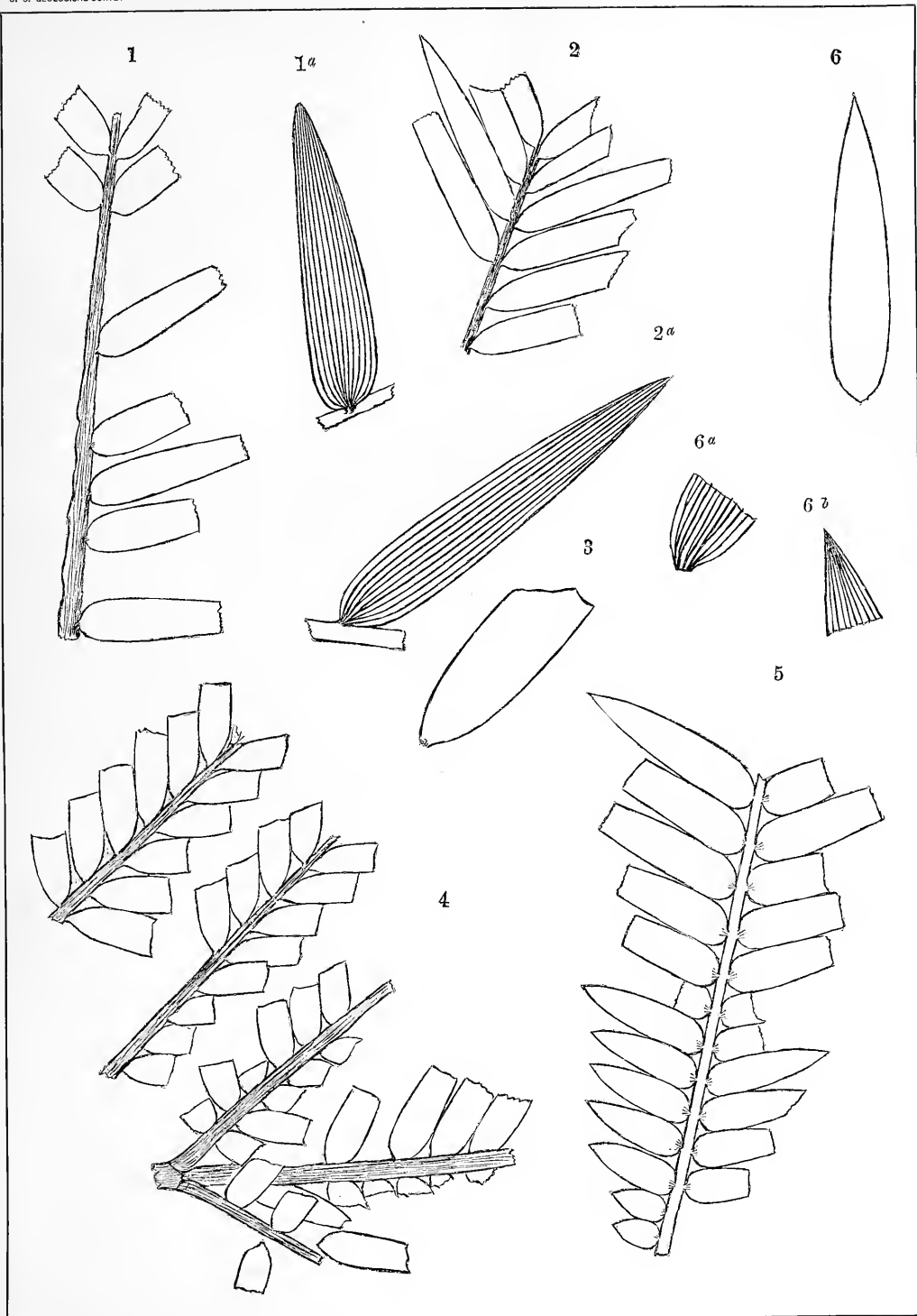




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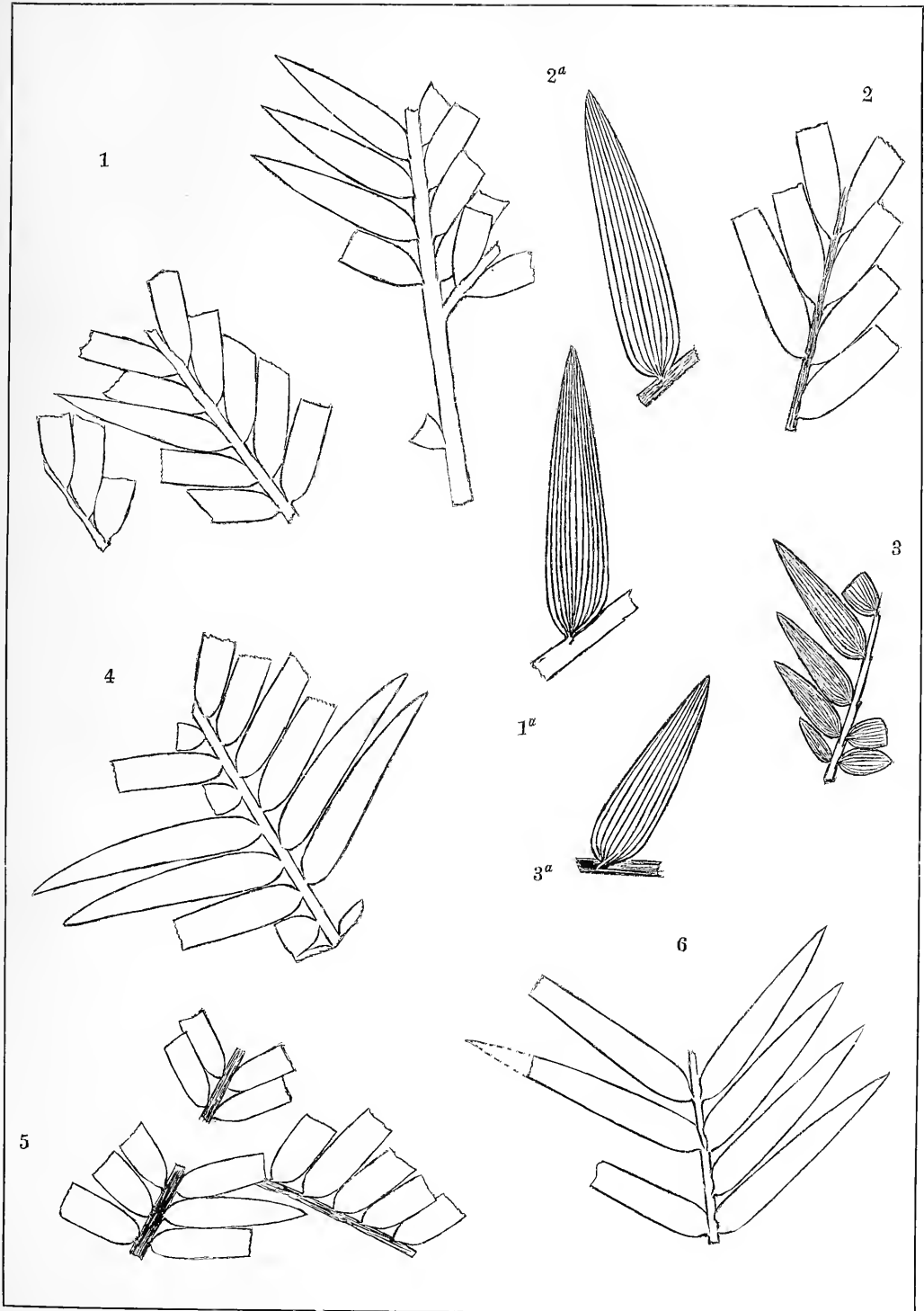


PLATE LXXXII.

PLATE LXXXII.

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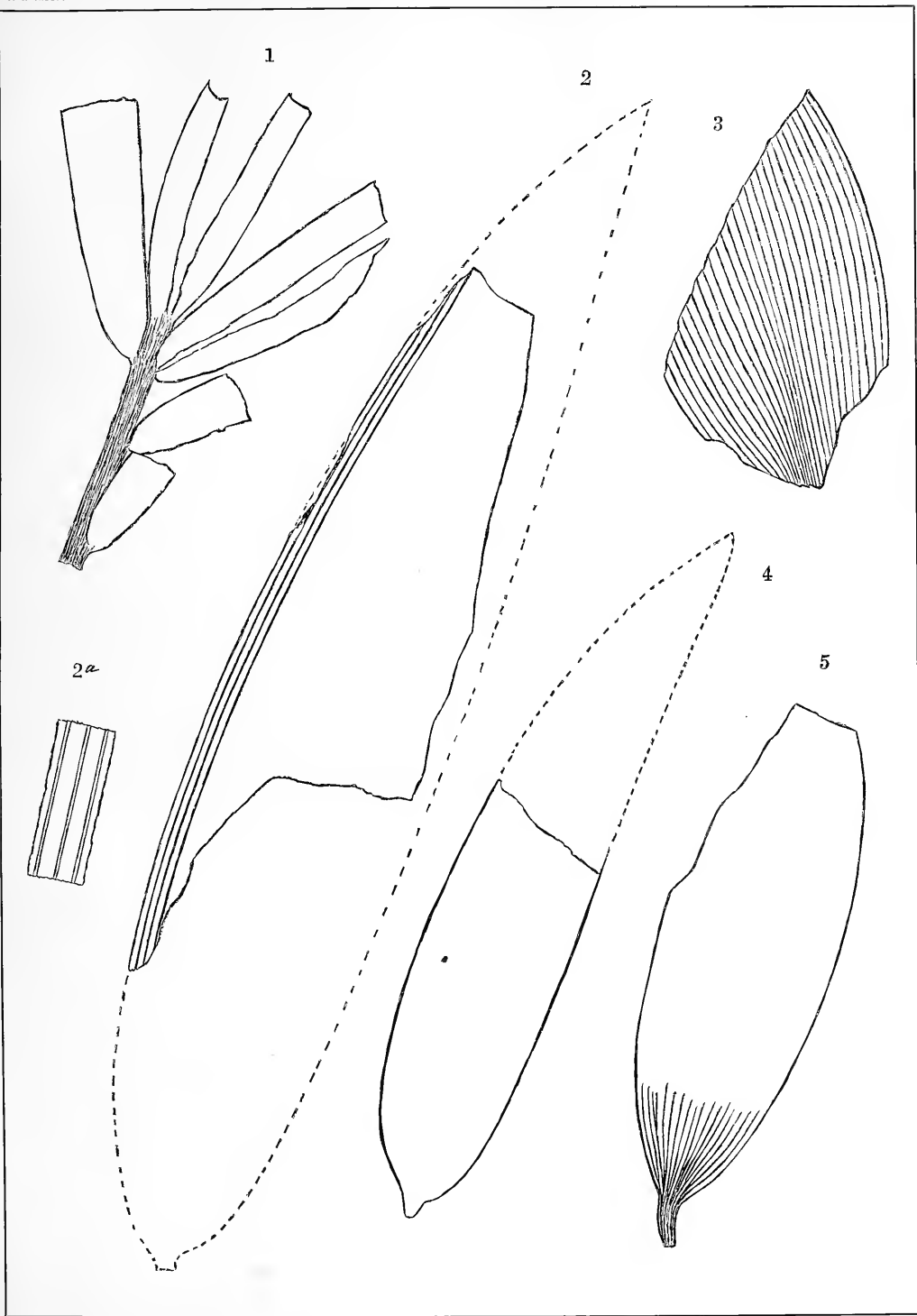
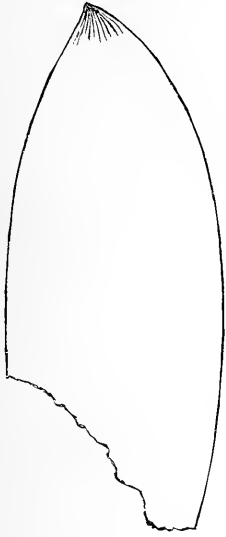


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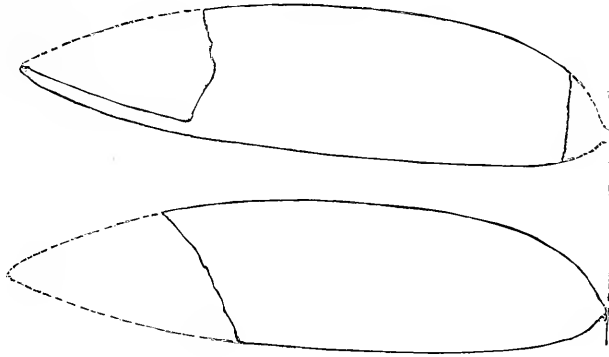
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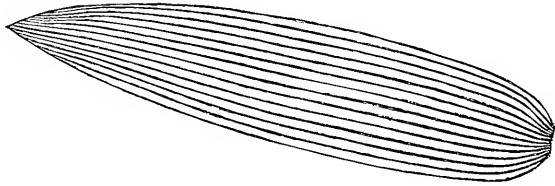
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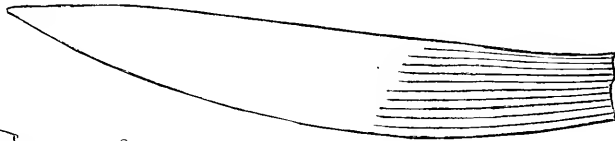
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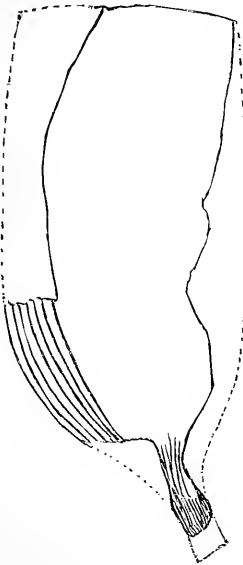
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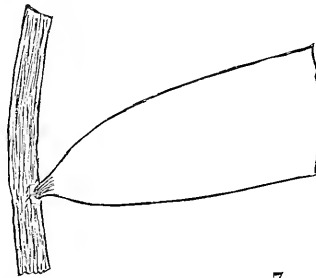
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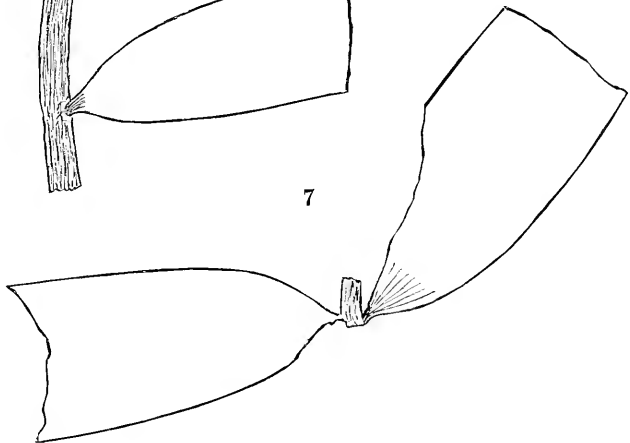




PLATE LXXXIV.

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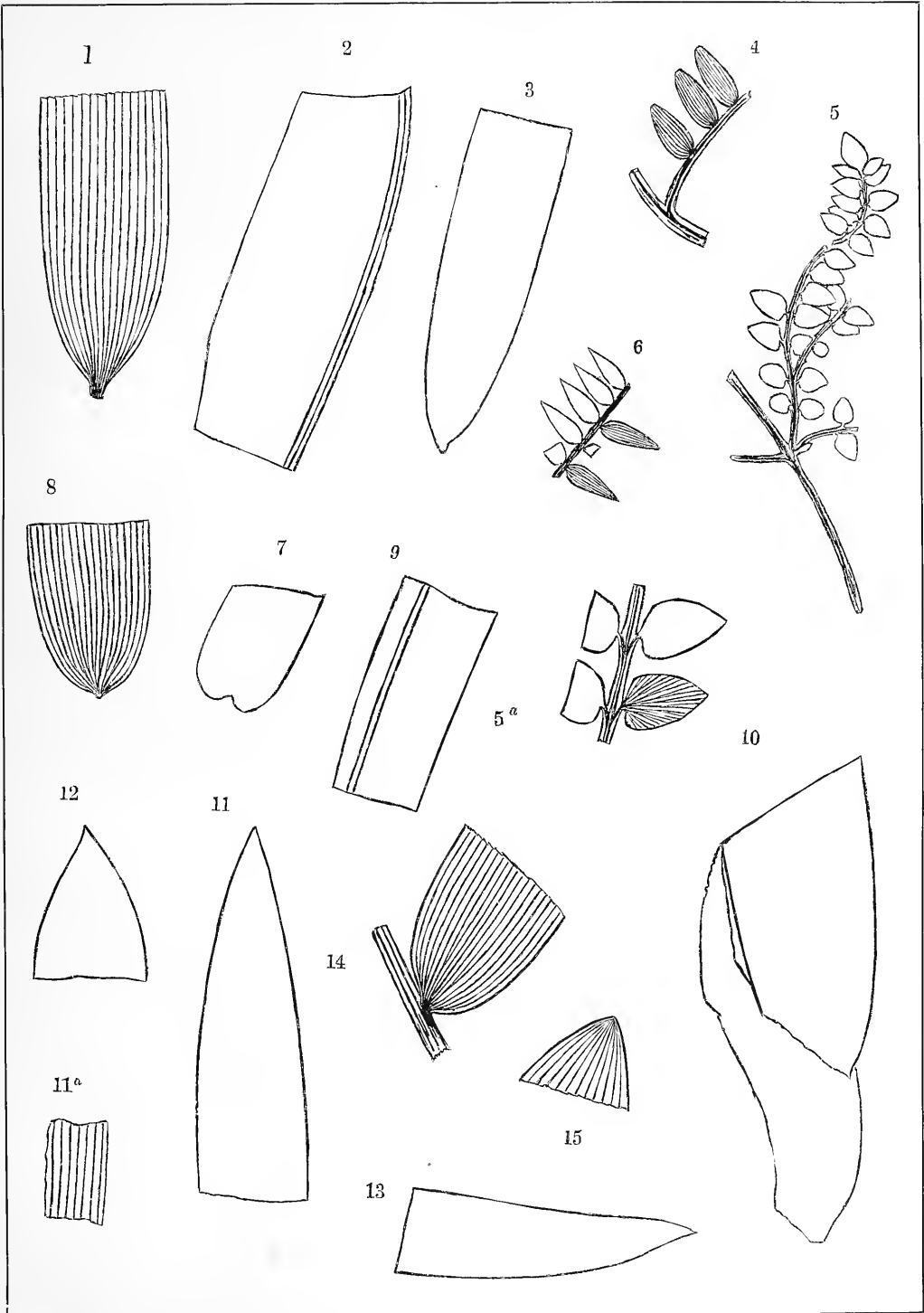




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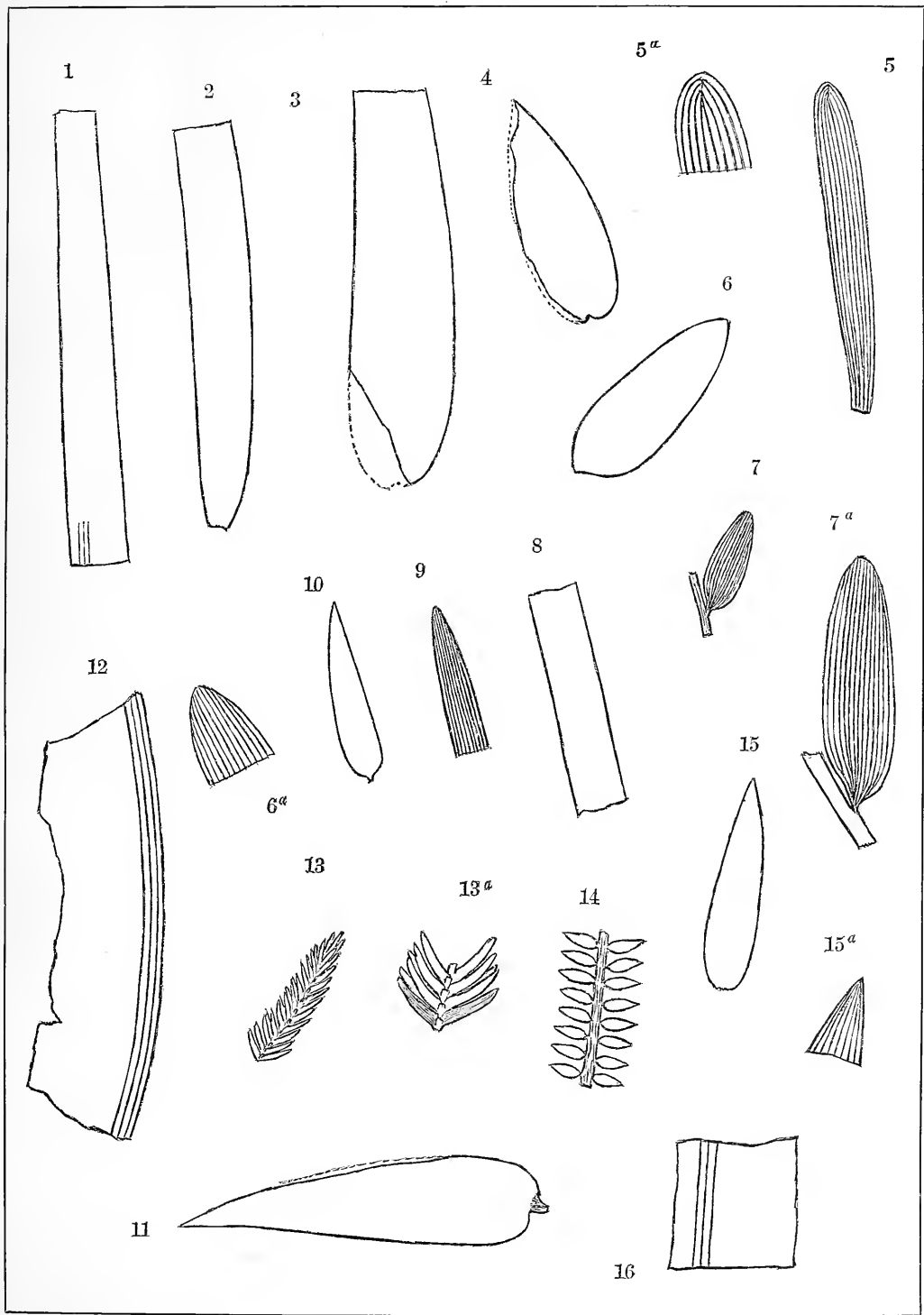




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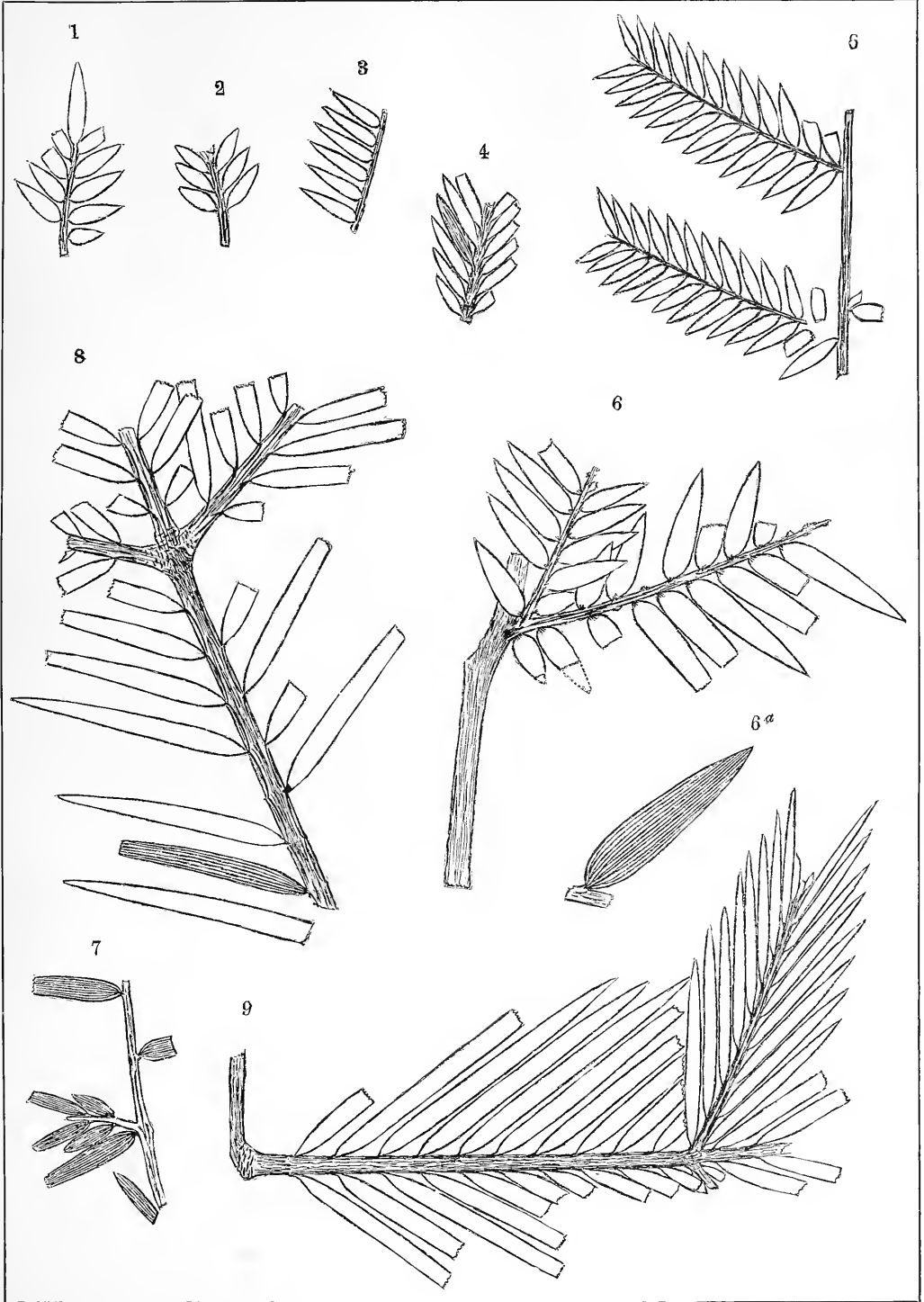


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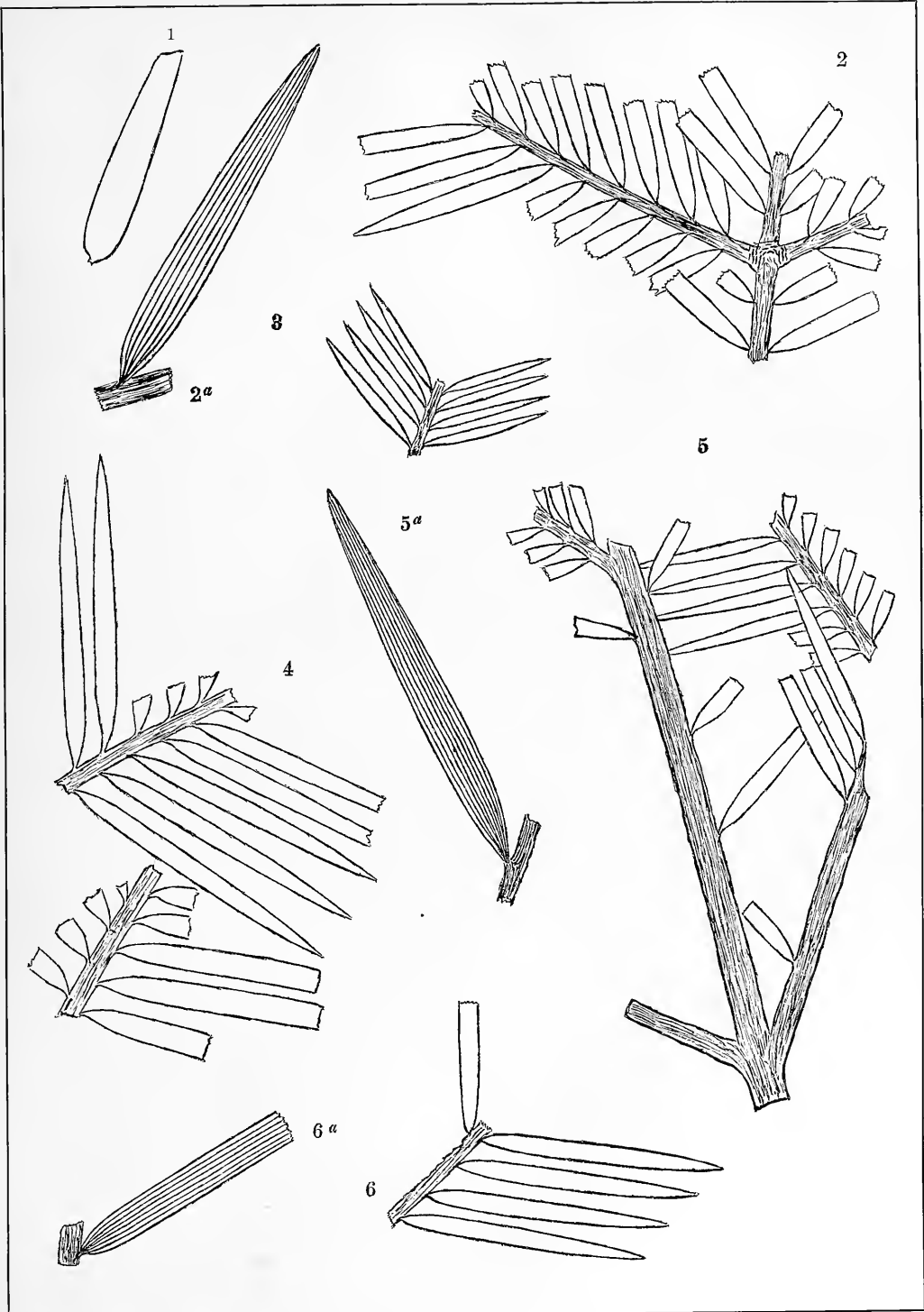


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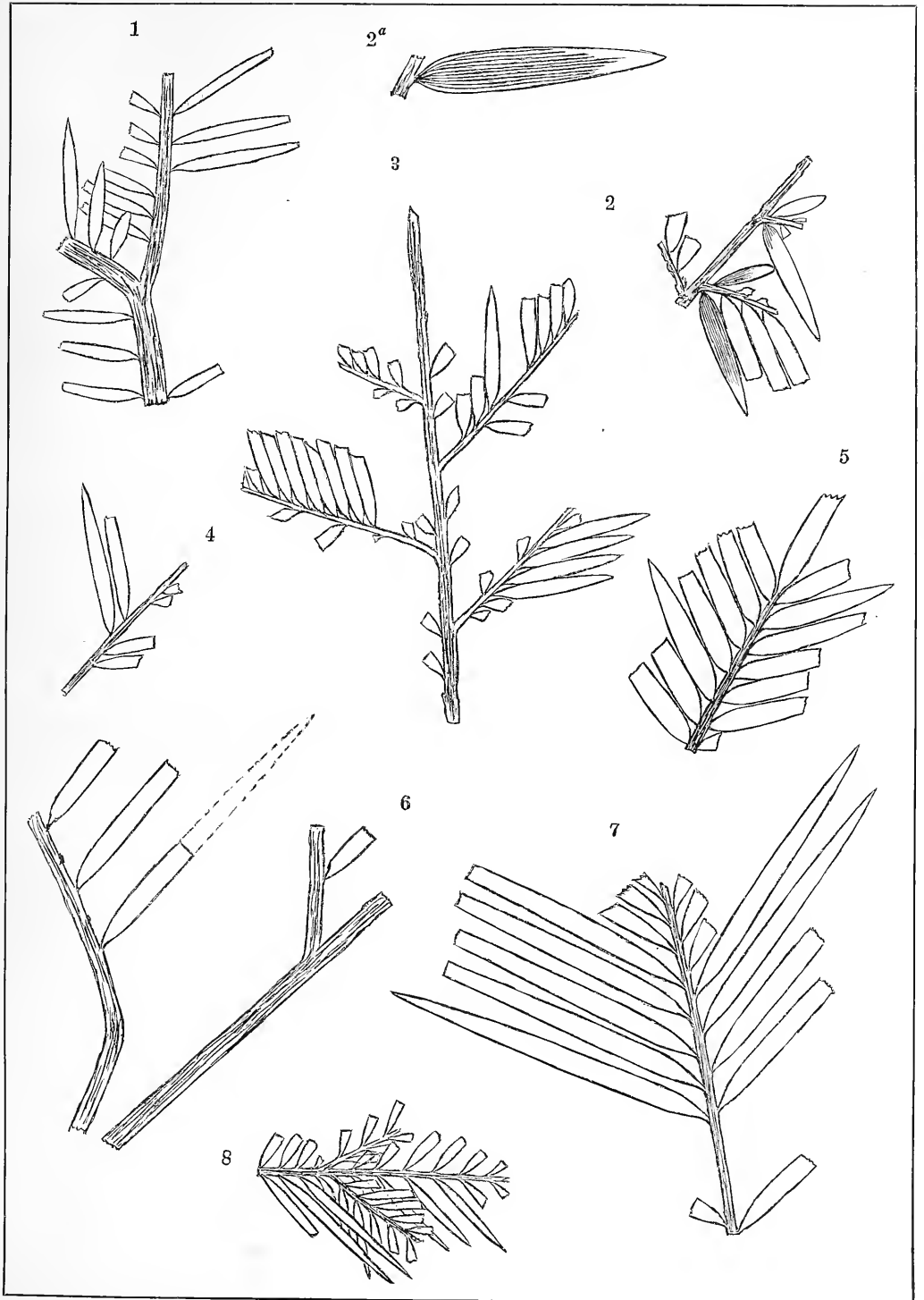


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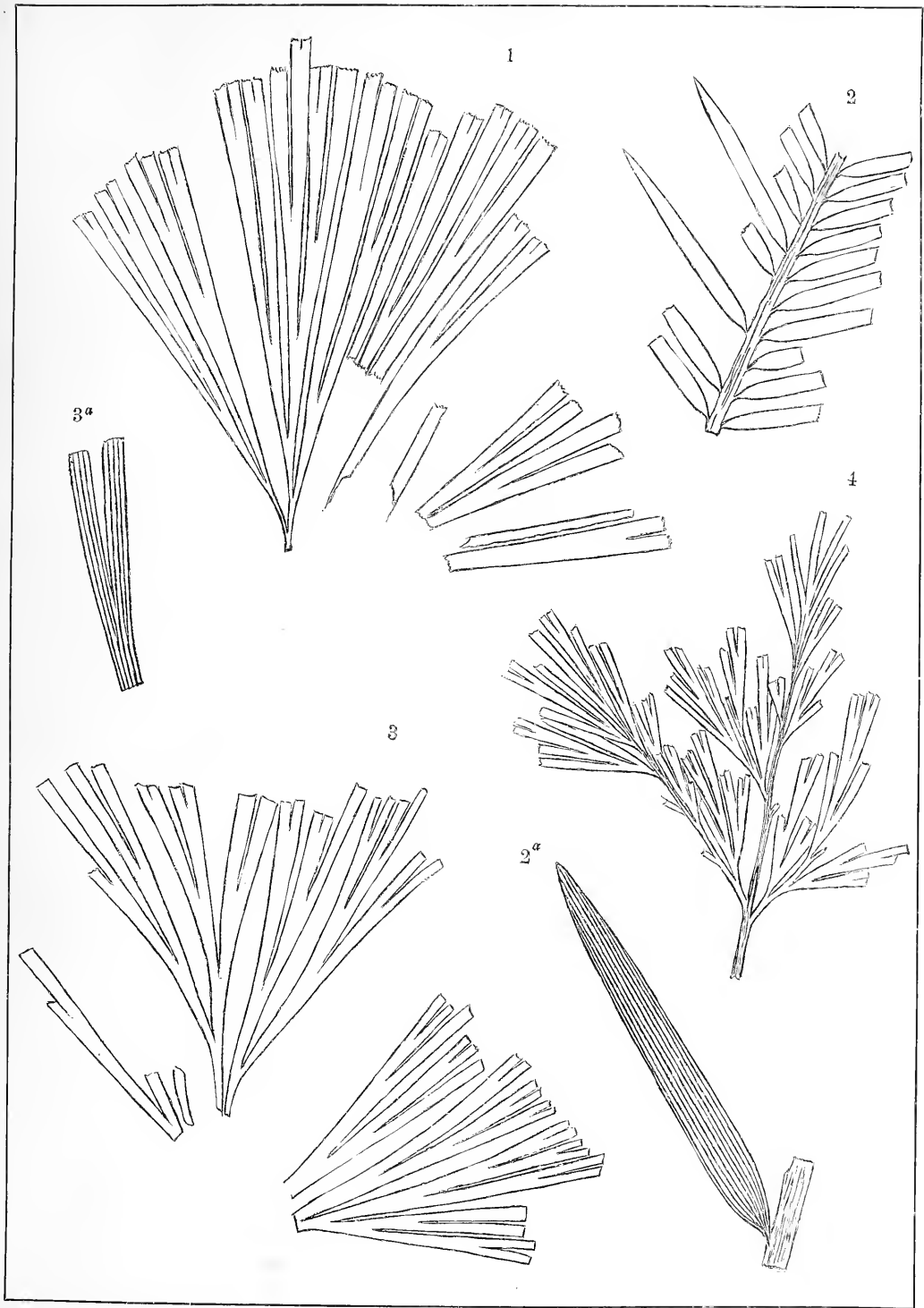


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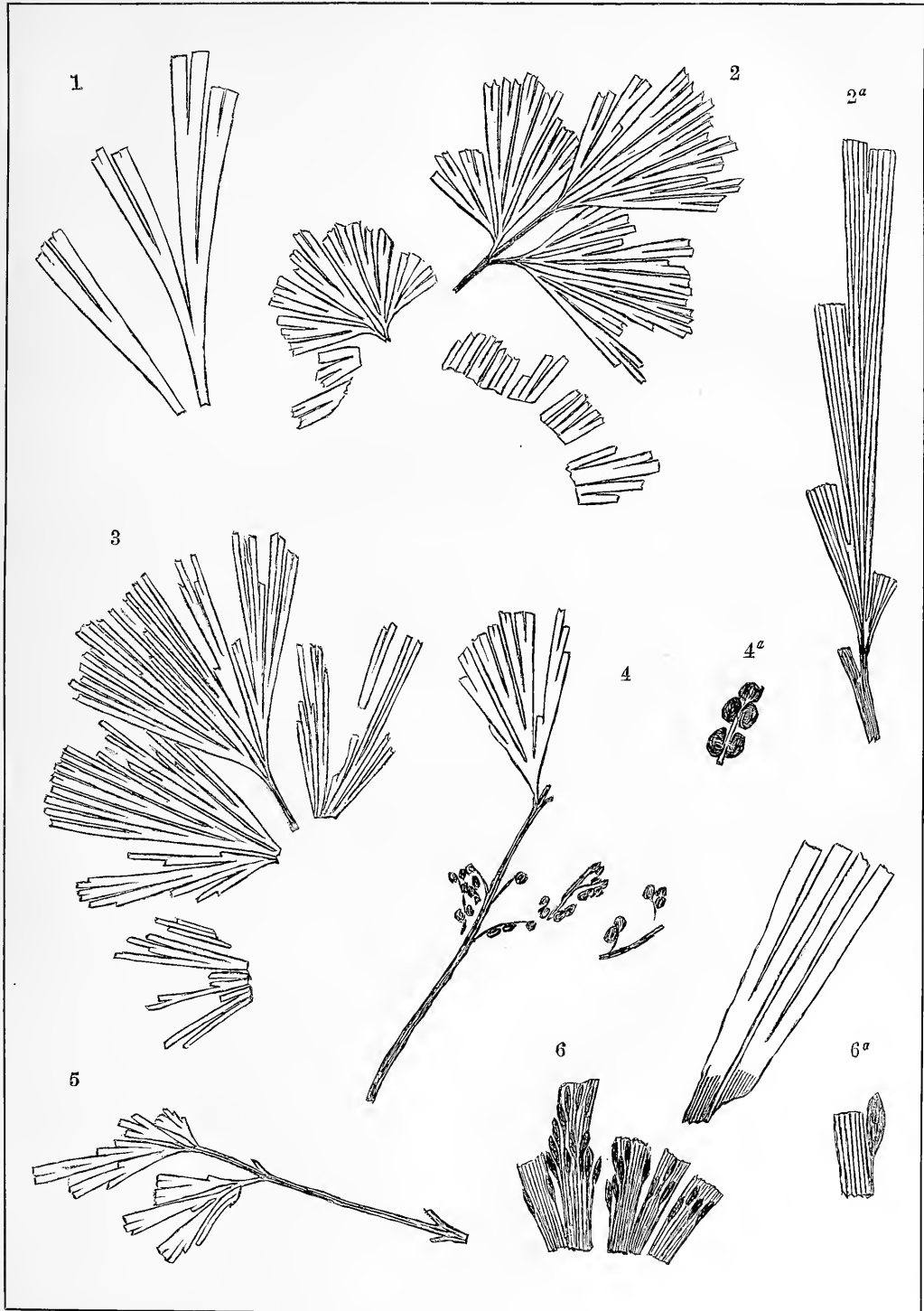


PLATE XCI.

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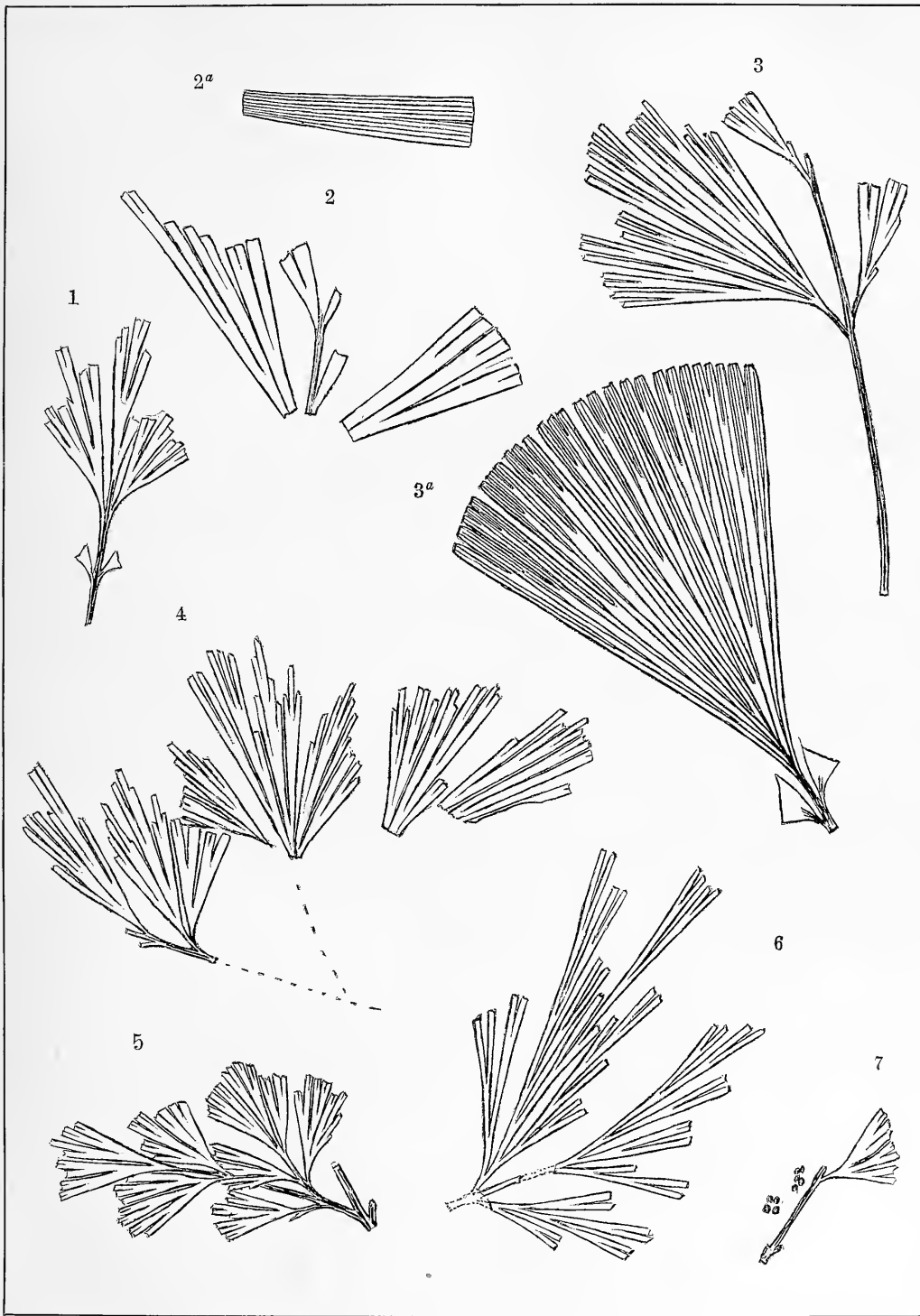


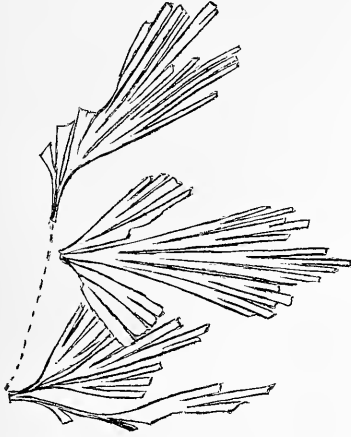


PLATE XCII.

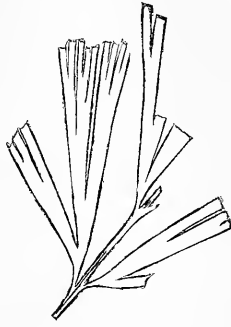
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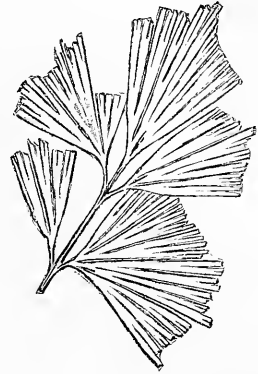
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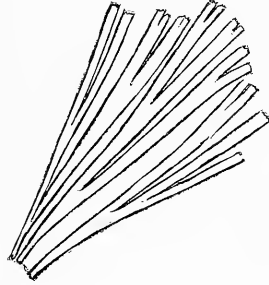
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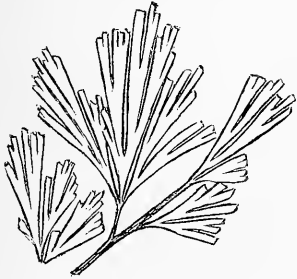
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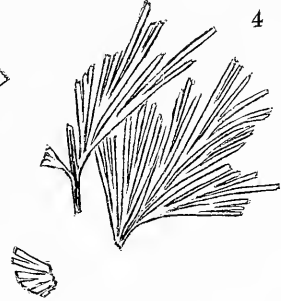
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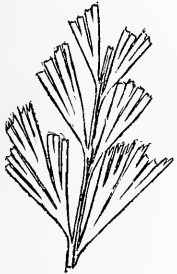
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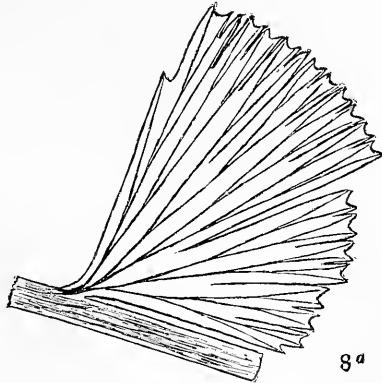
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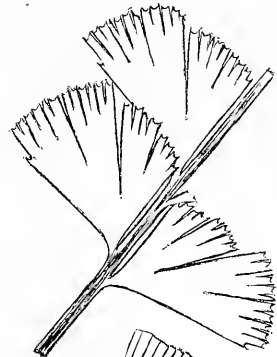
7



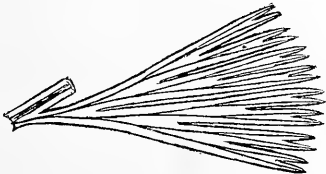
8



8^a



7^a



9

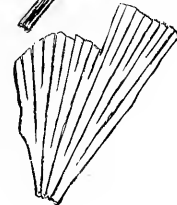


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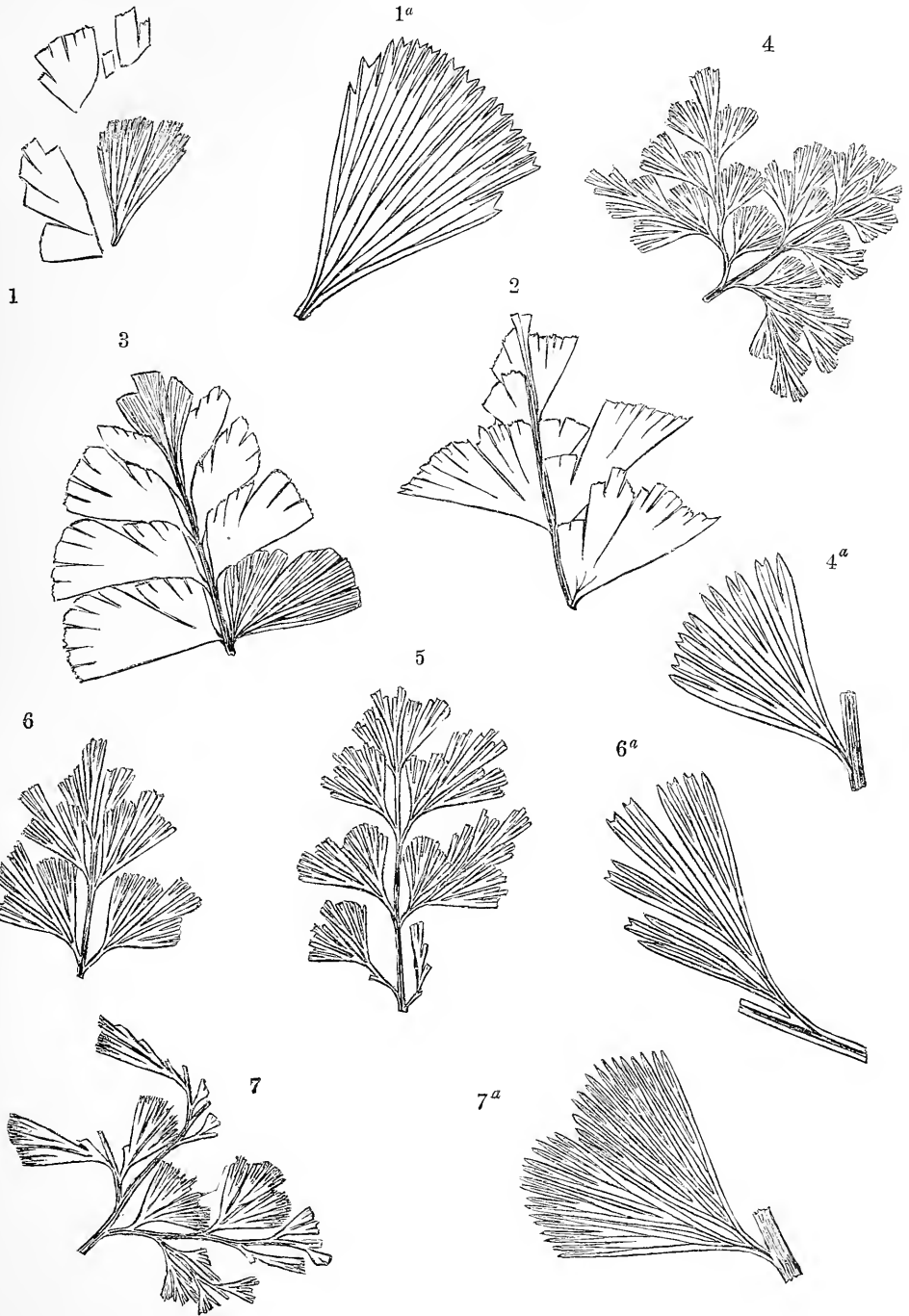




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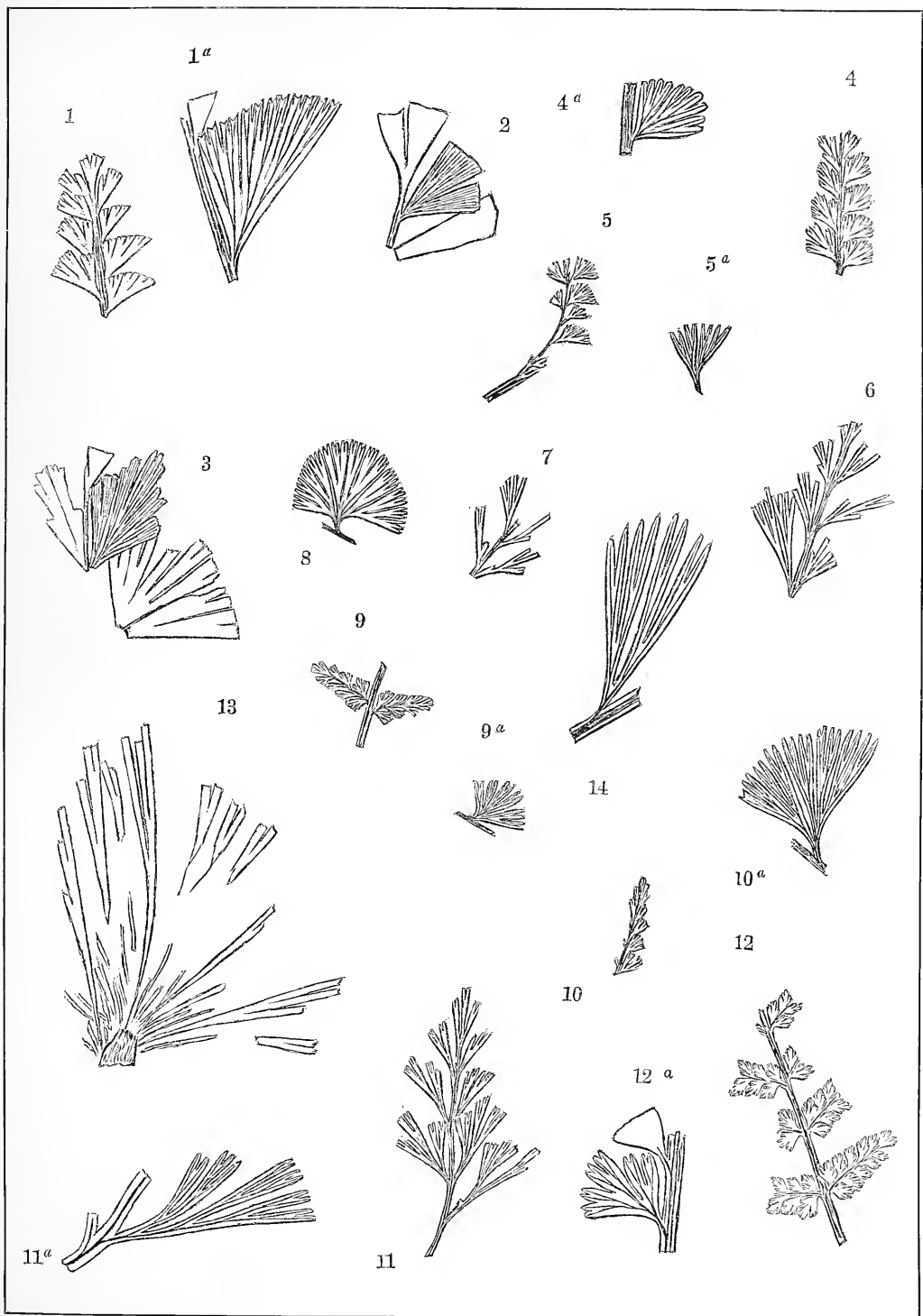


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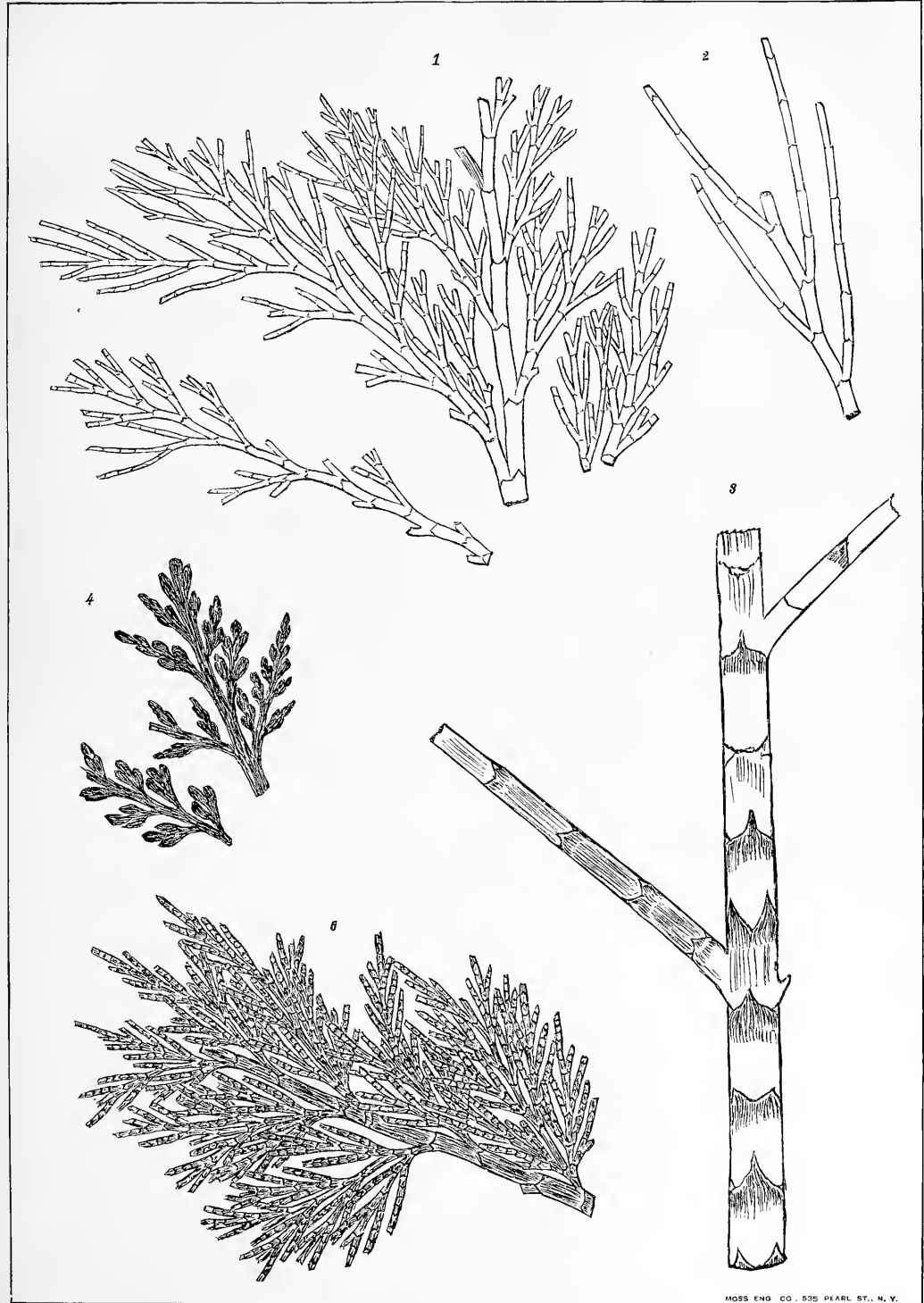


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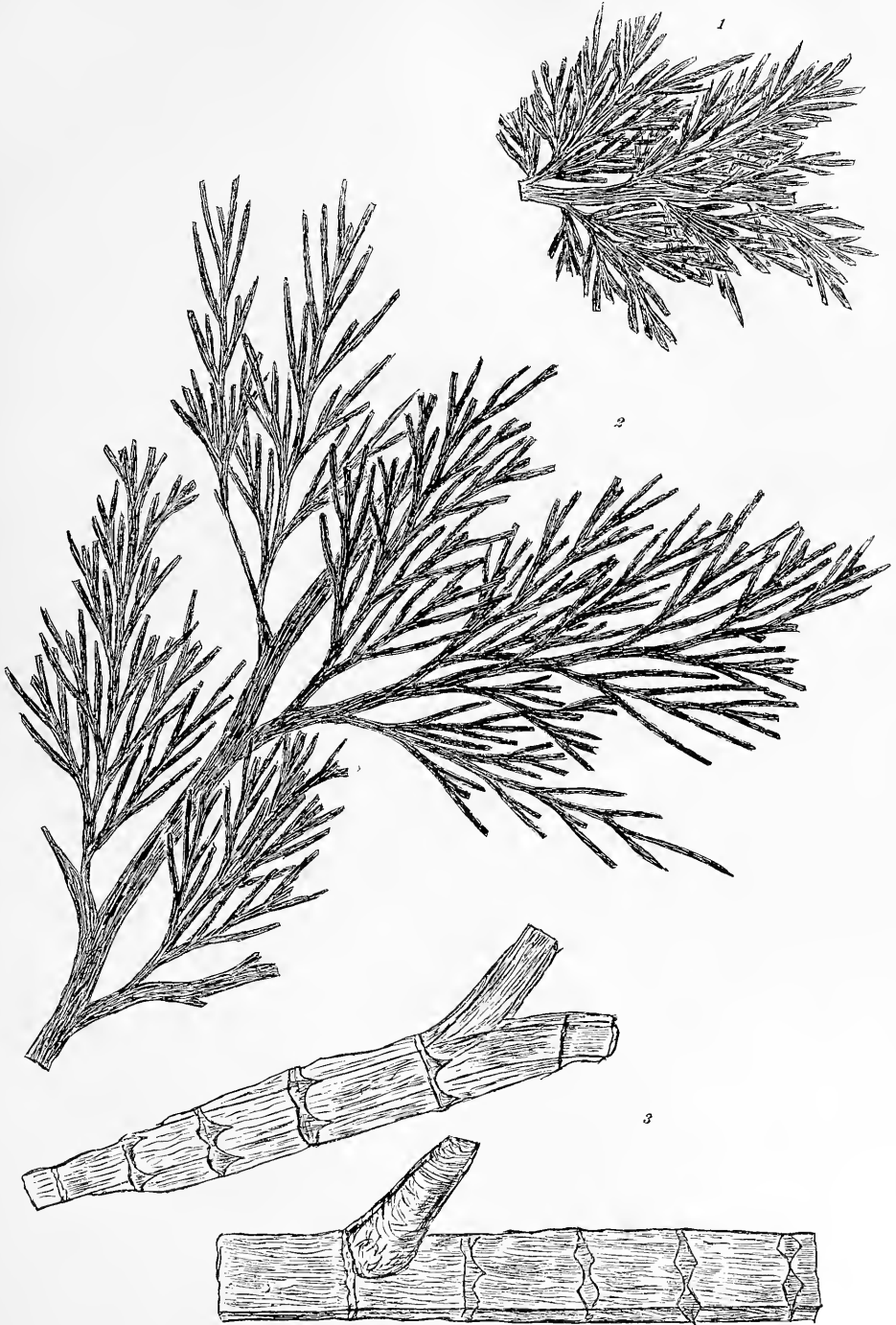


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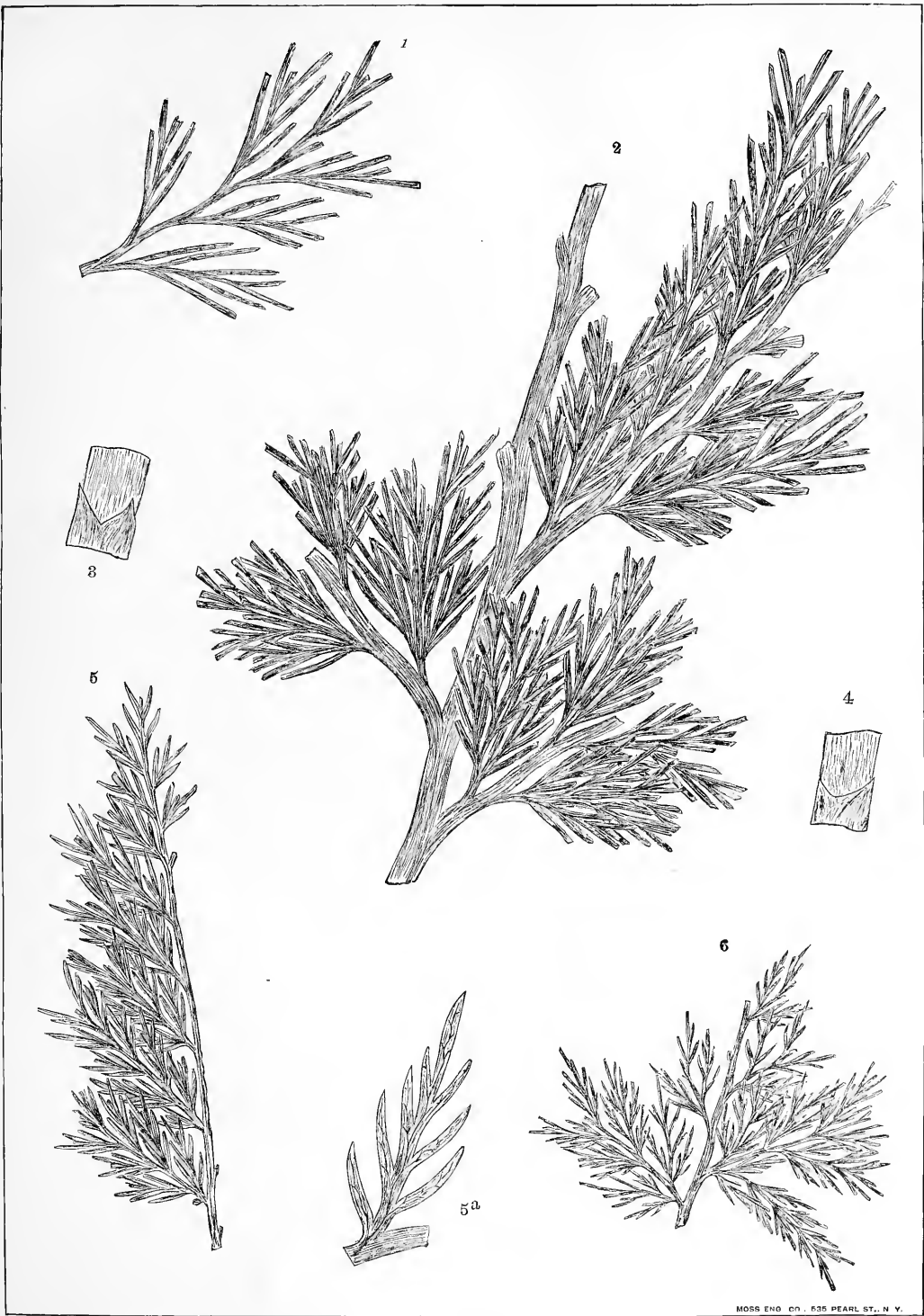


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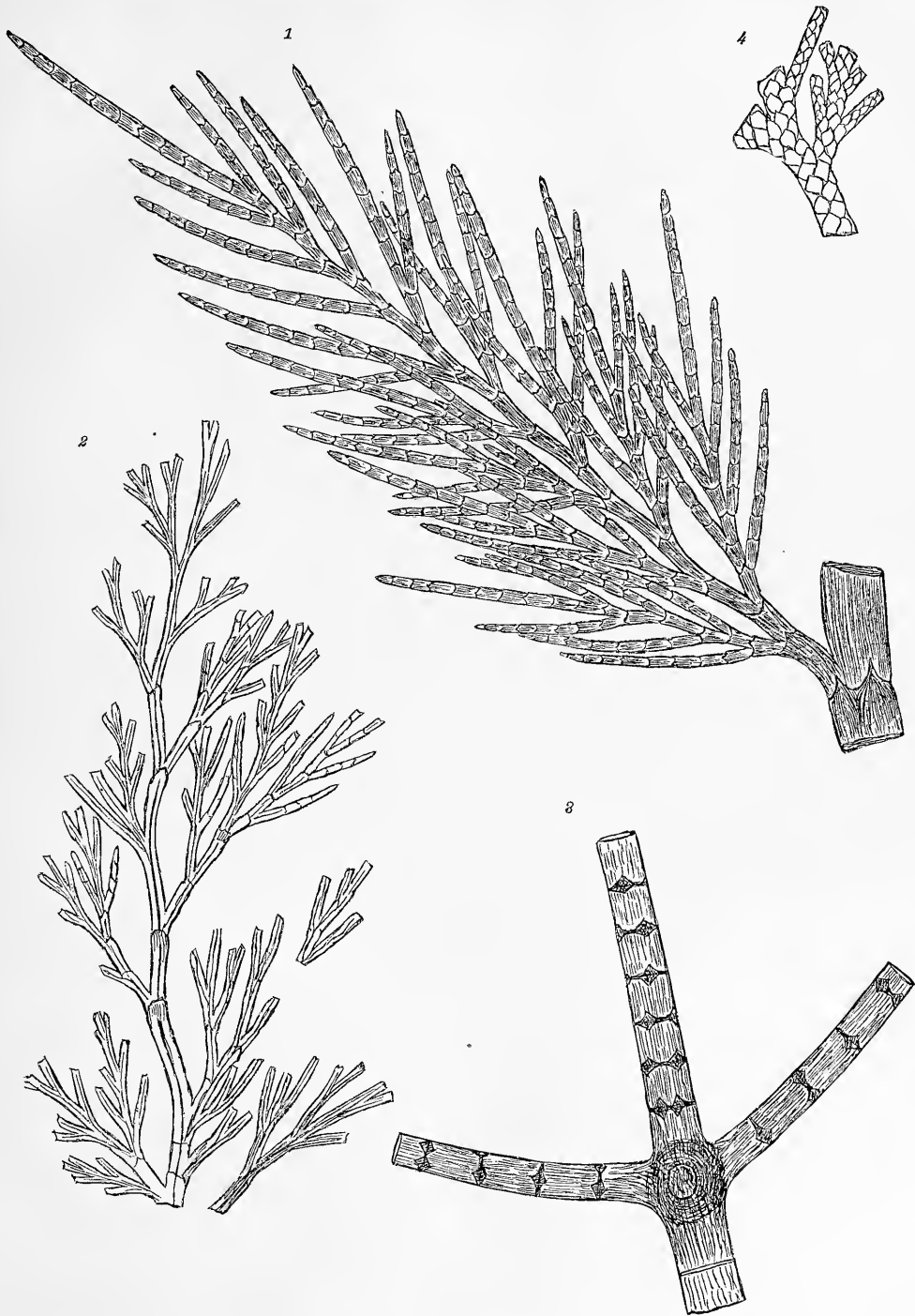


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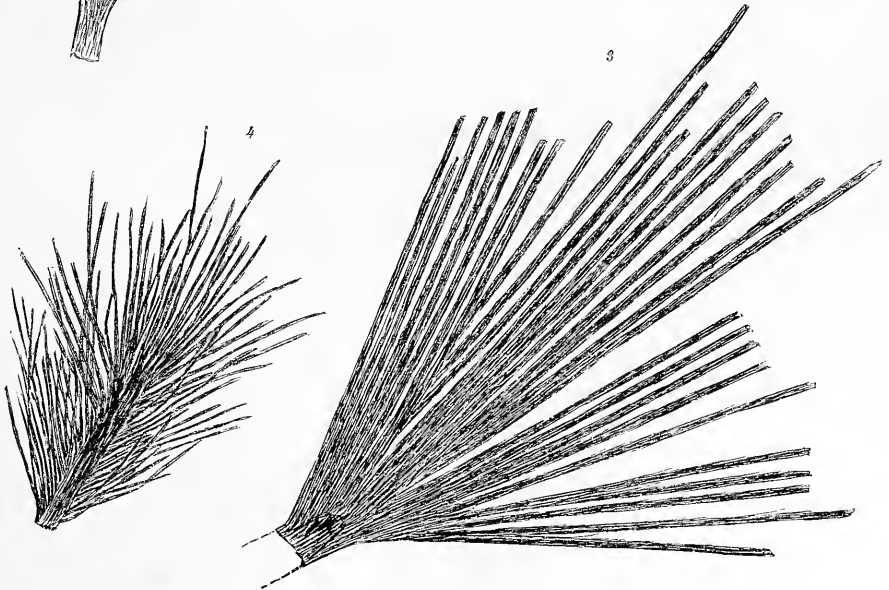
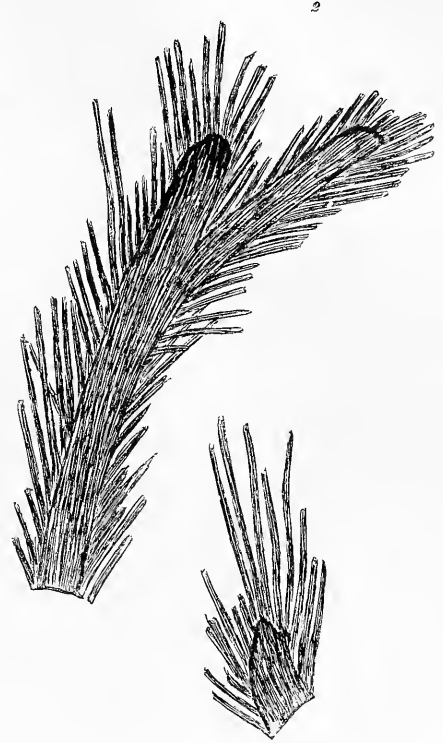


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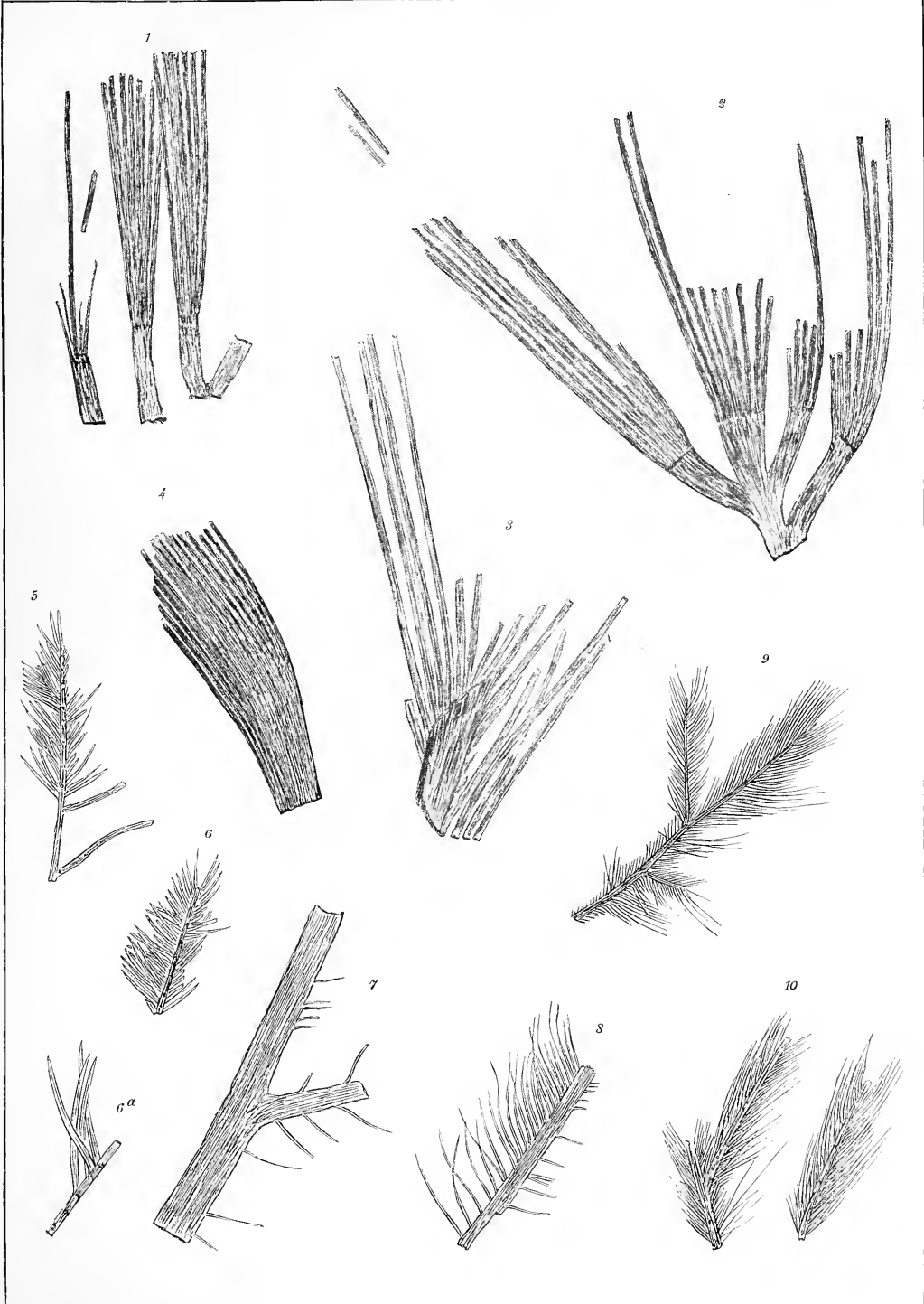




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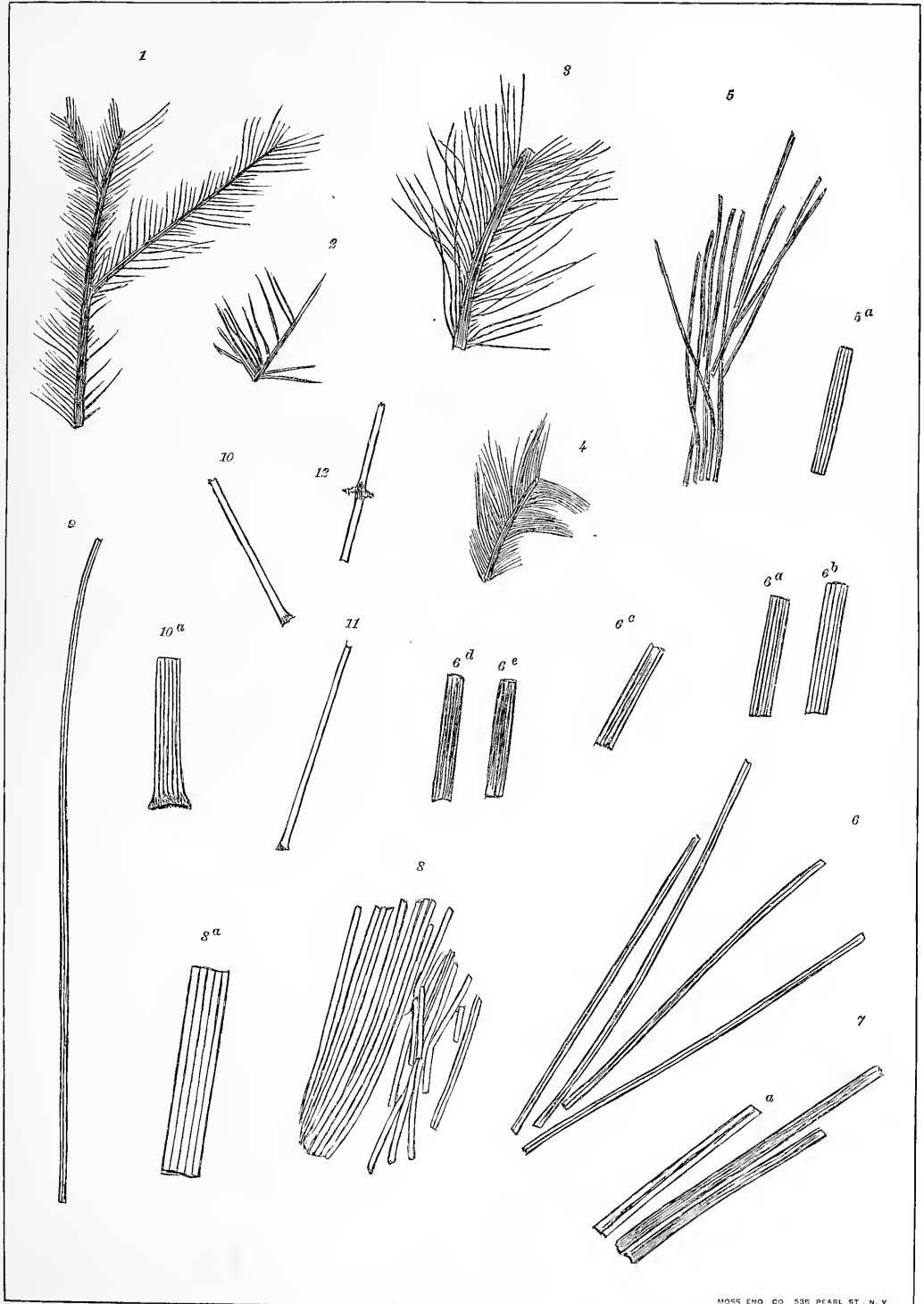


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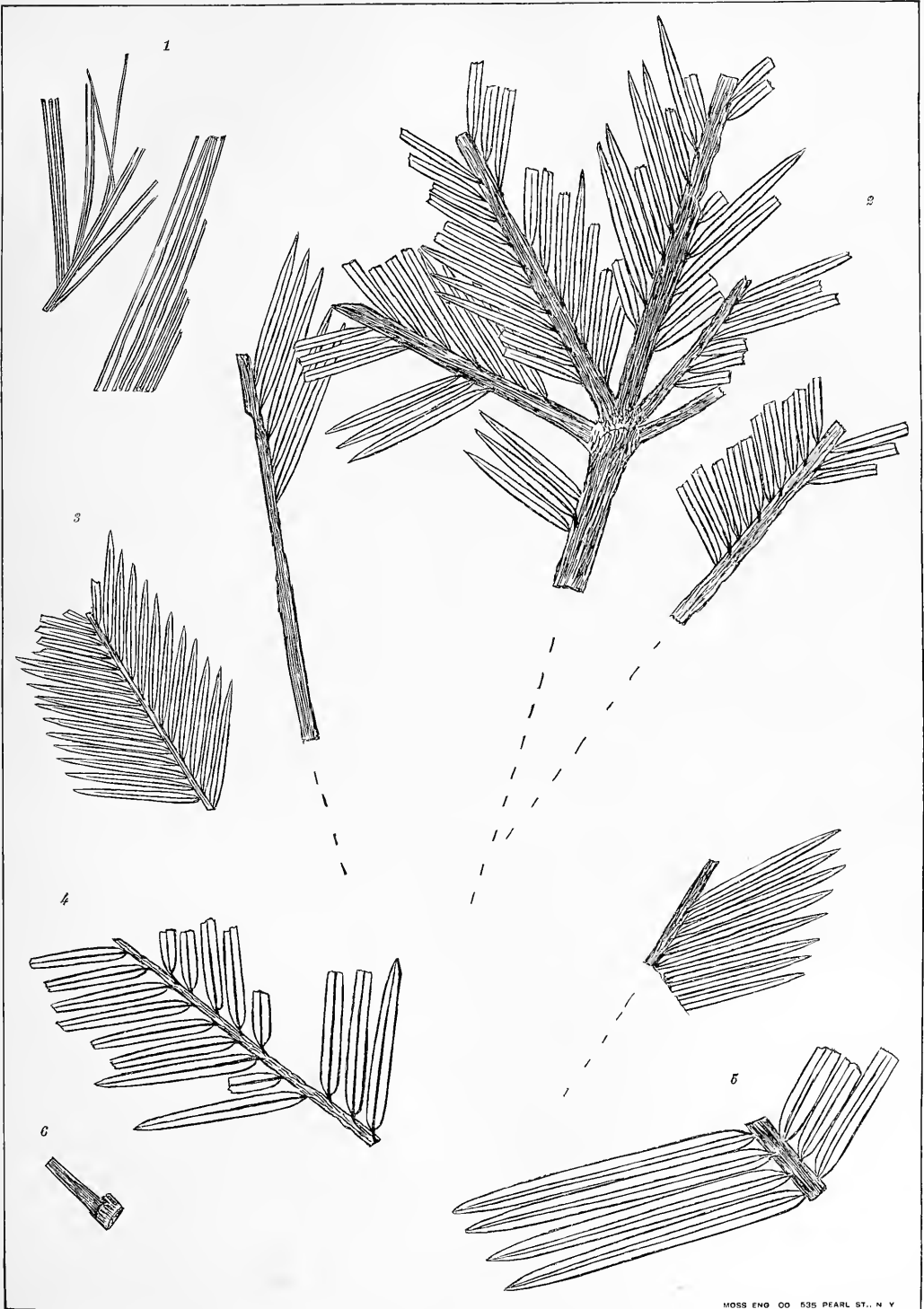


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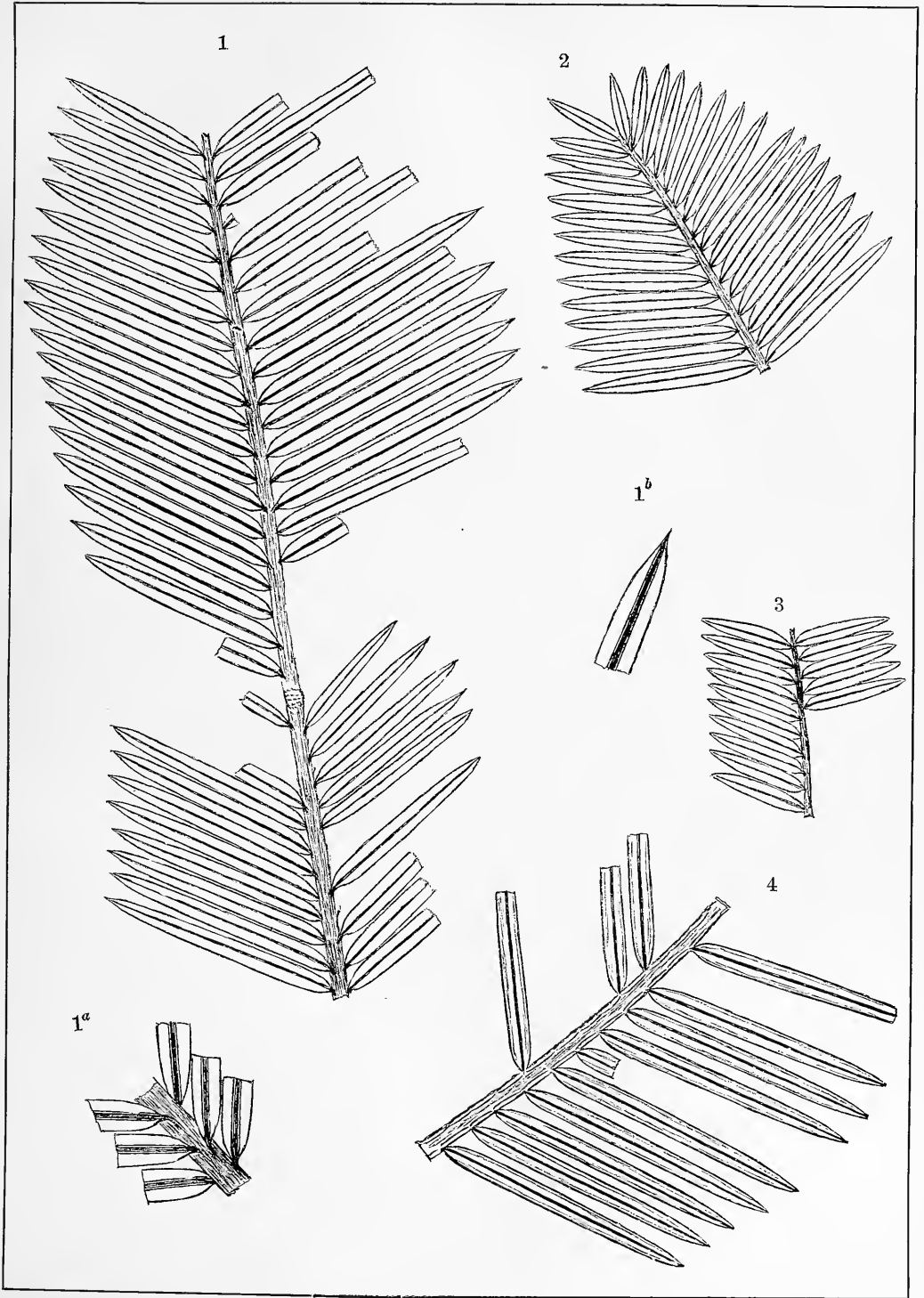


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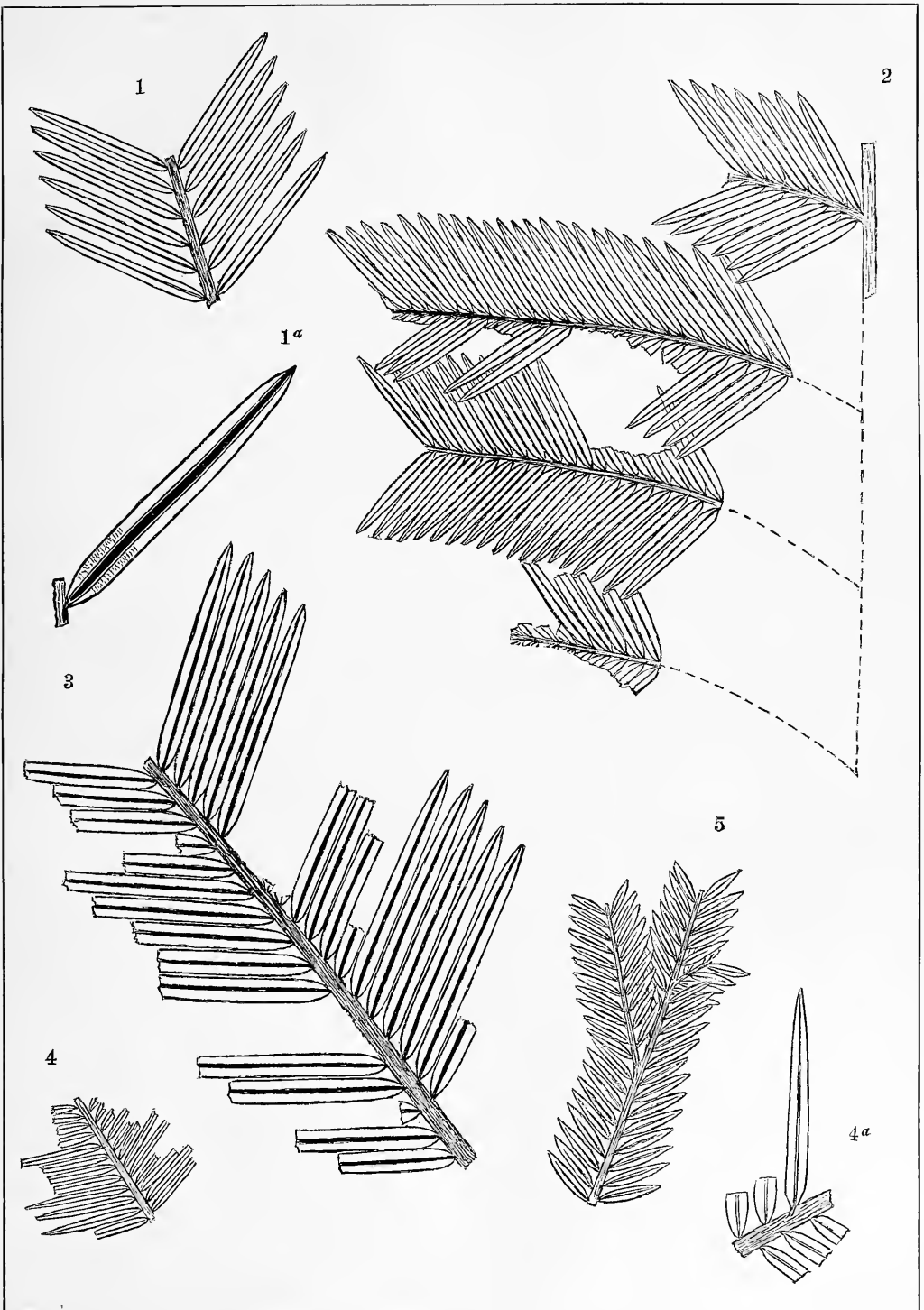


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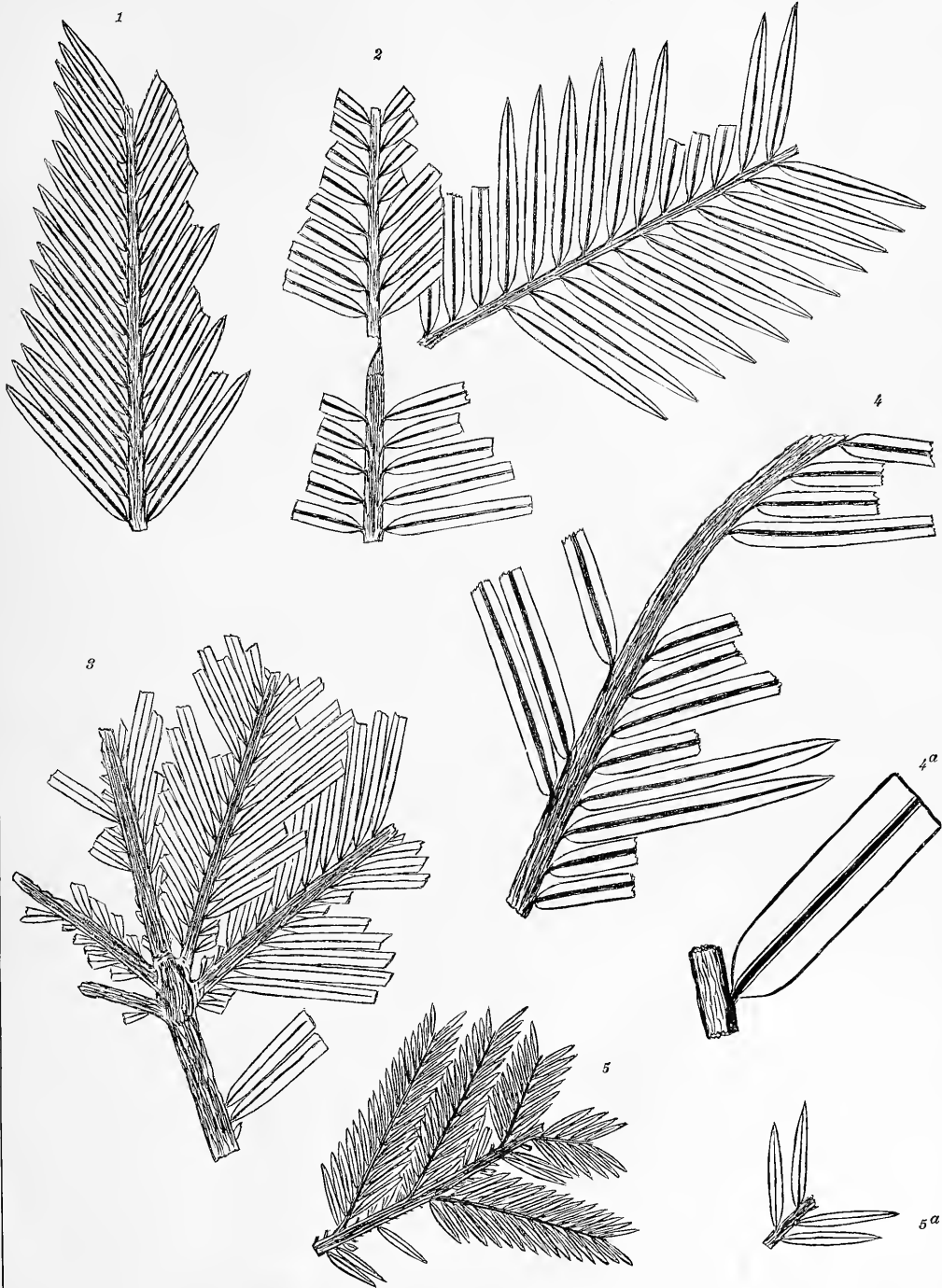


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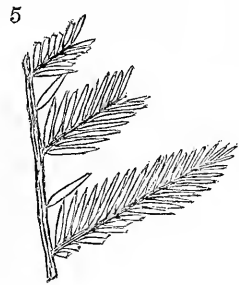
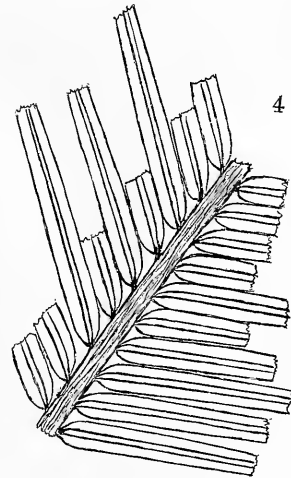
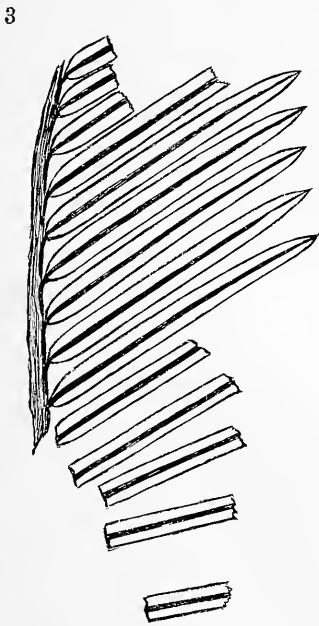
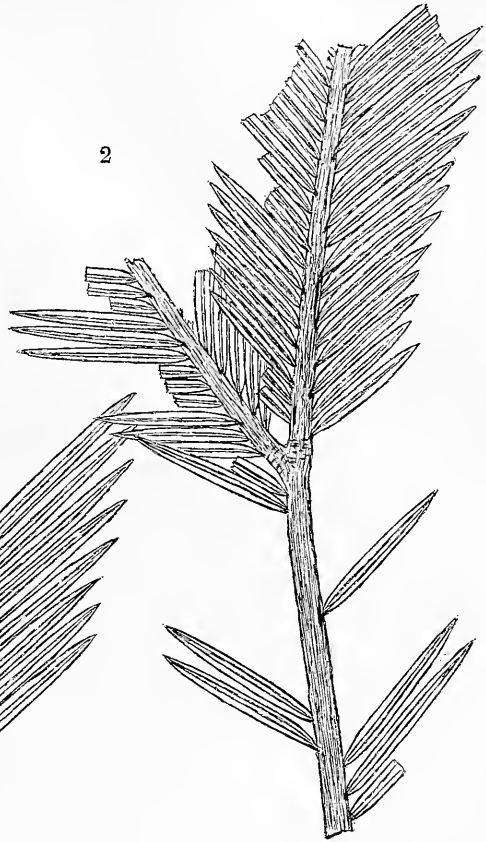
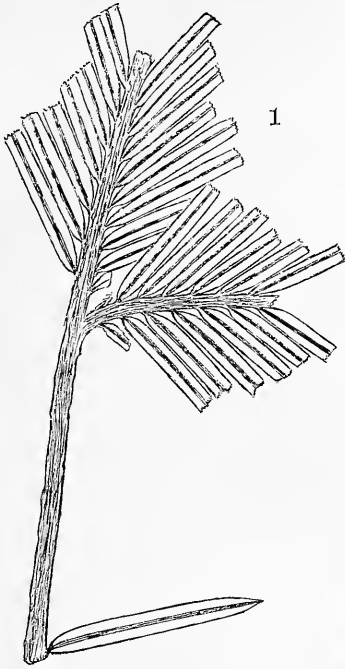


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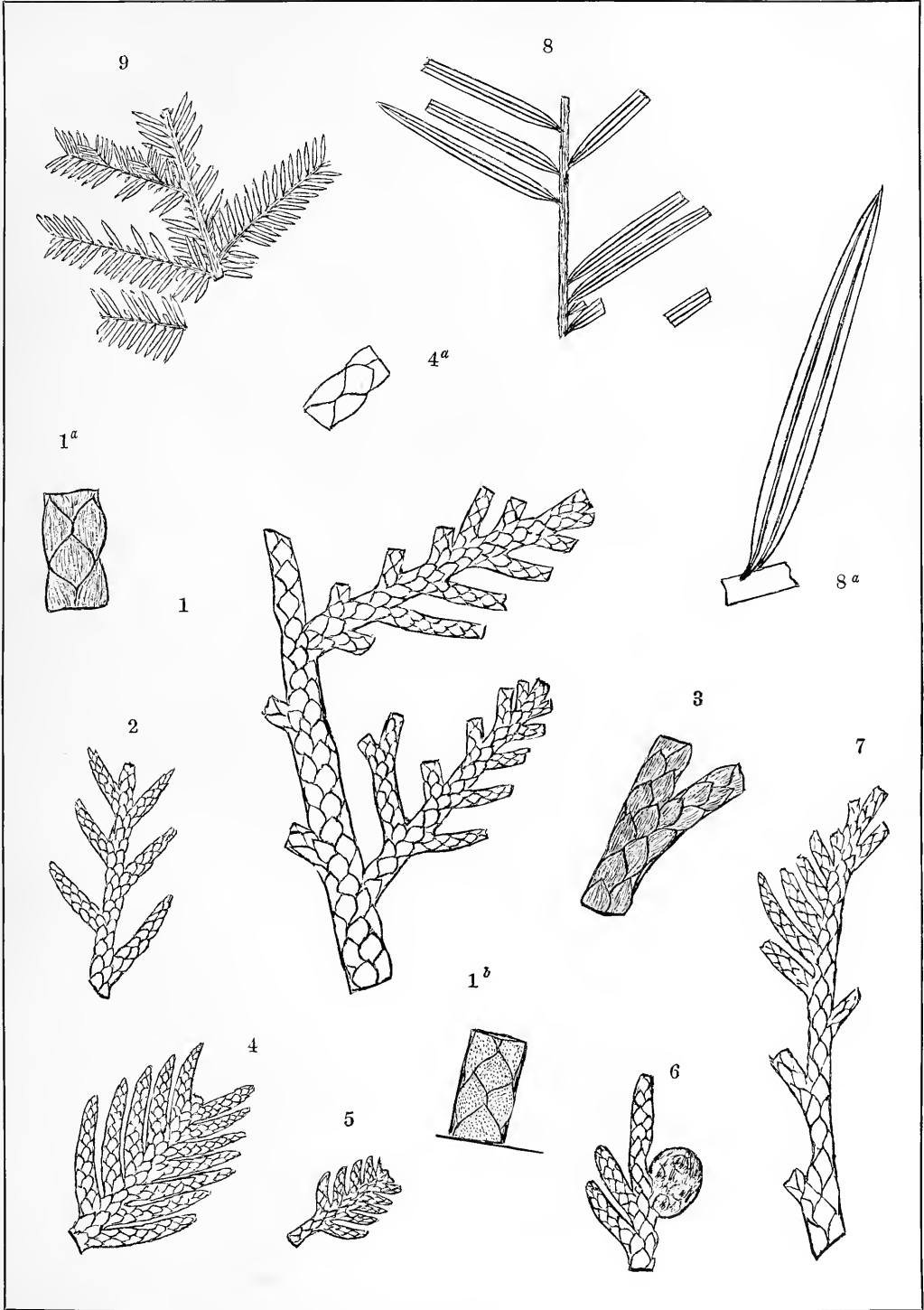


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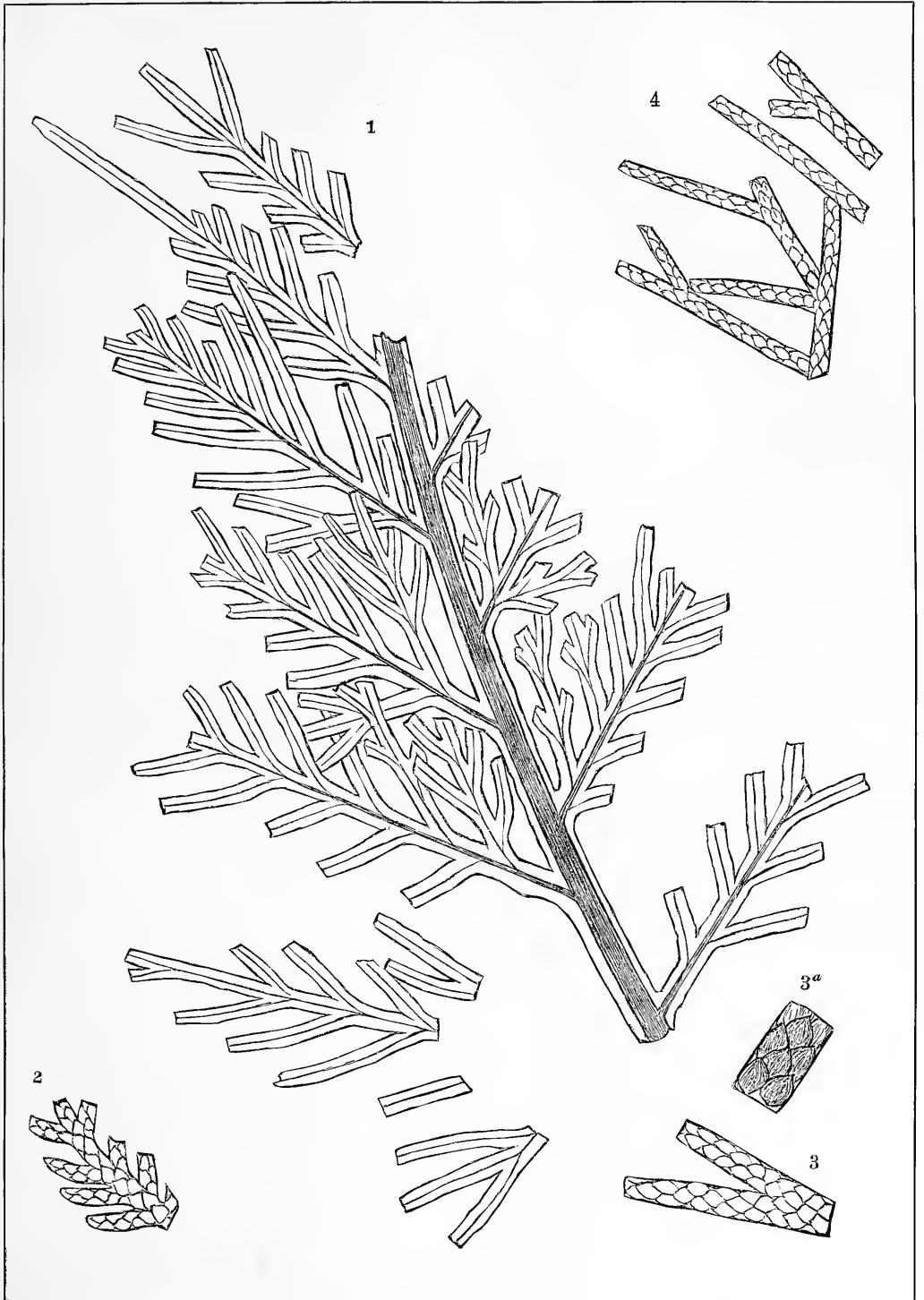


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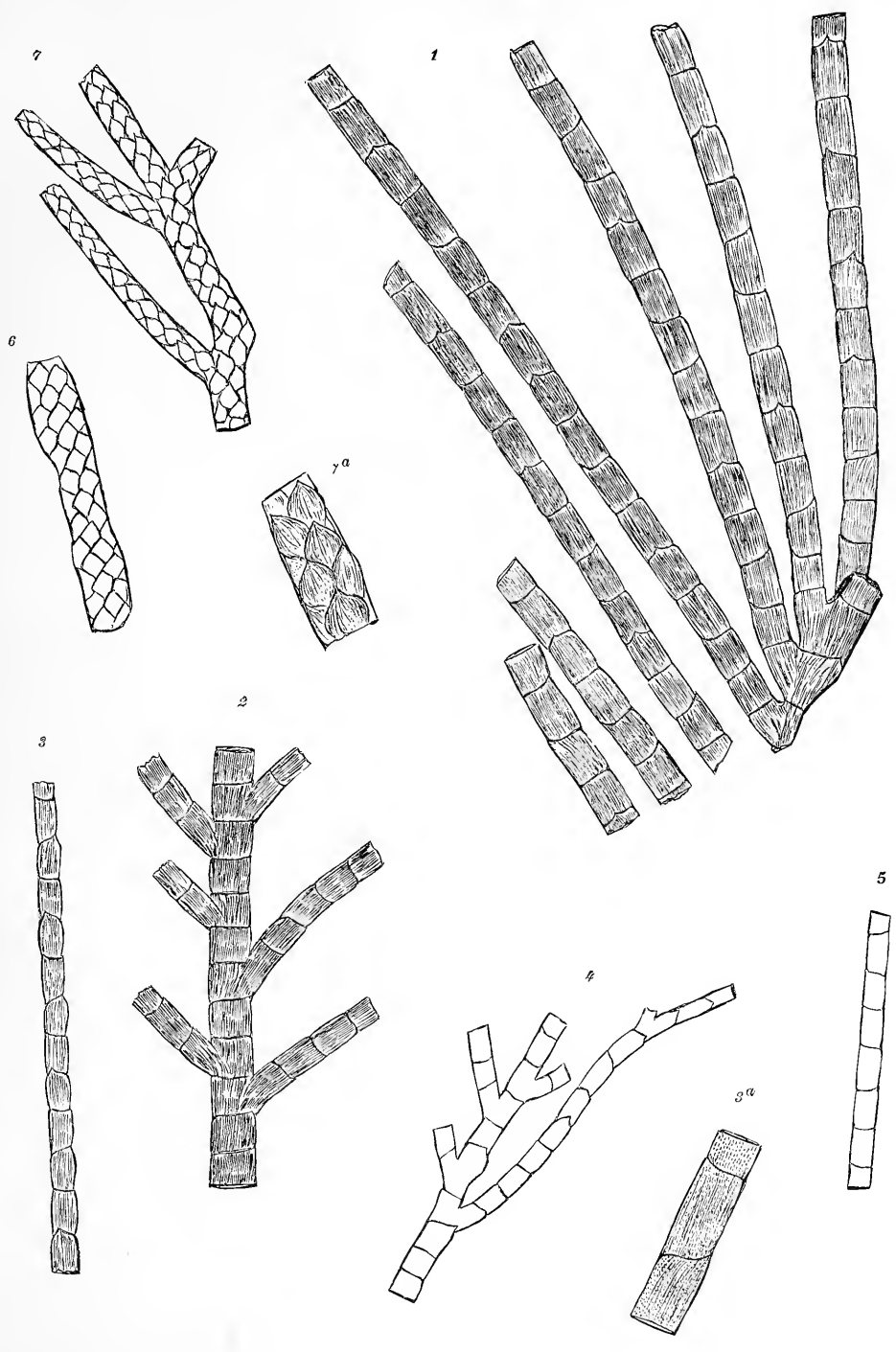


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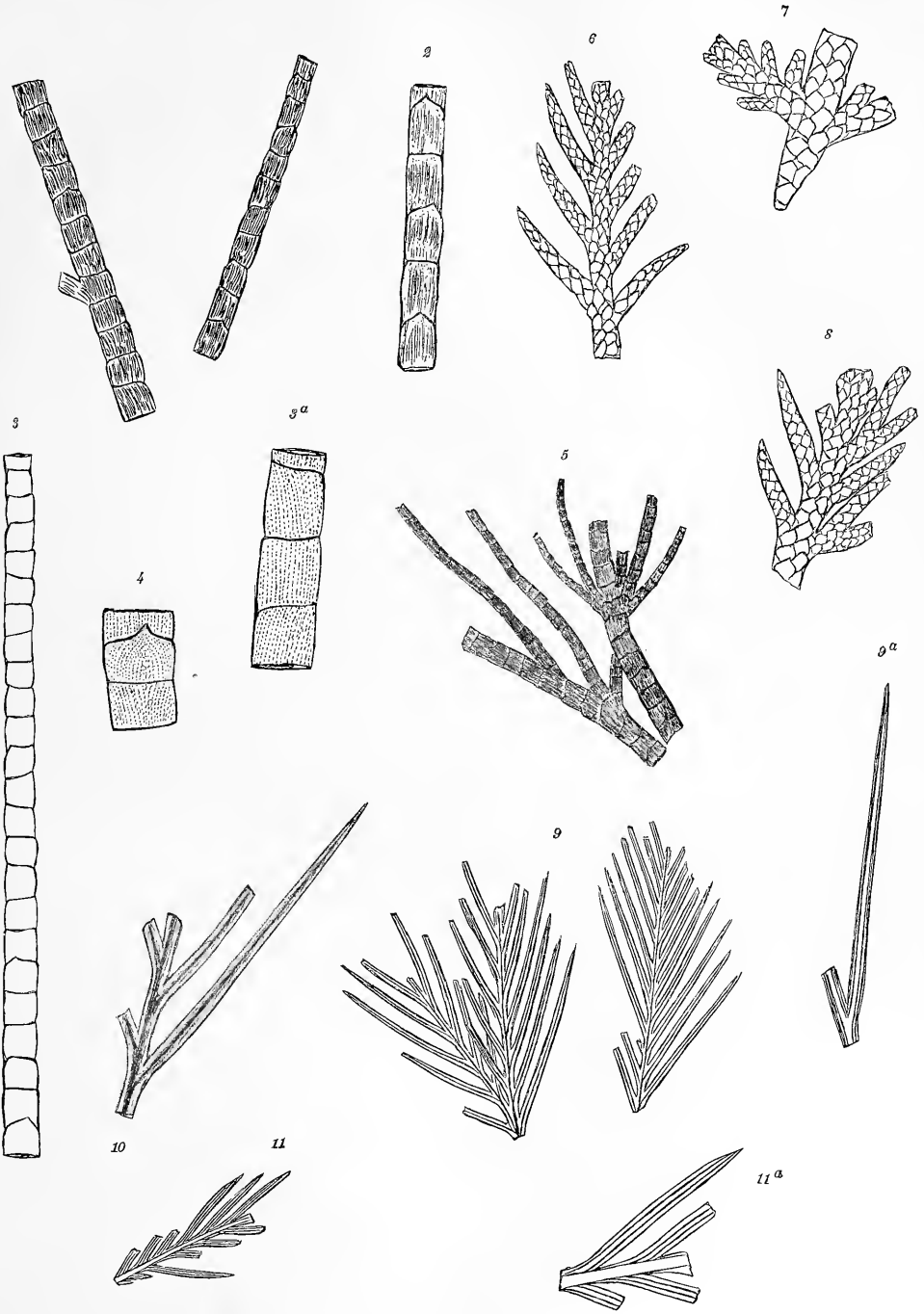


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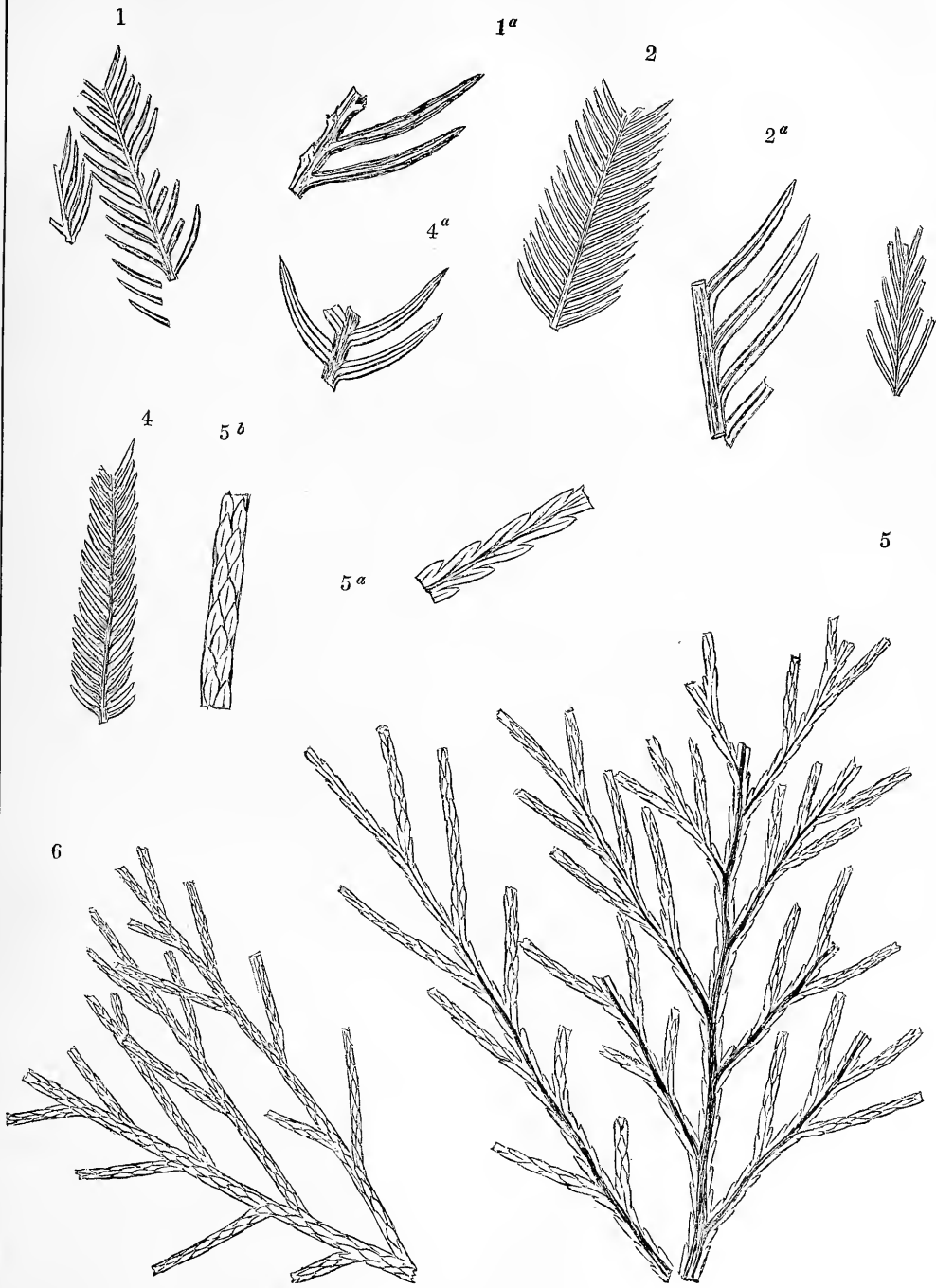


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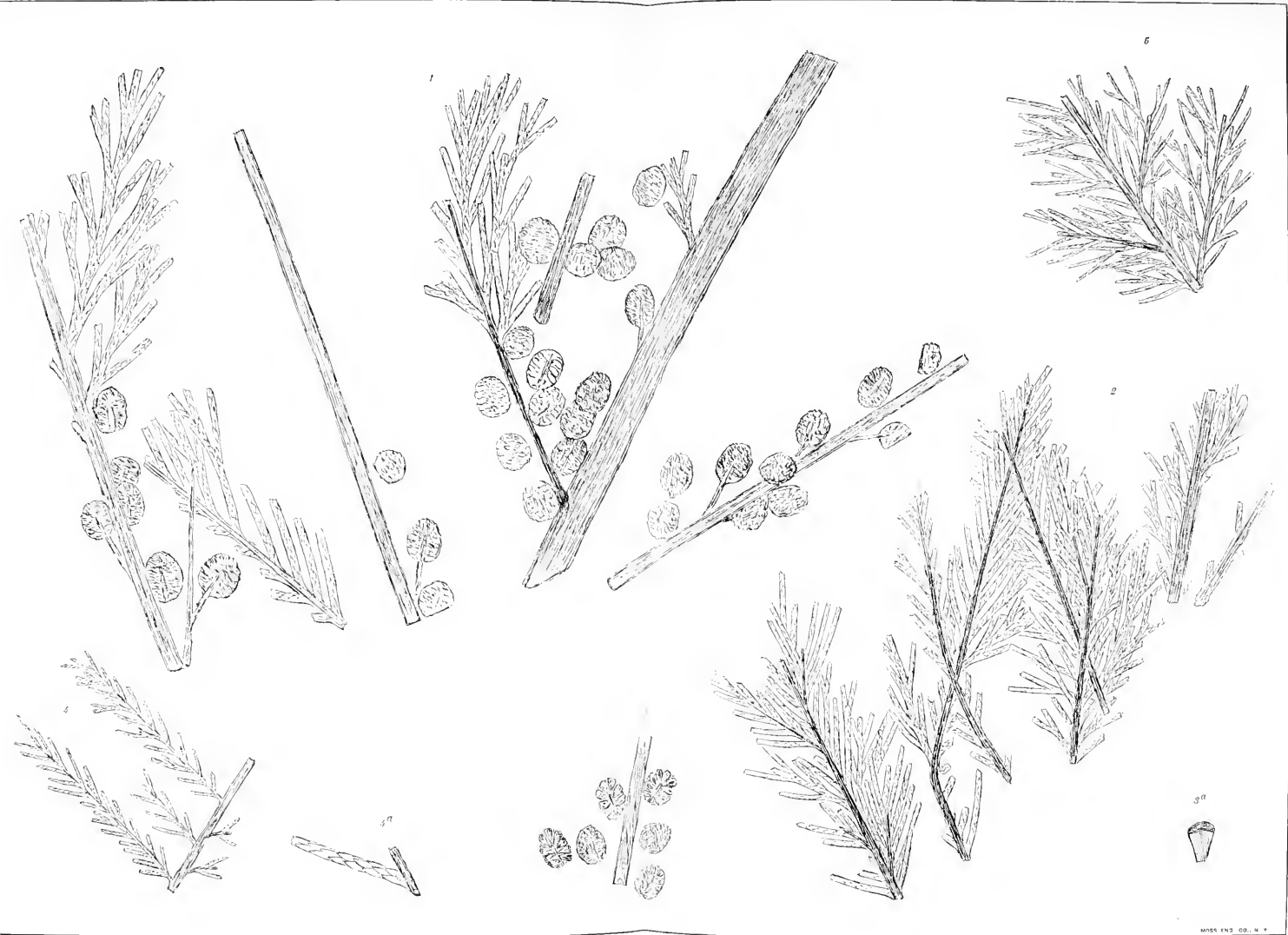




PLATE CXV.

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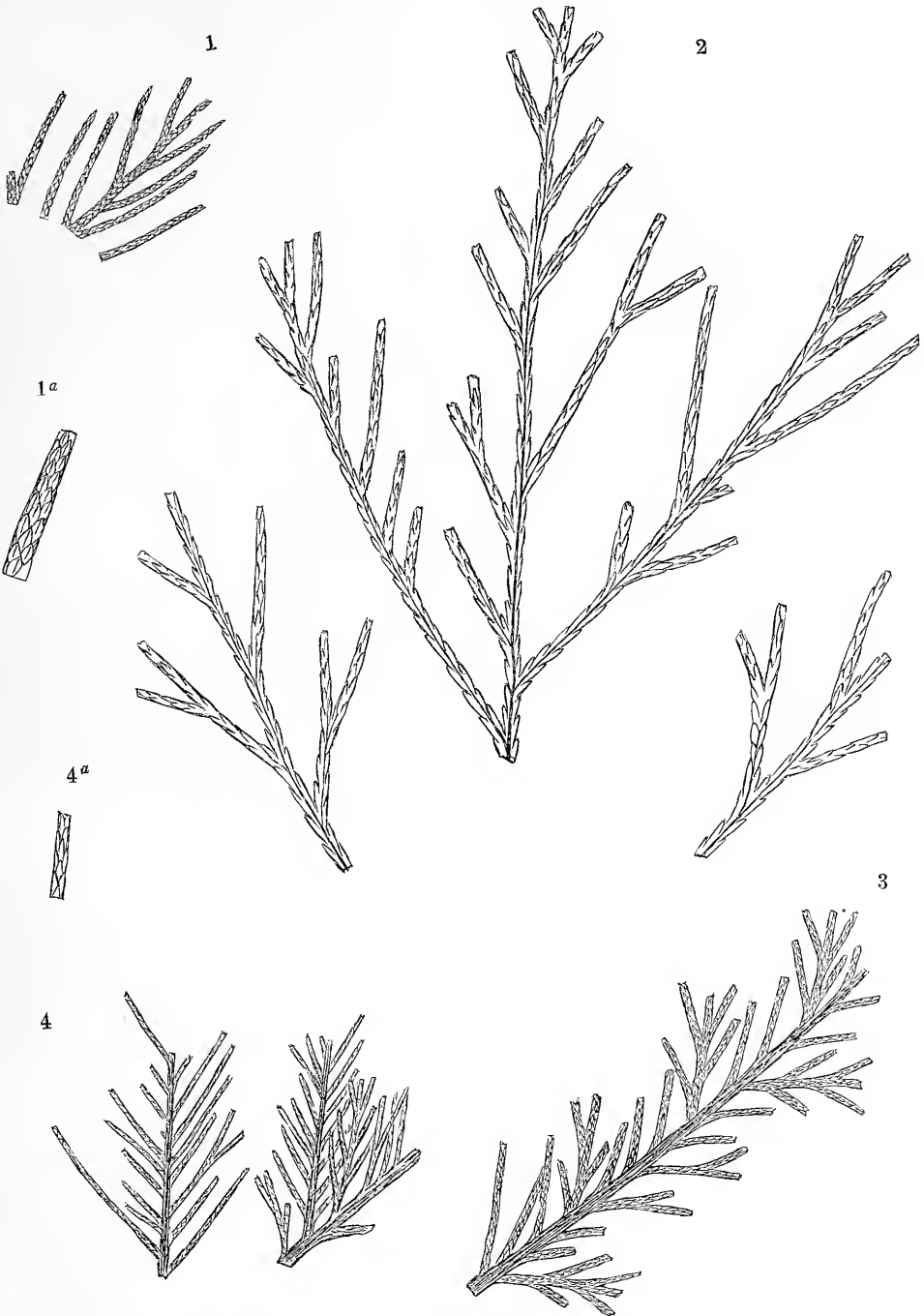


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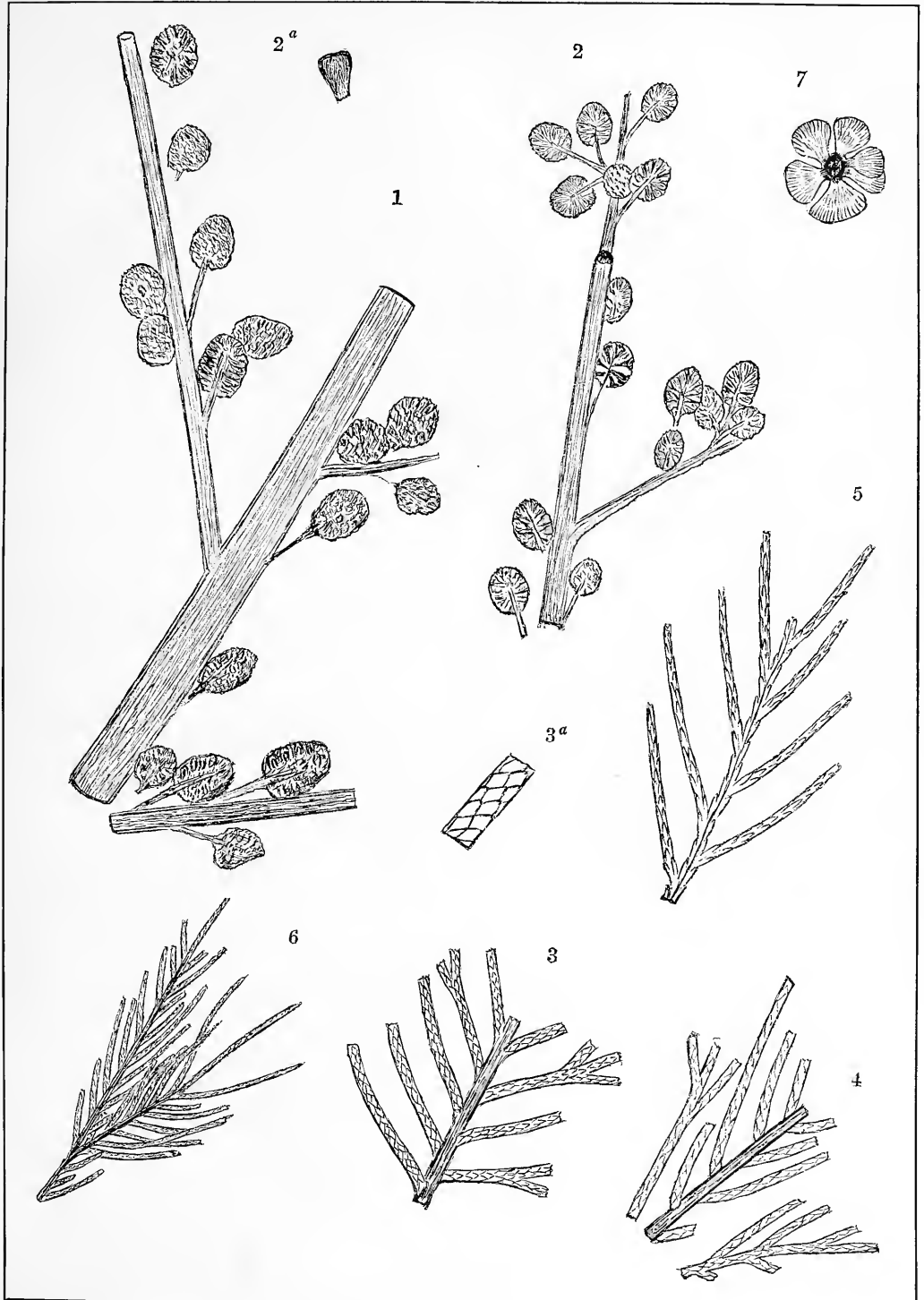


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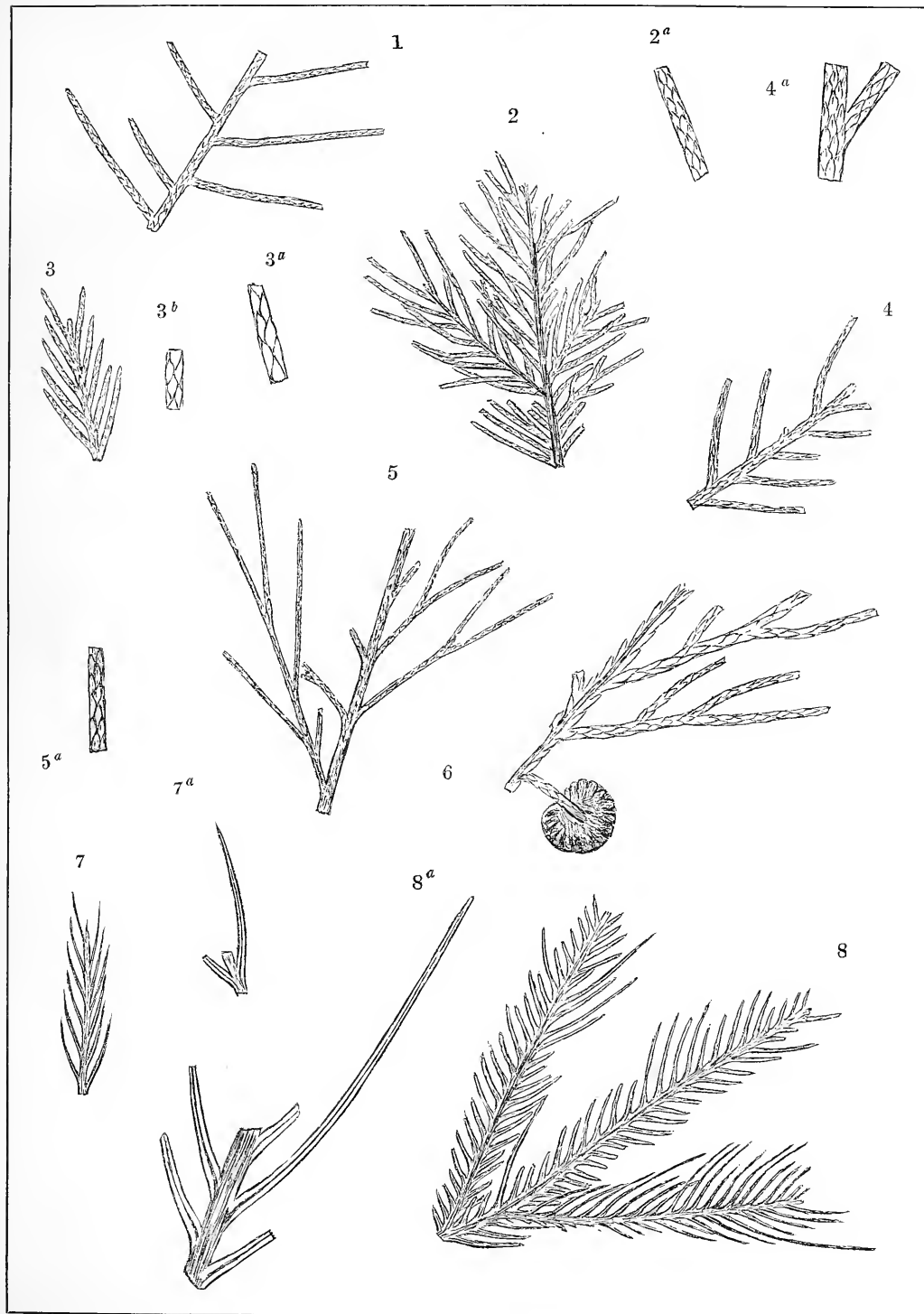


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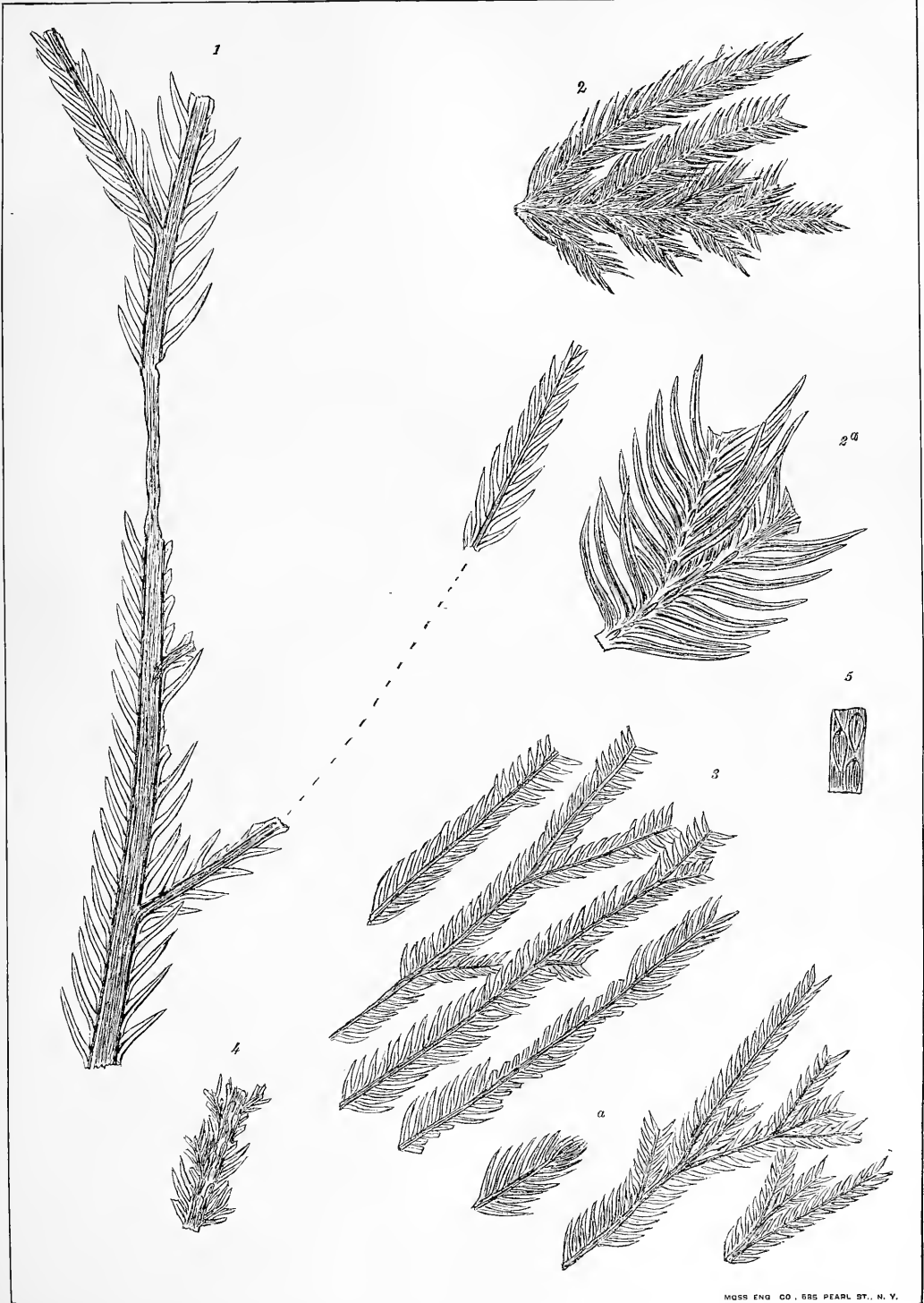


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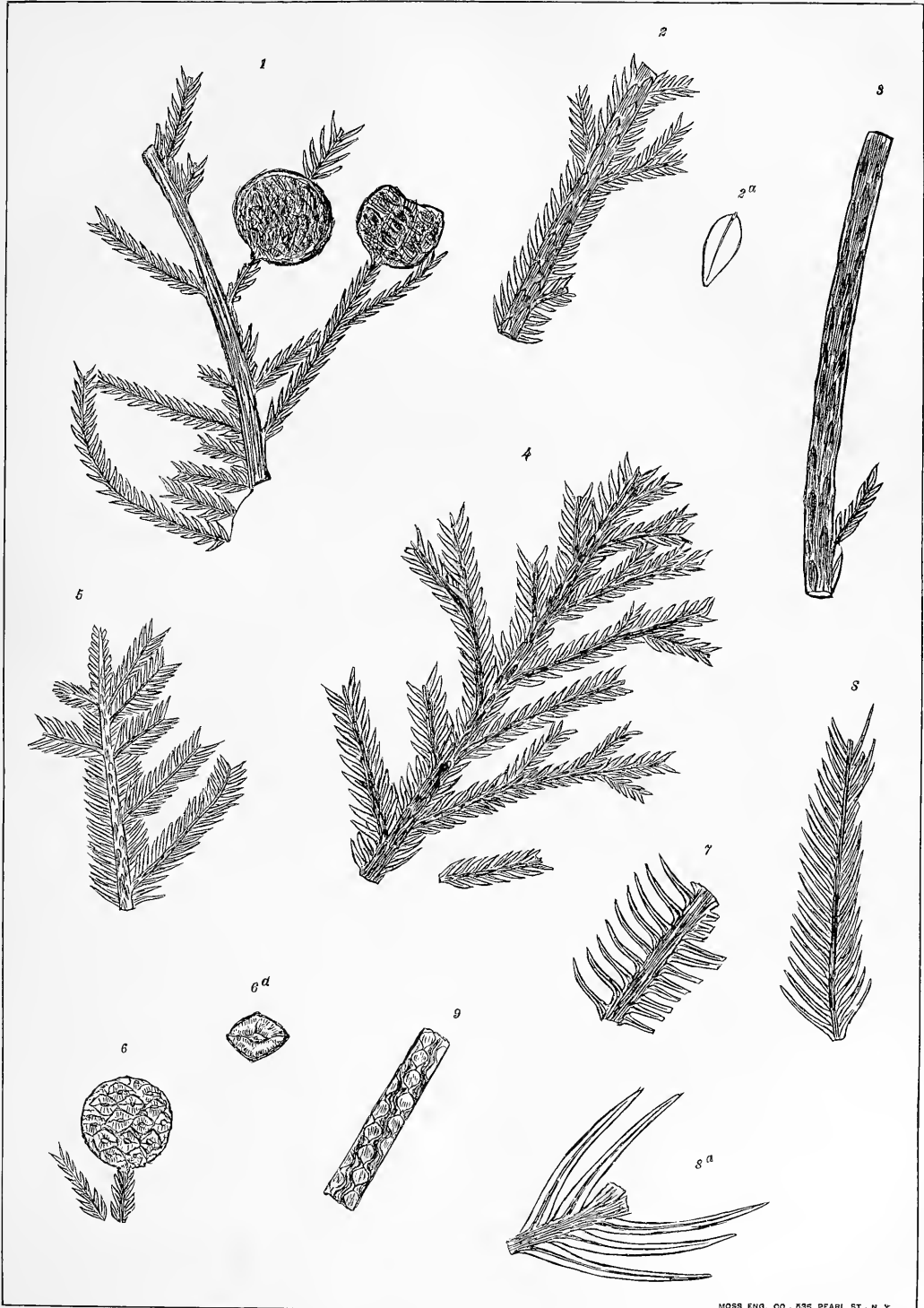


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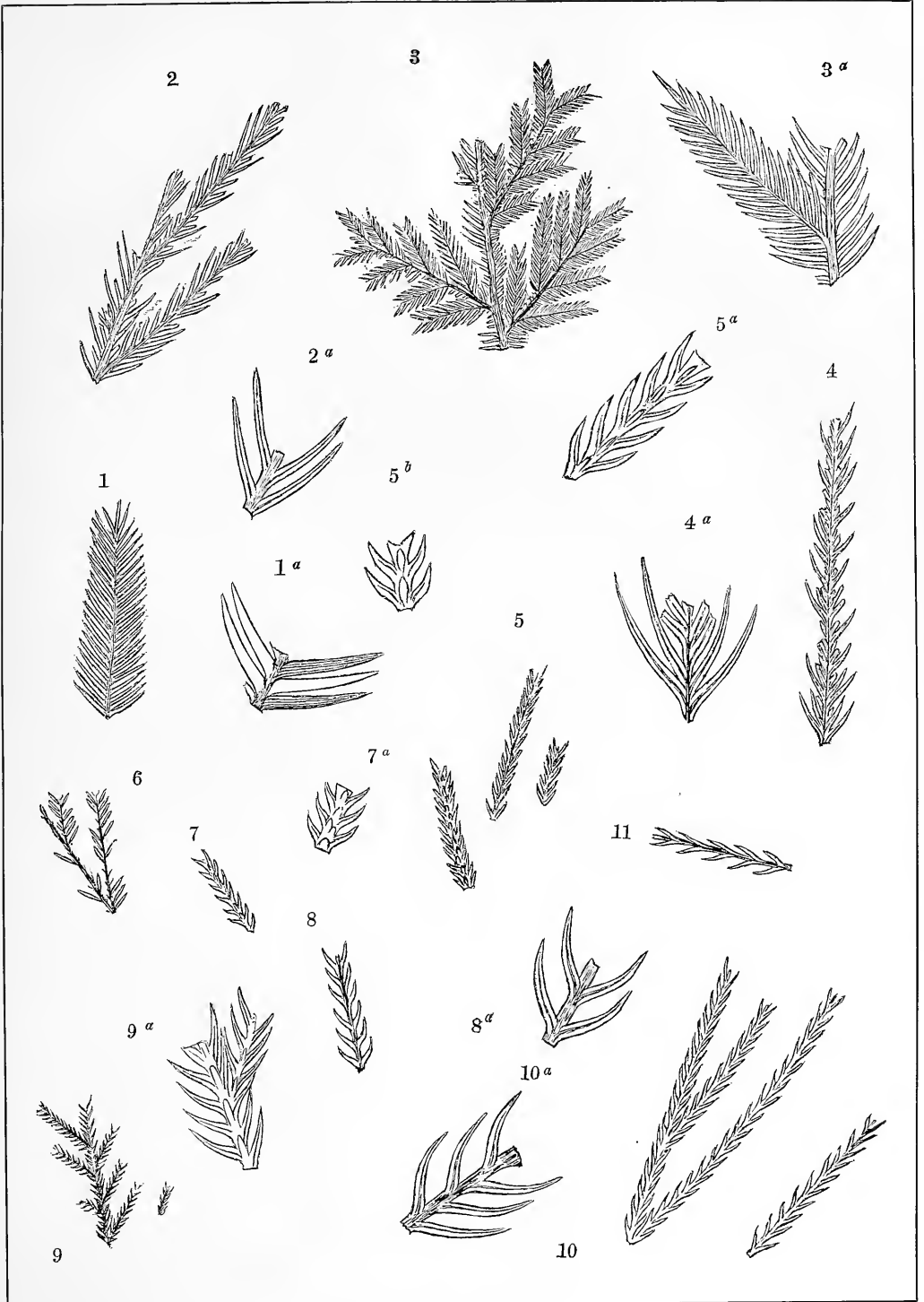


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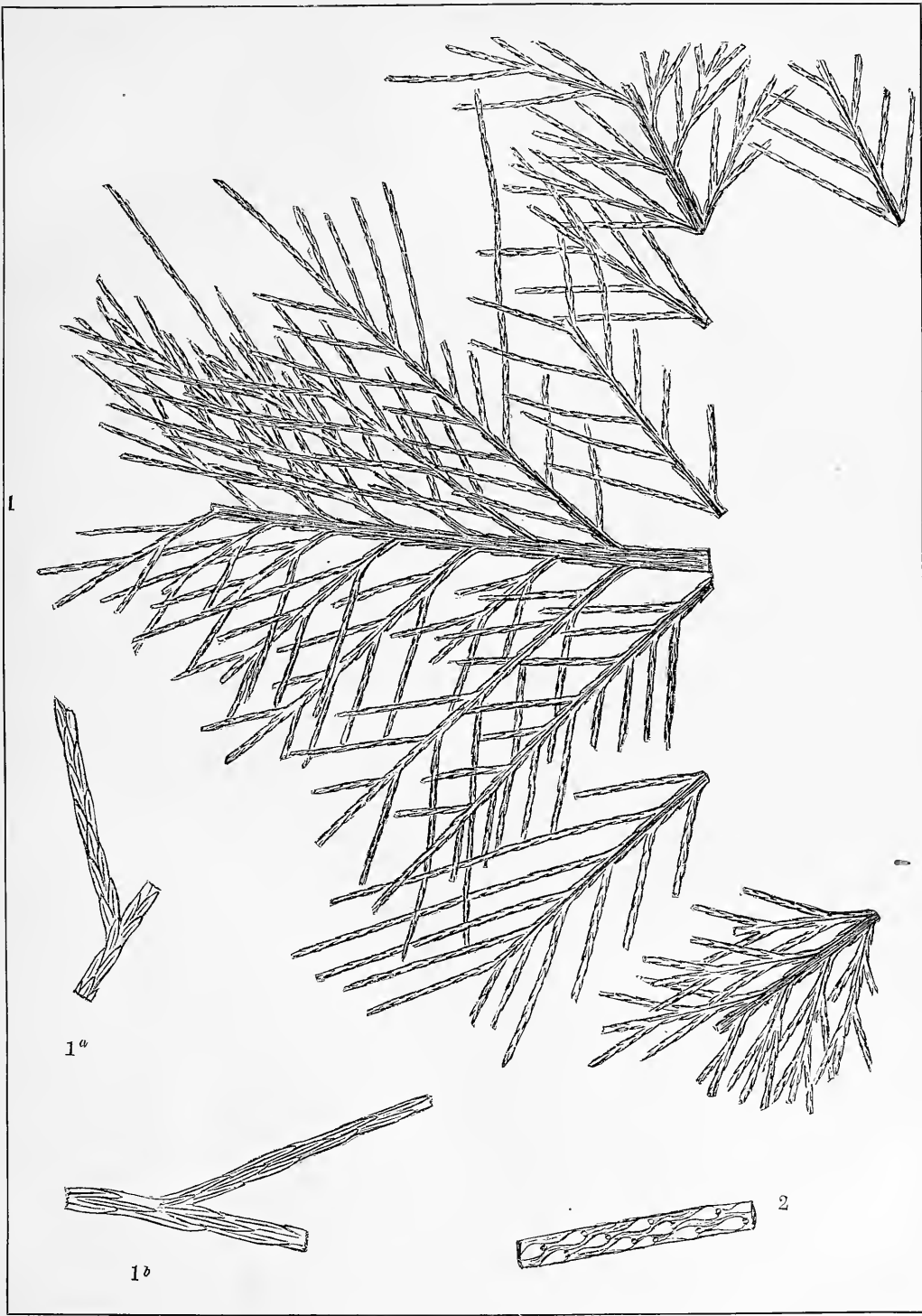




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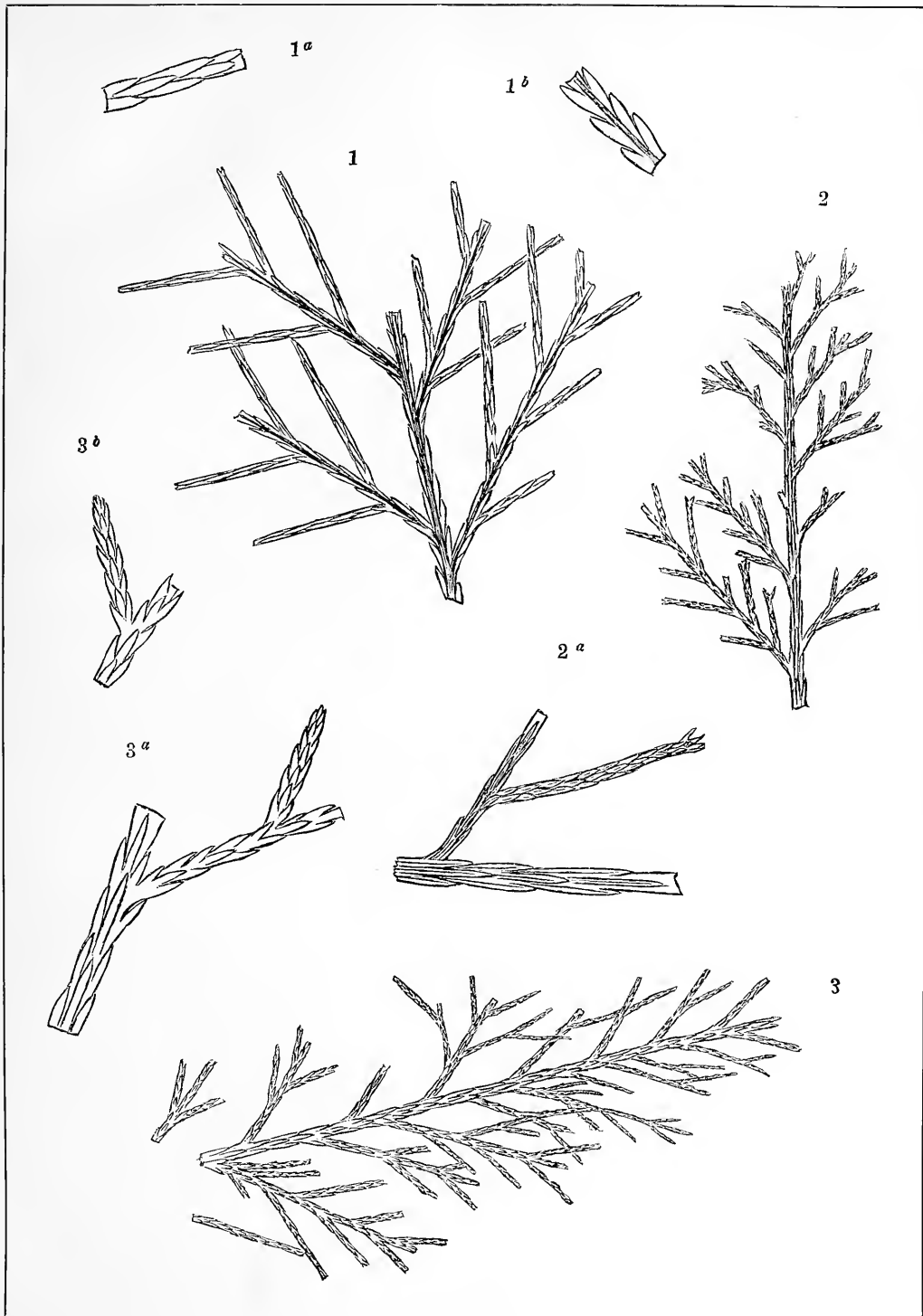


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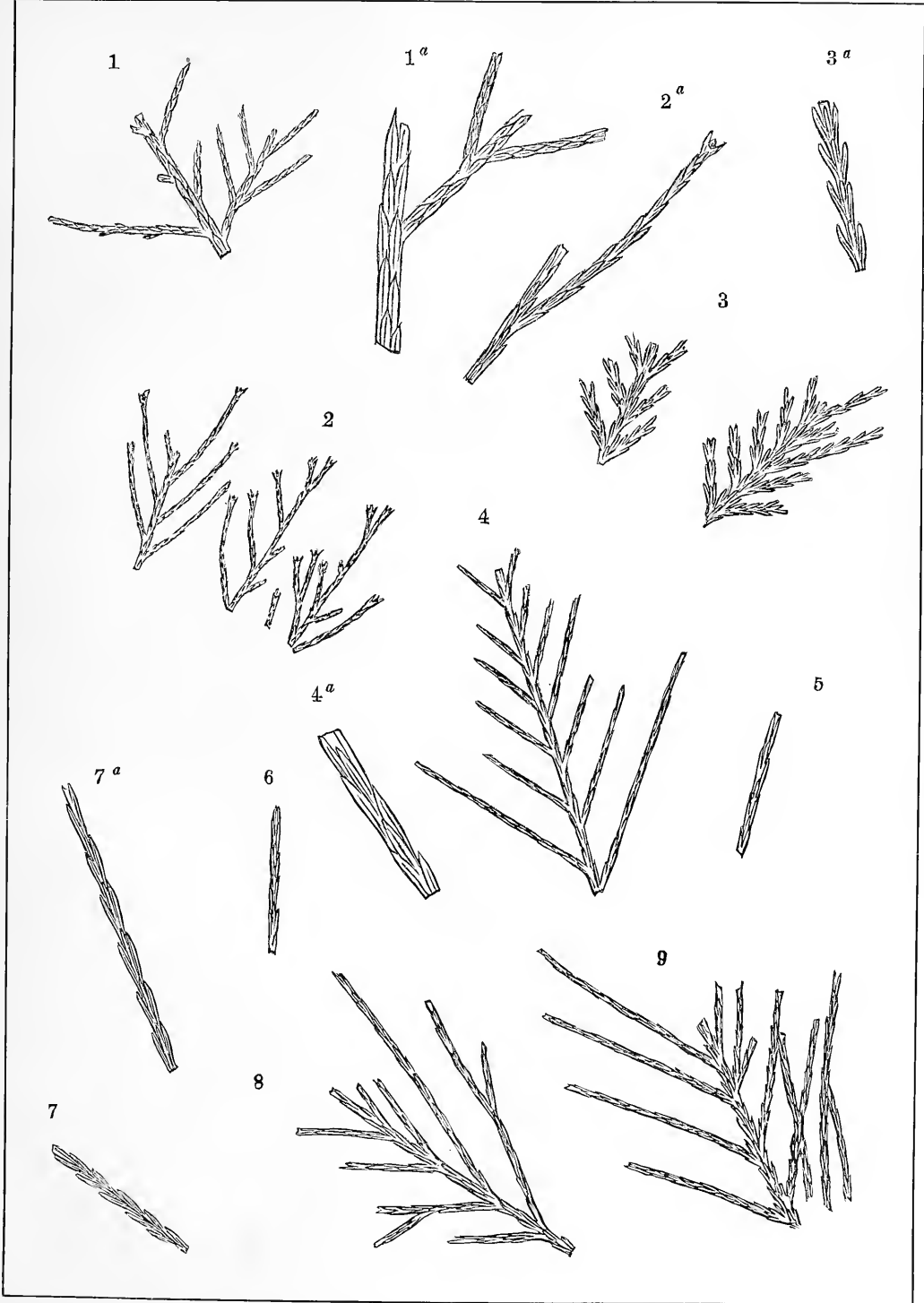




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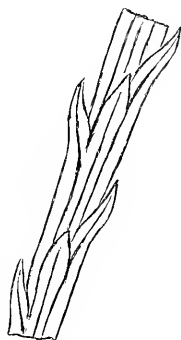
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1



1^a



2



2^a



1^b



3



3^a



4



4^a



a a



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PLATE CXXVI.

	Page.
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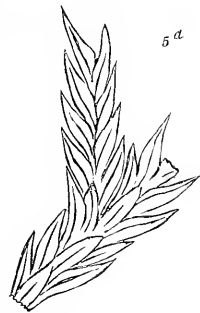
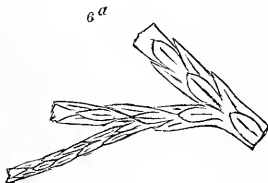


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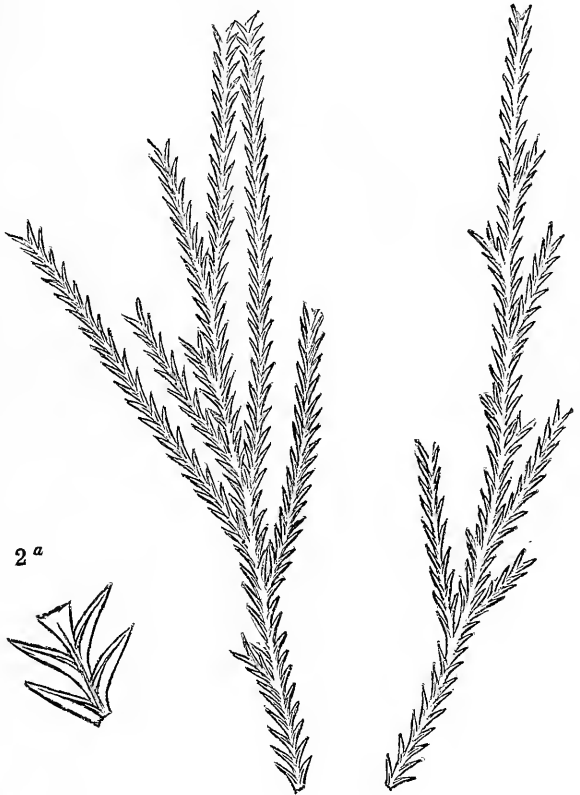
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5 ^a . Leaves magnified	245

1



2



4



3



2^a



a

5



5^a



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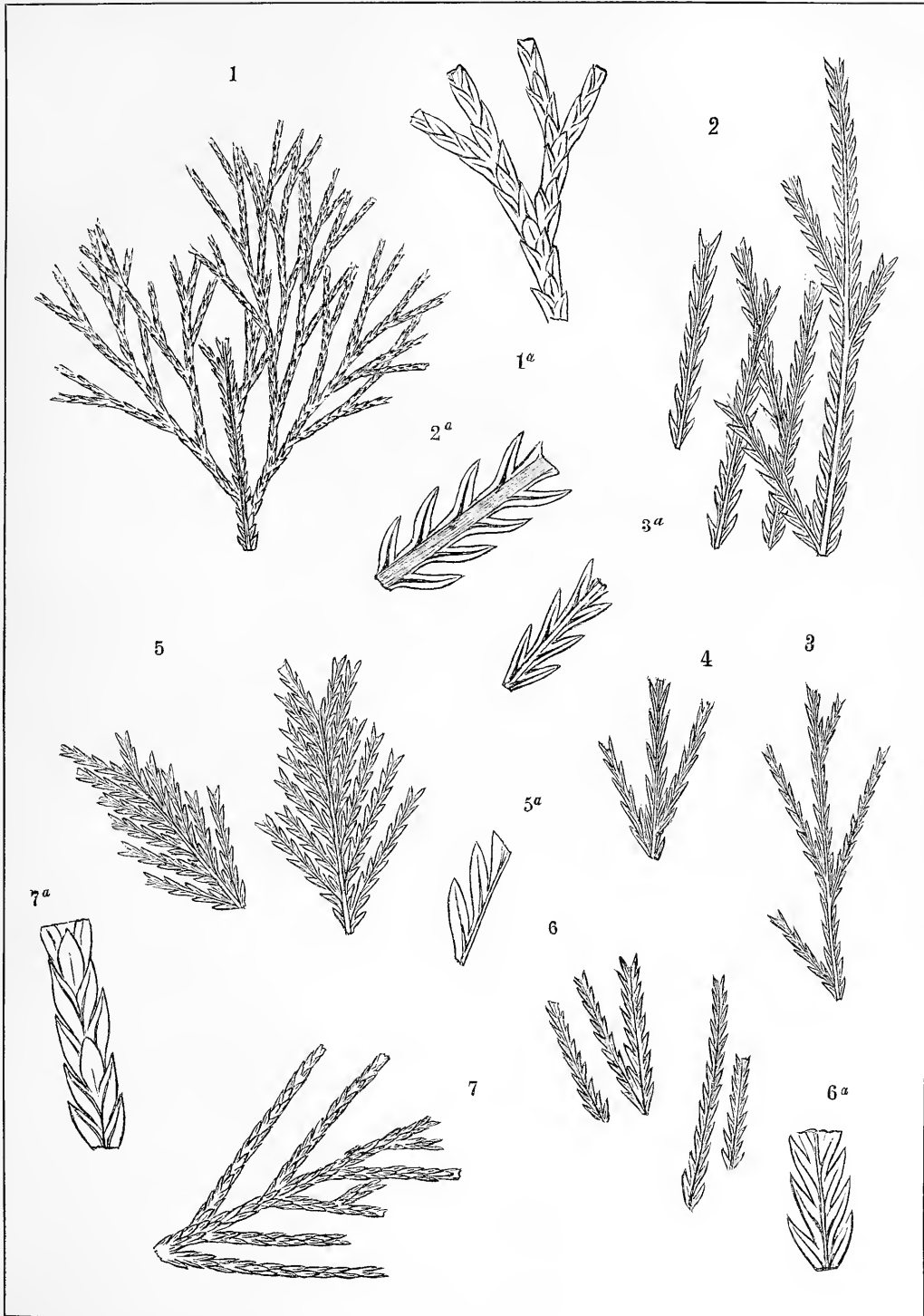
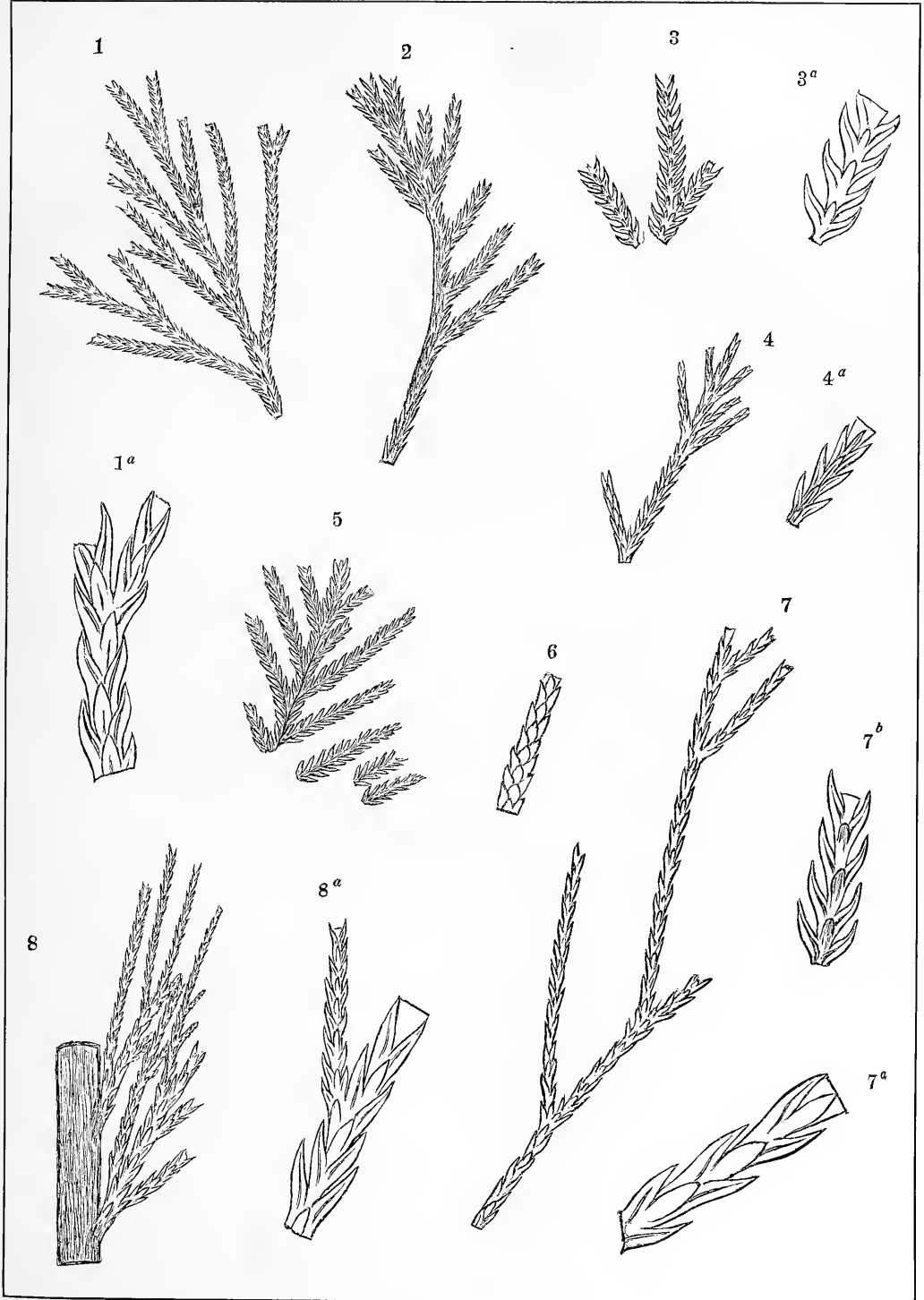


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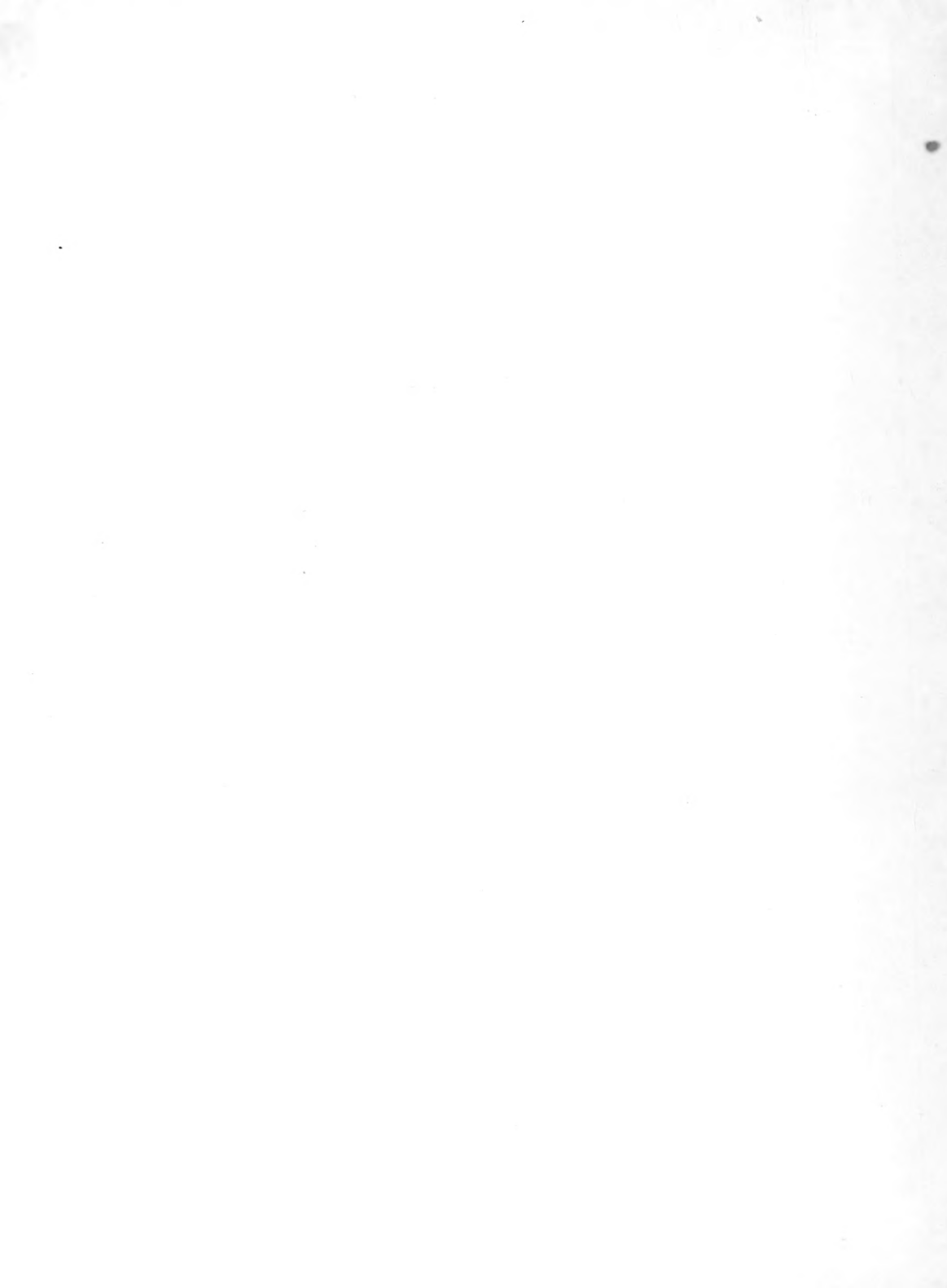


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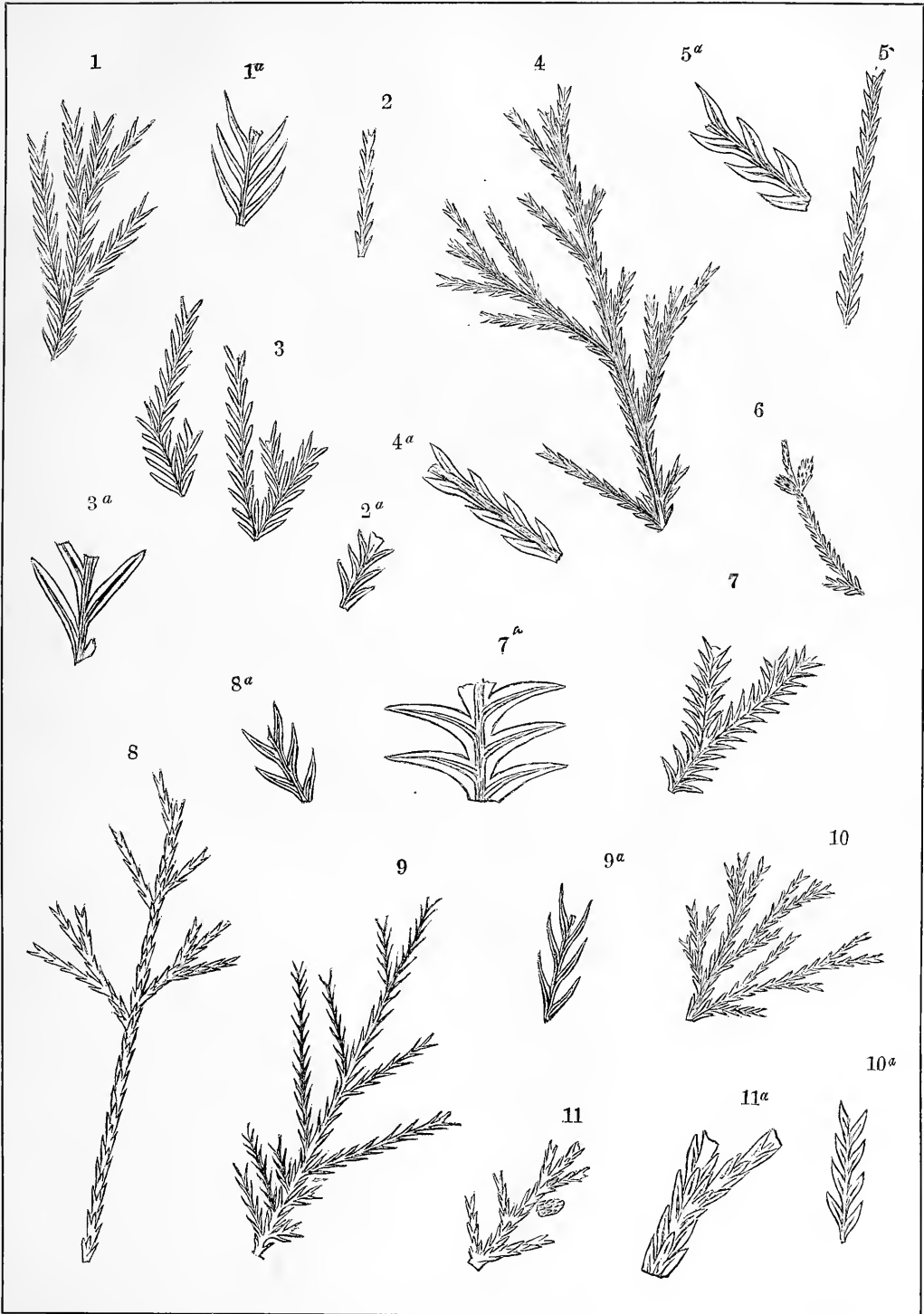




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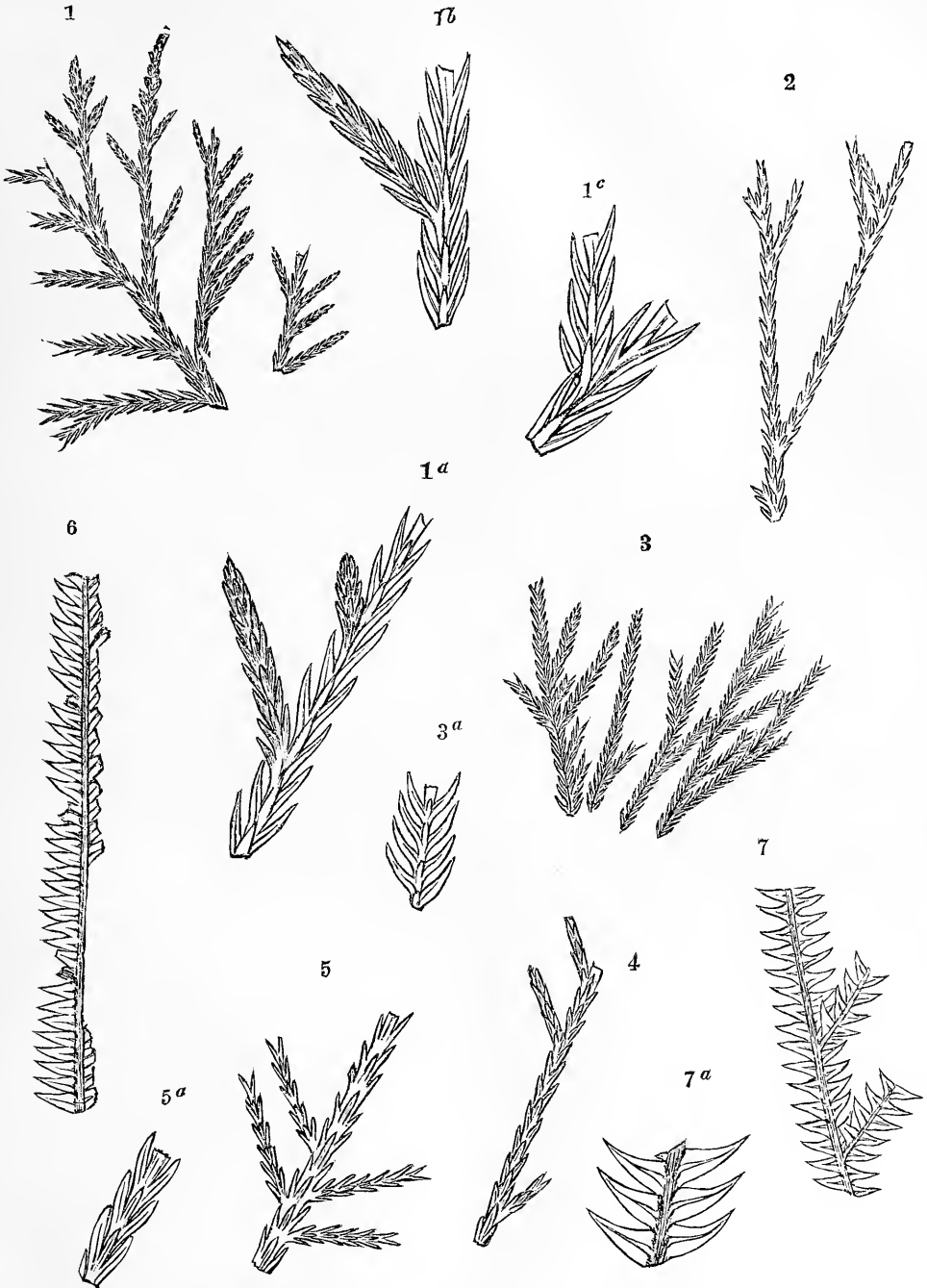


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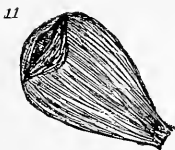
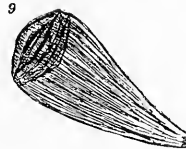
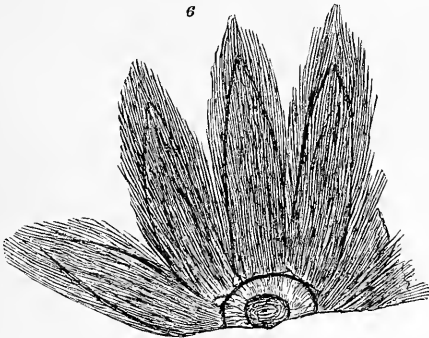
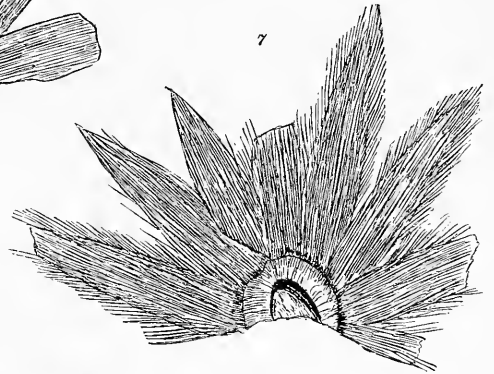
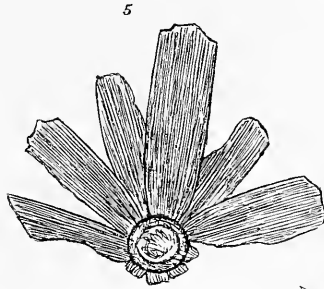
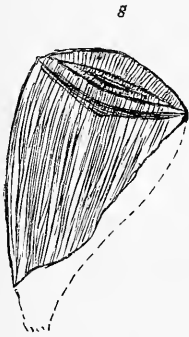
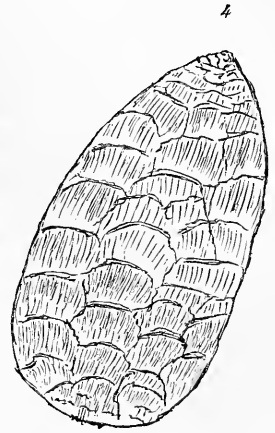
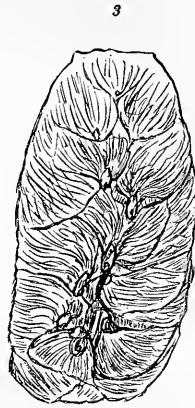


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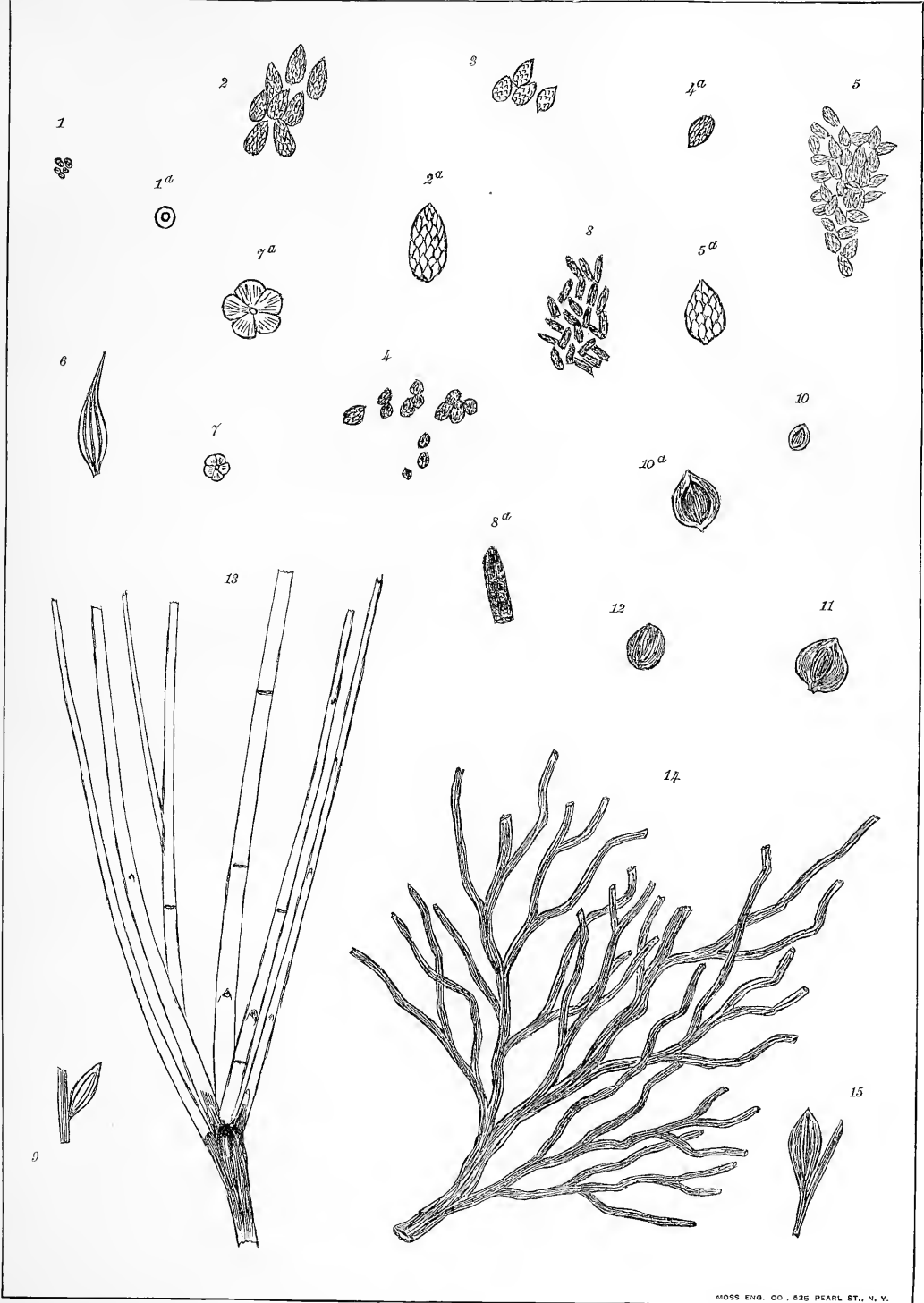


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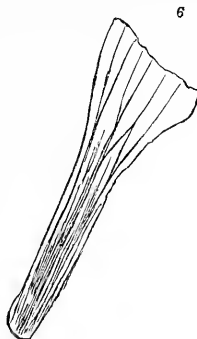
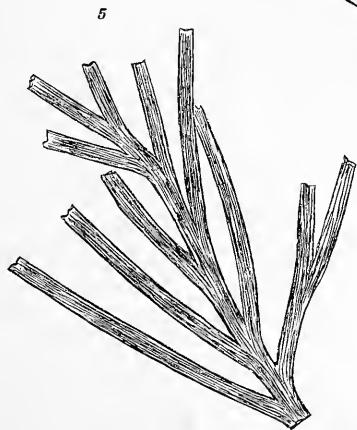
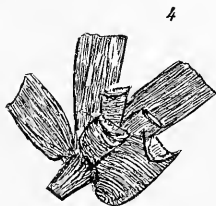
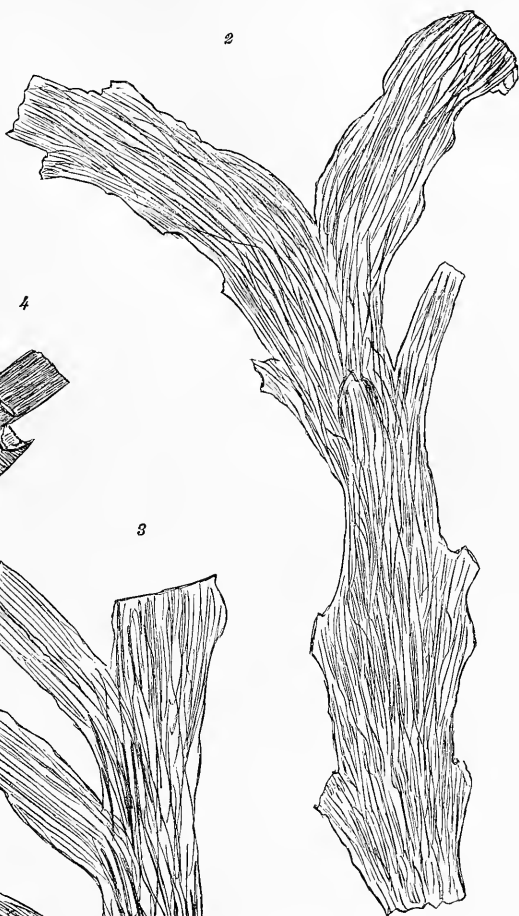


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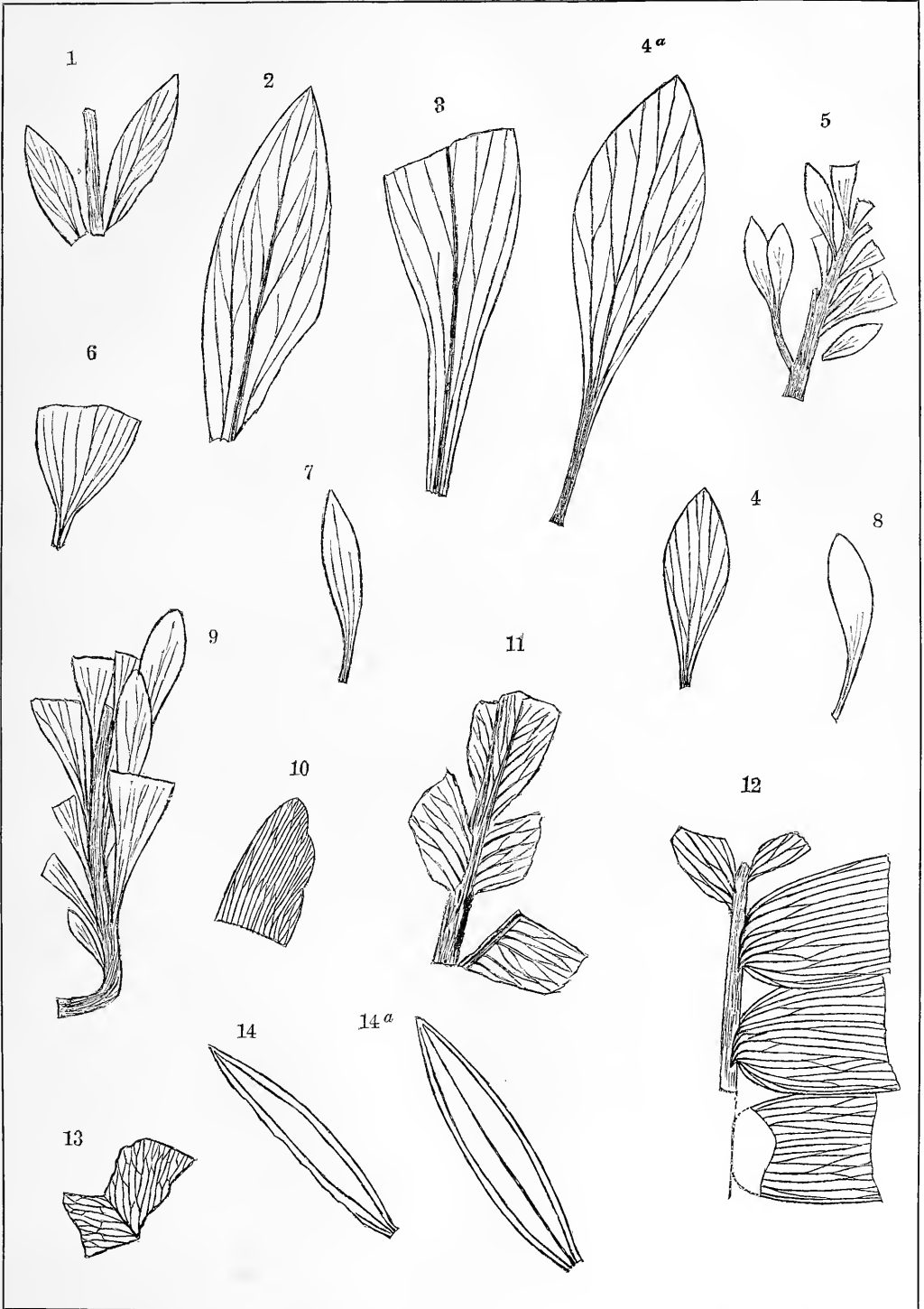


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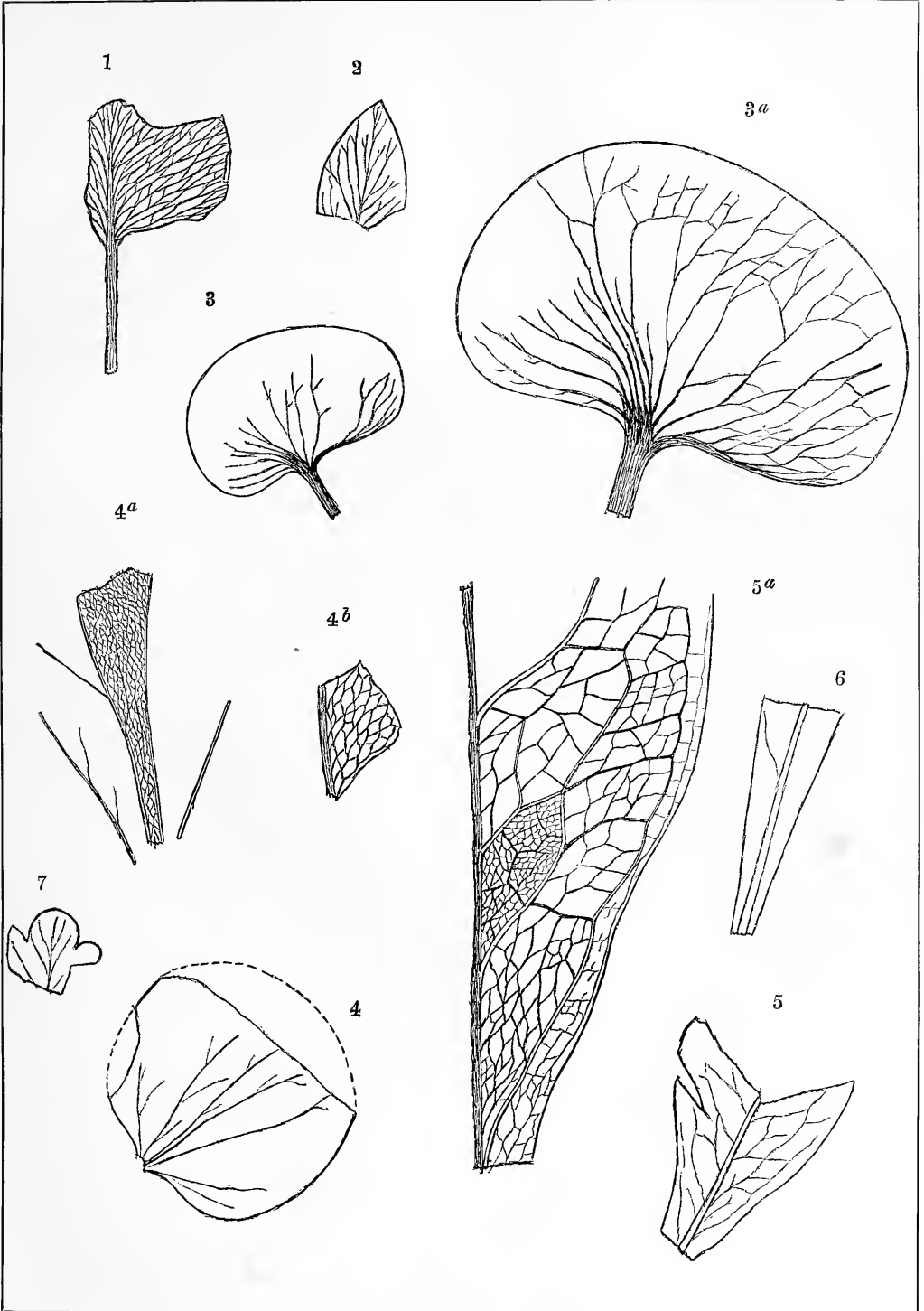


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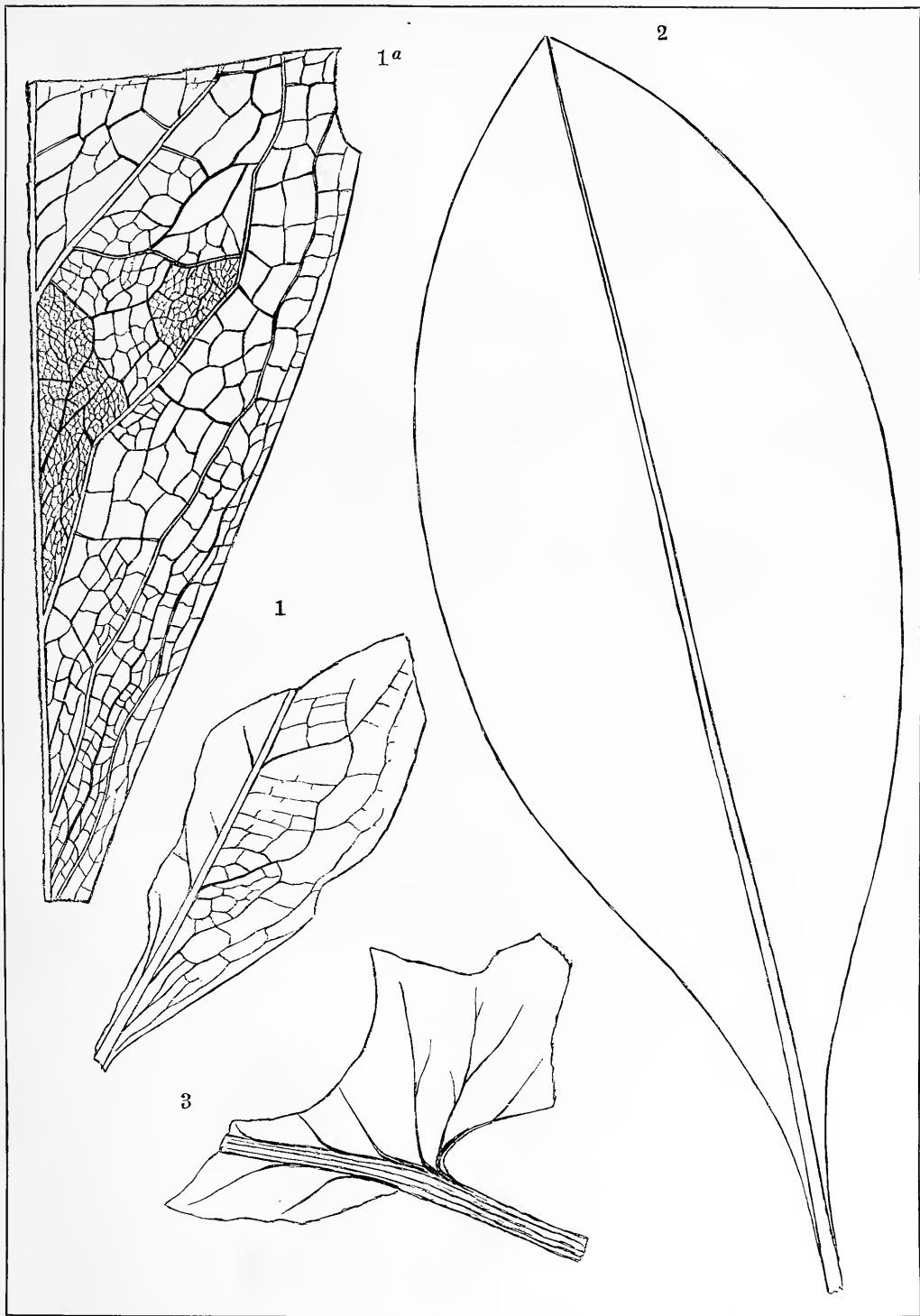


PLATE CXLI.

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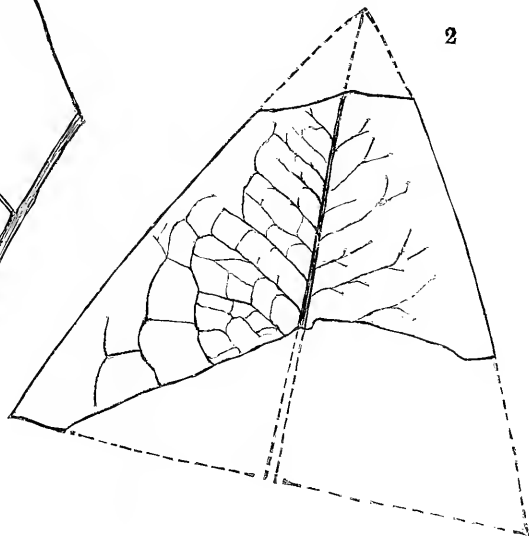
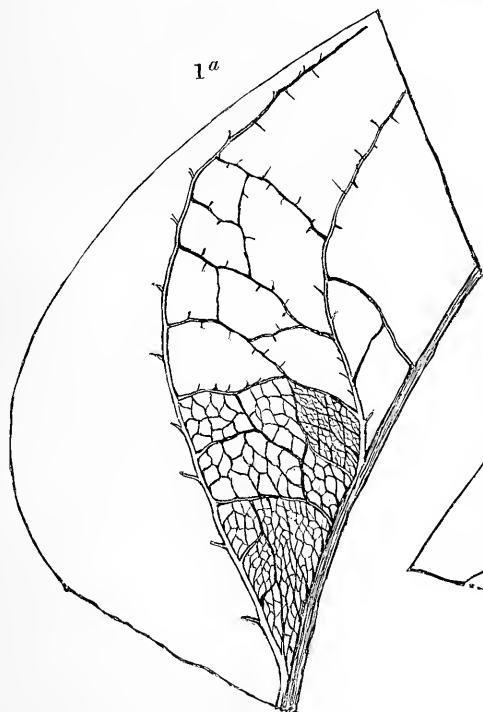
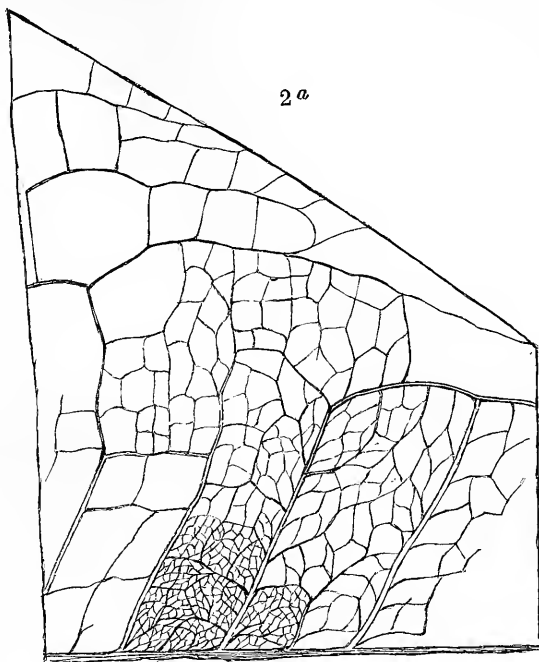
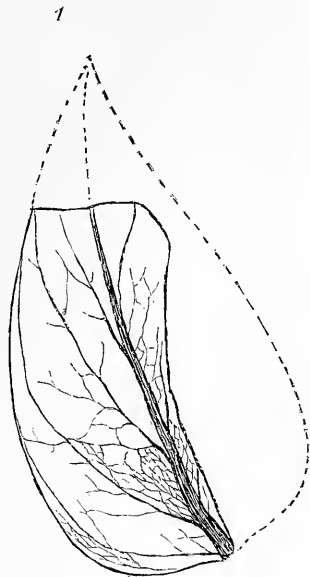
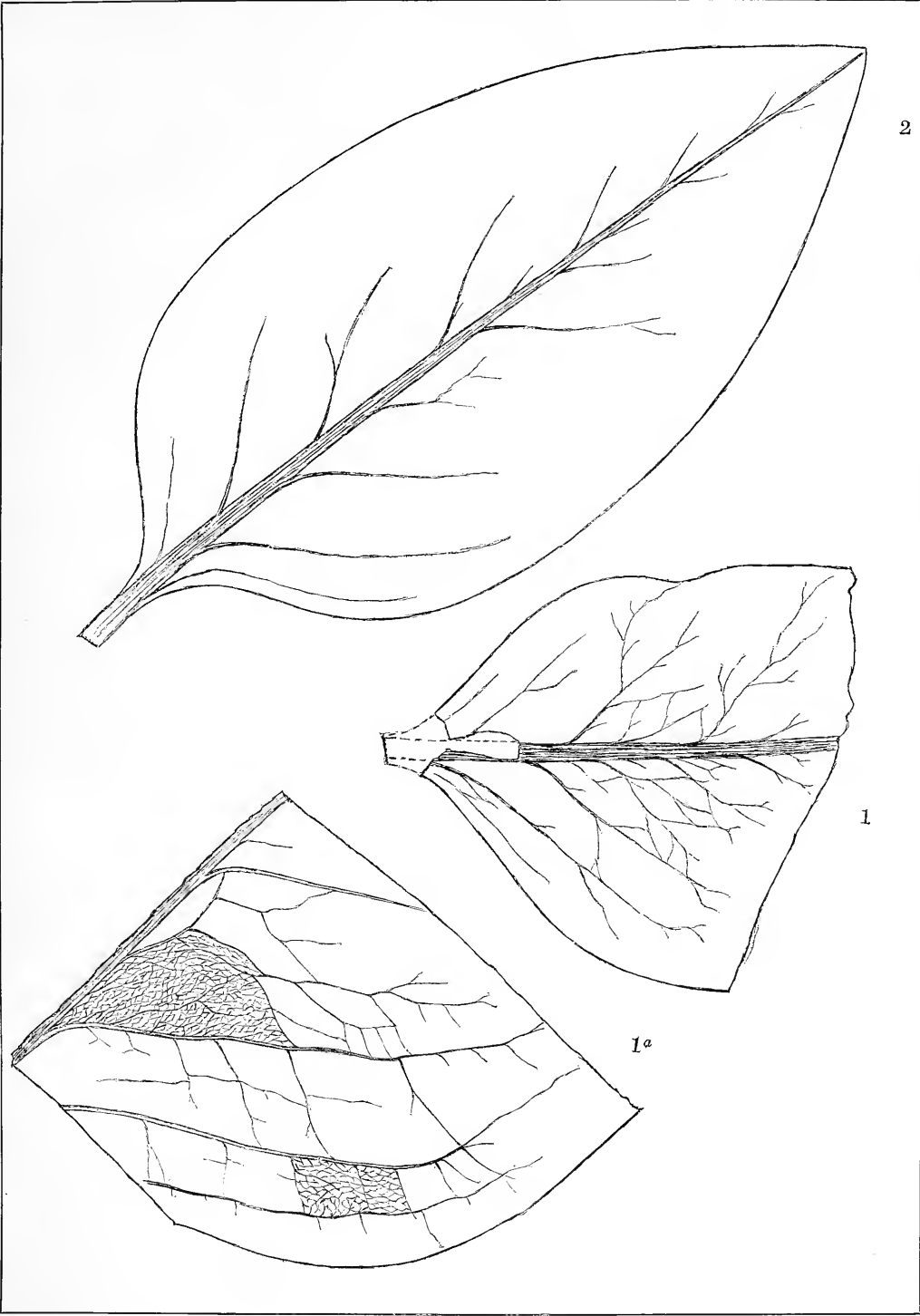


PLATE CXLII.

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1 ^a . Portion of 1 magnified three diameters	285
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2

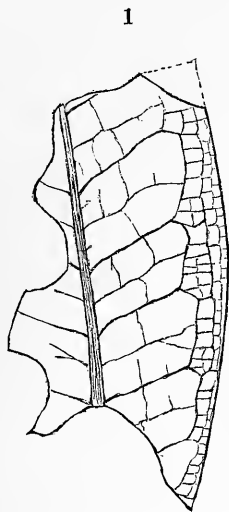
1

1a

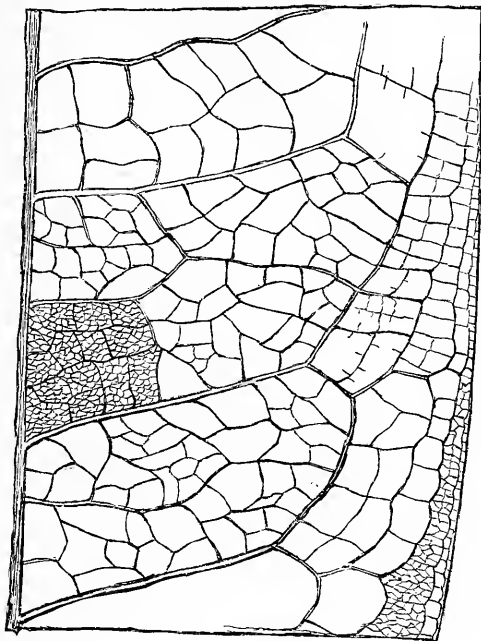
PLATE CXLIII.

PLATE CXLIII.

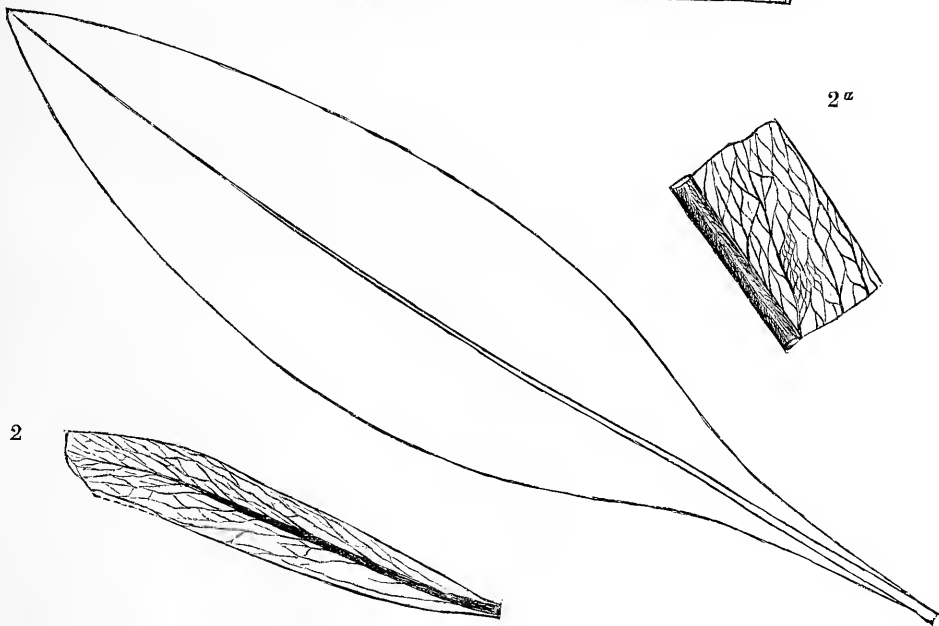
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1a. Portion of 1 magnified three diameters	295
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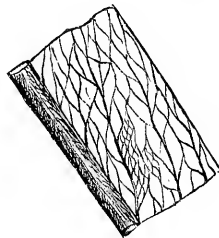
1^a



3



2^a



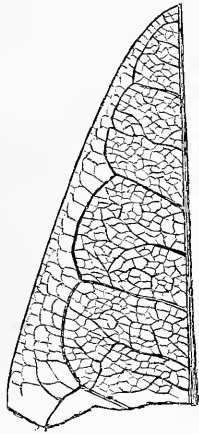
2



PLATE CXLIV.

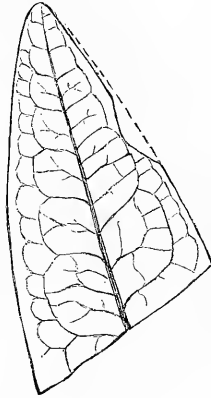
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1 ^a . Portion of 1 magnified three diameters	295
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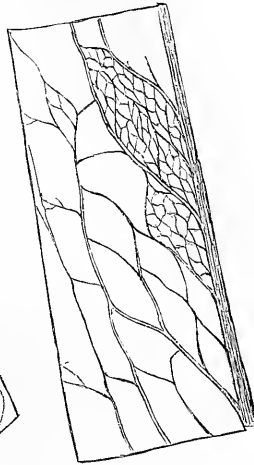


1^a

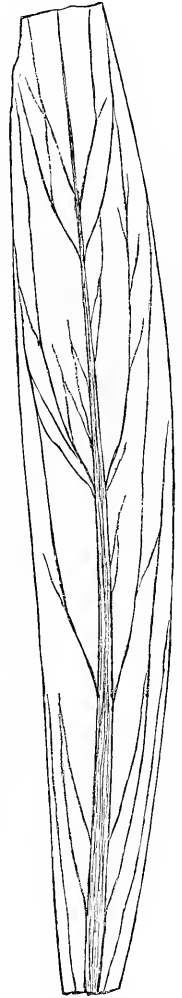
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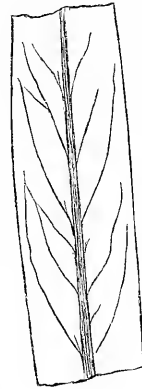
2^b



2^a



2



3

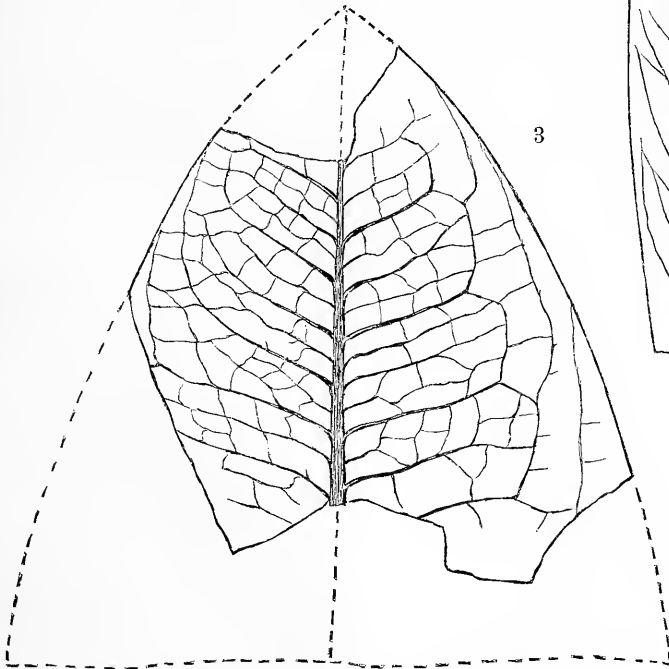
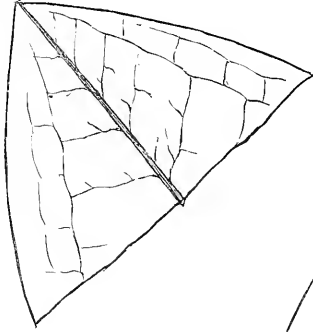


PLATE CXLV.

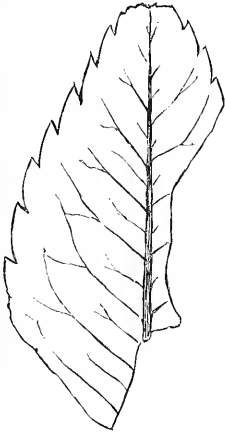
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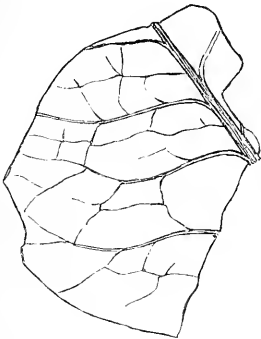
1



2



3



4

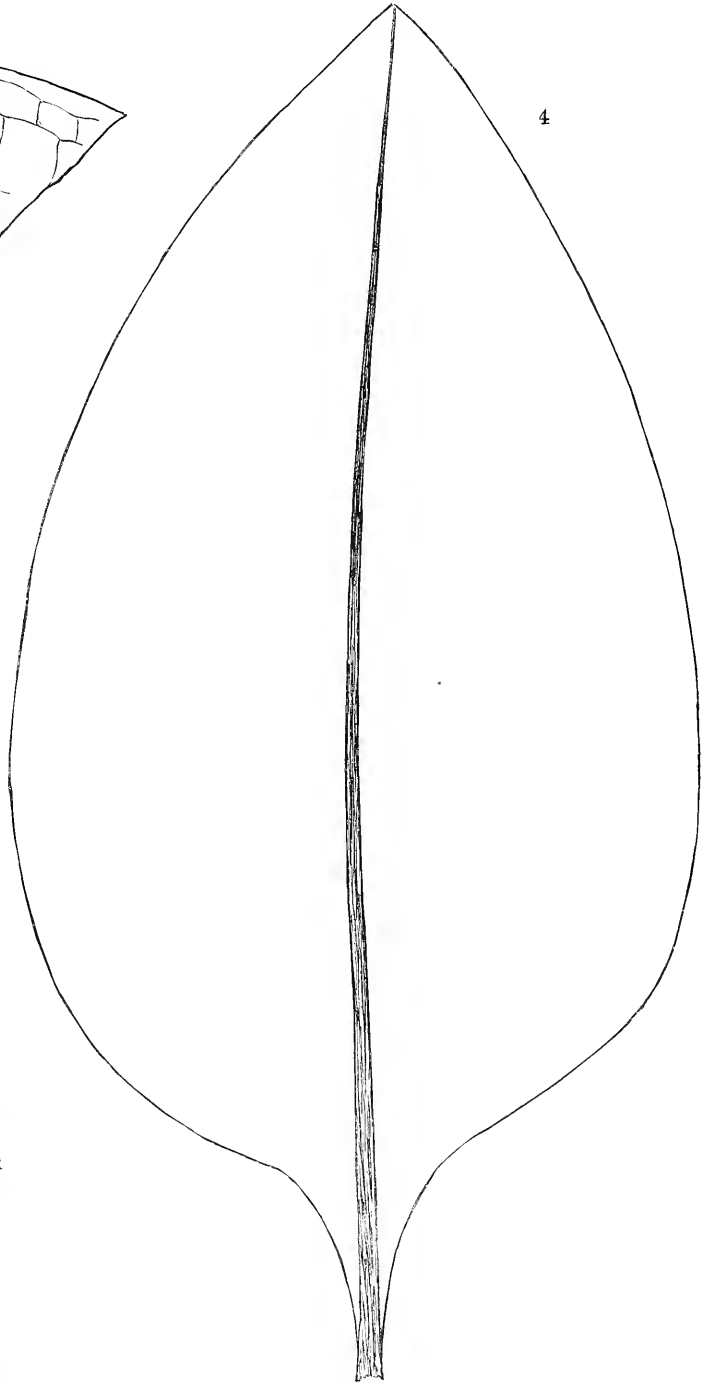
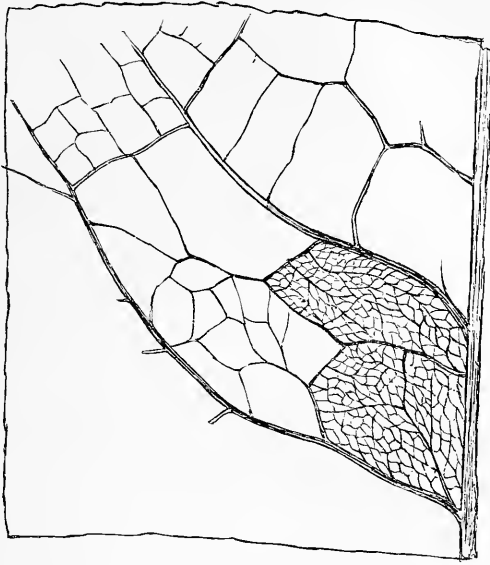


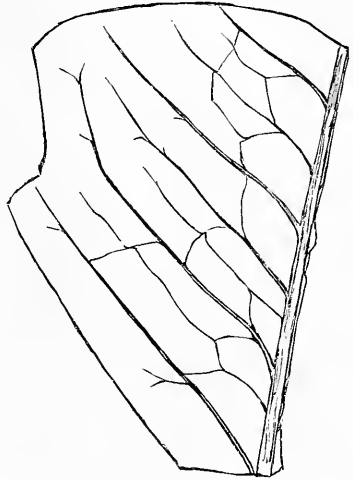
PLATE CXLVI.

PLATE CXLVI.

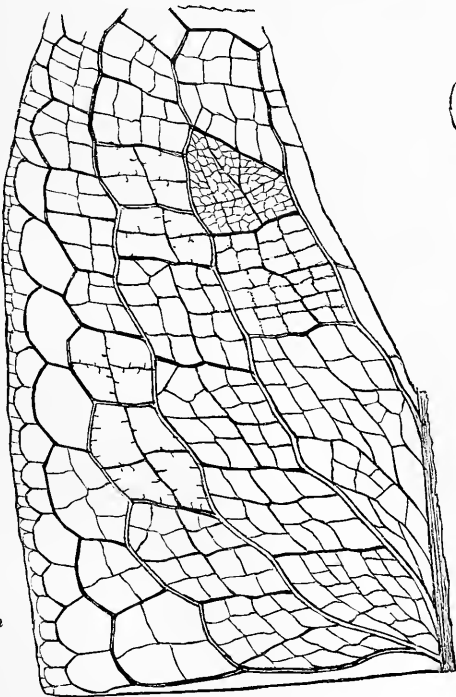
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1



1a



3a

2



5



4



3

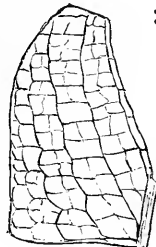


PLATE CXLVII.

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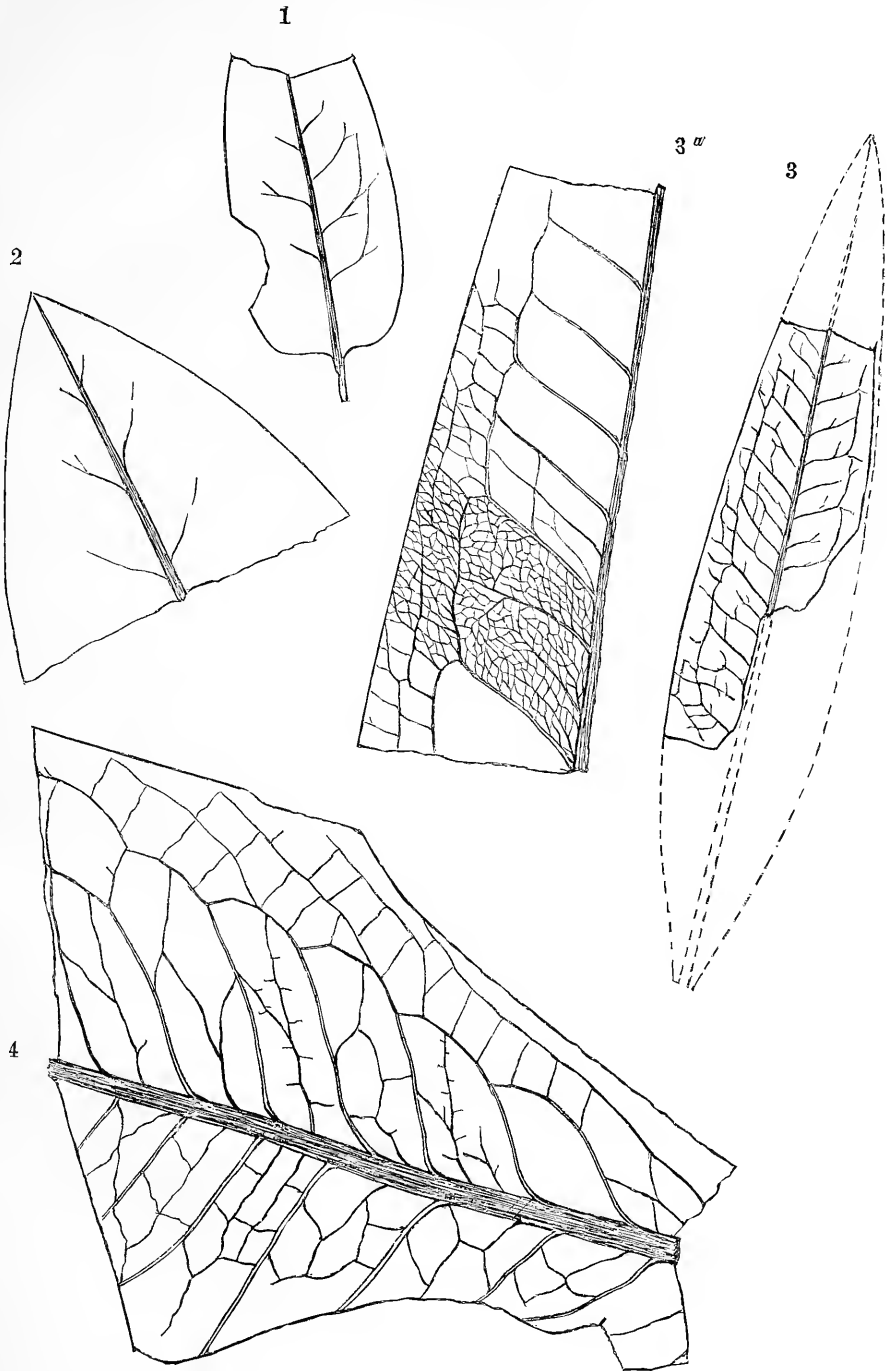


PLATE CXLVIII.

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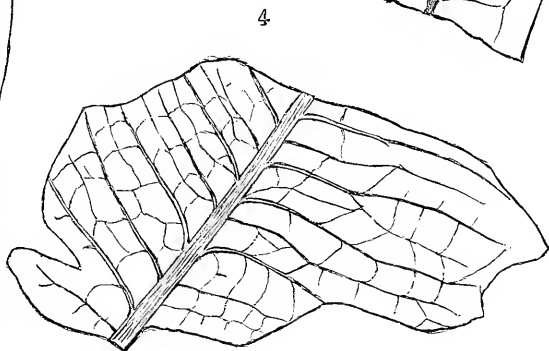
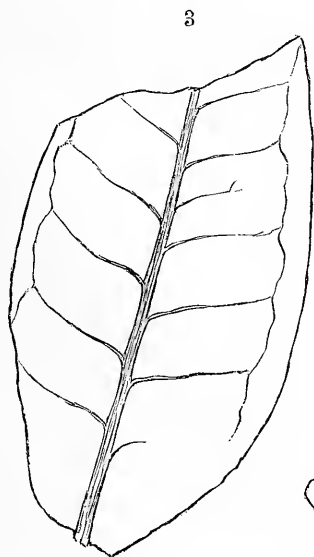
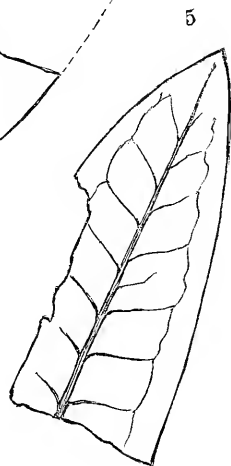
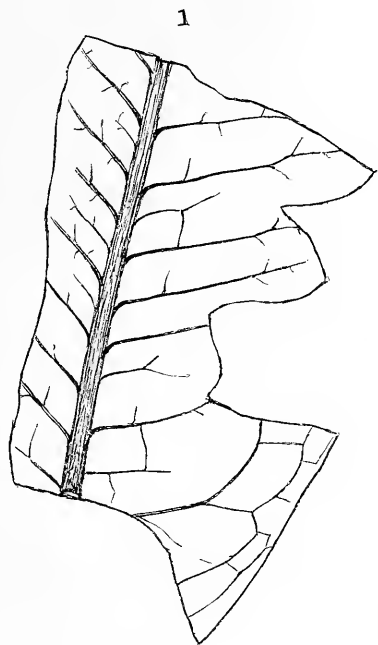


PLATE CXLIX.

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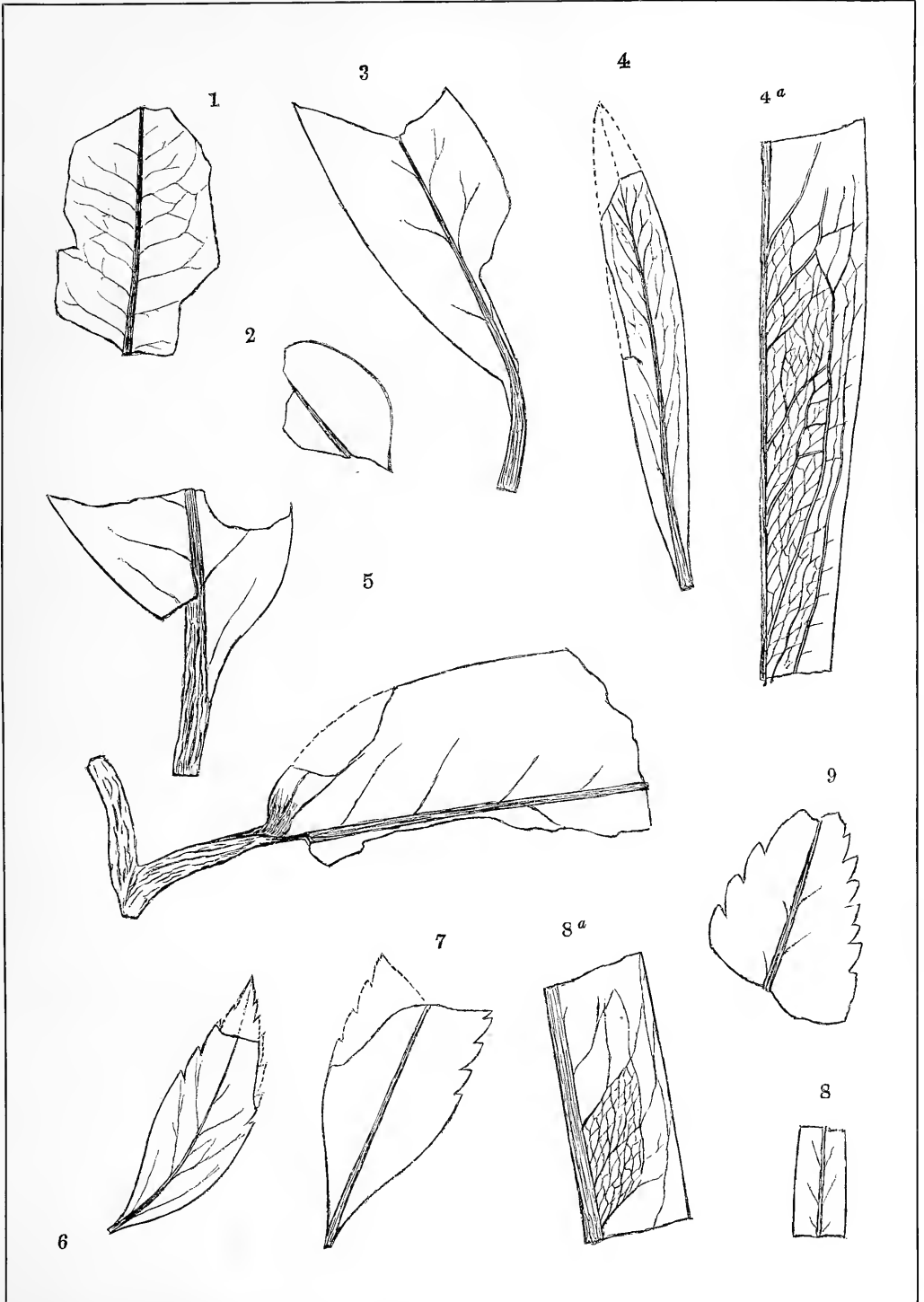


PLATE CL.

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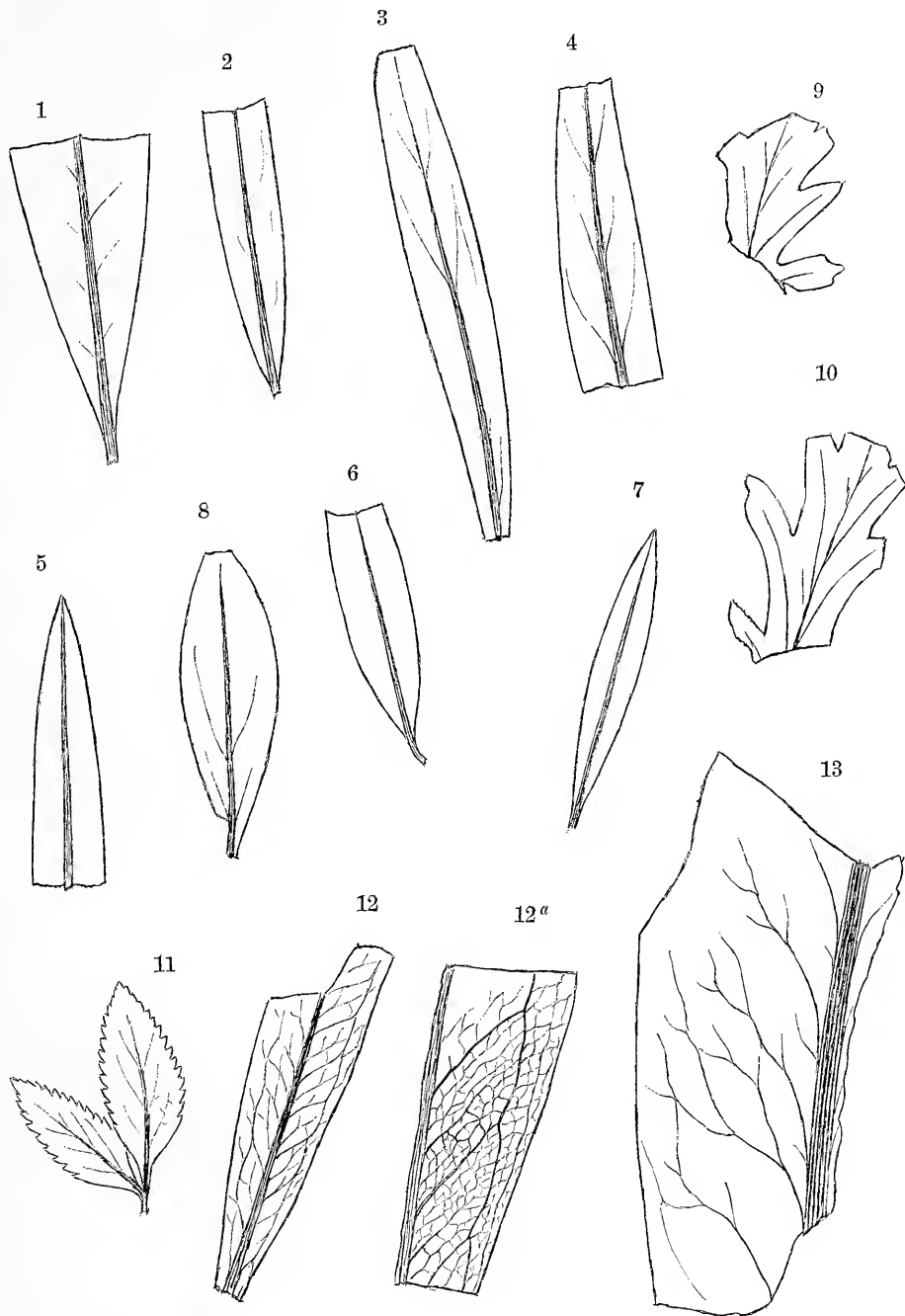


PLATE CLI.

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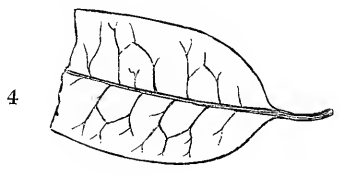
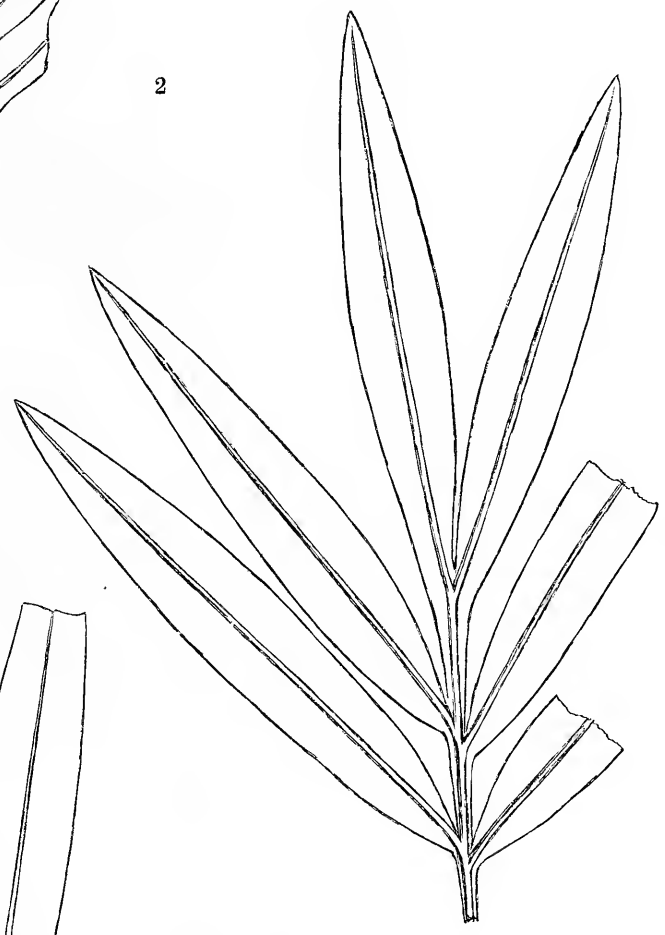
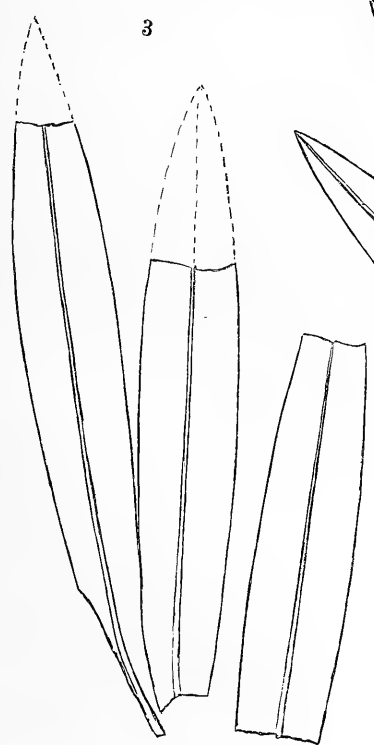
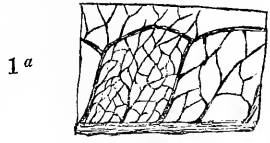
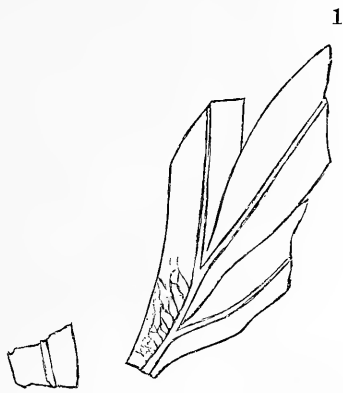


PLATE CLII.

PLATE CLII.

	Page.
FIGS. 1, 4. <i>SAPINDOPSIS VARIABILIS</i> , sp. nov	298
1. Upper part of a small compound leaf	298
4. Fragments from the upper part of a compound leaf	298
4 ^a . Portion of 4 magnified three diameters	298
FIGS. 2, 3. <i>SAPINDOPSIS MAGNIFOLIA</i> , sp. nov	297
2. Summit of a large compound leaf	297
3. Fragments of very large leaflets	297
FIG. 5. <i>SASSAFRAS CRETACEUM</i> Newb., var. <i>HETEROLOBUM</i>	289
5. Entire leaf	289

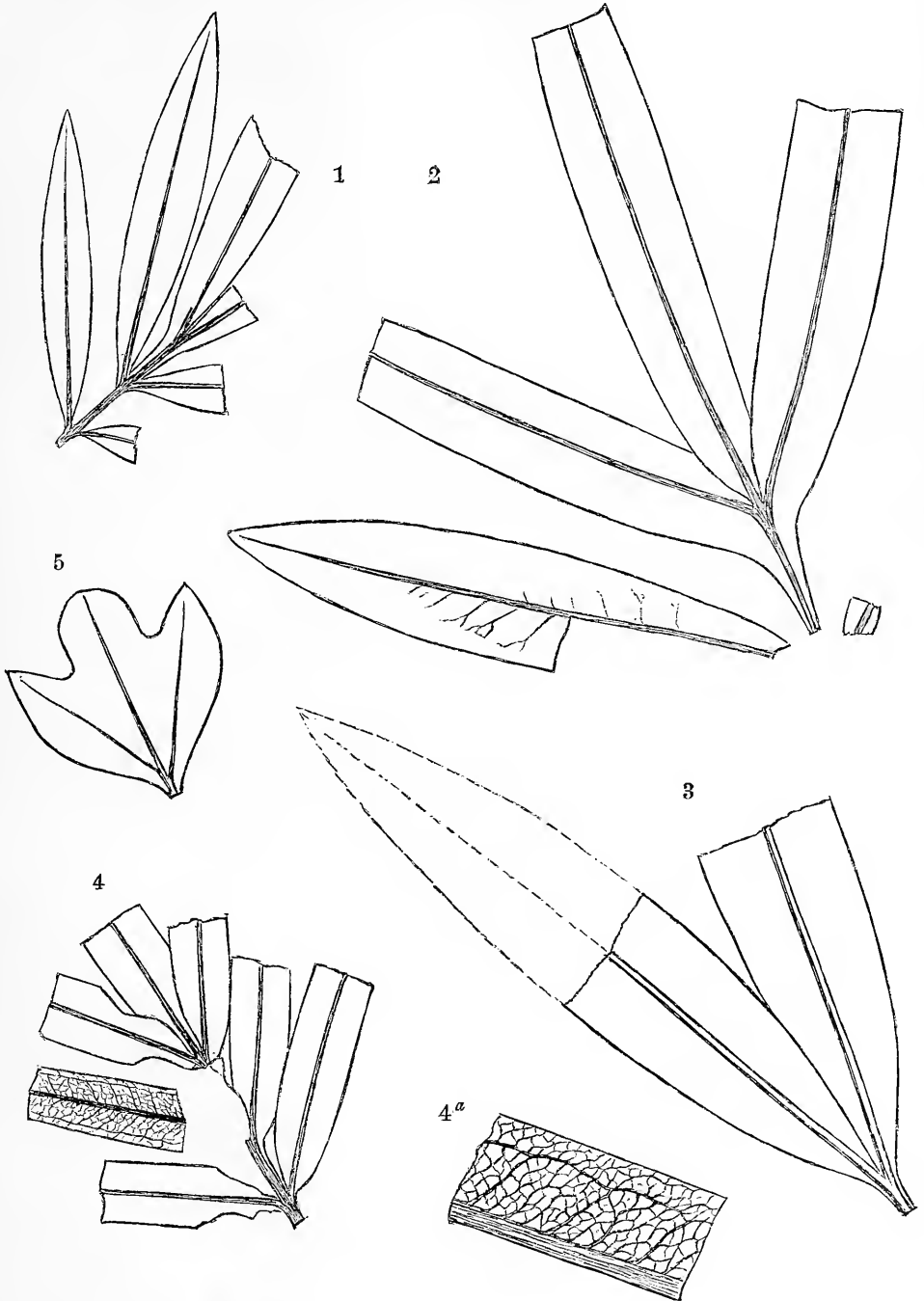


PLATE CLIII.

PLATE CLIII.

	Page.
FIG. 1. <i>SAPINDOPSIS TENUINERVIS</i> , sp. nov.	301
1. Upper part of a compound leaf	301
1 ^a . Portion of the base of a leaflet magnified three diameters	301
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3. Fragment of a compound leaf	298
FIG. 4. <i>SAPINDOPSIS BREVIFOLIA</i> , sp. nov.	300
4. Summit of a compound leaf	300

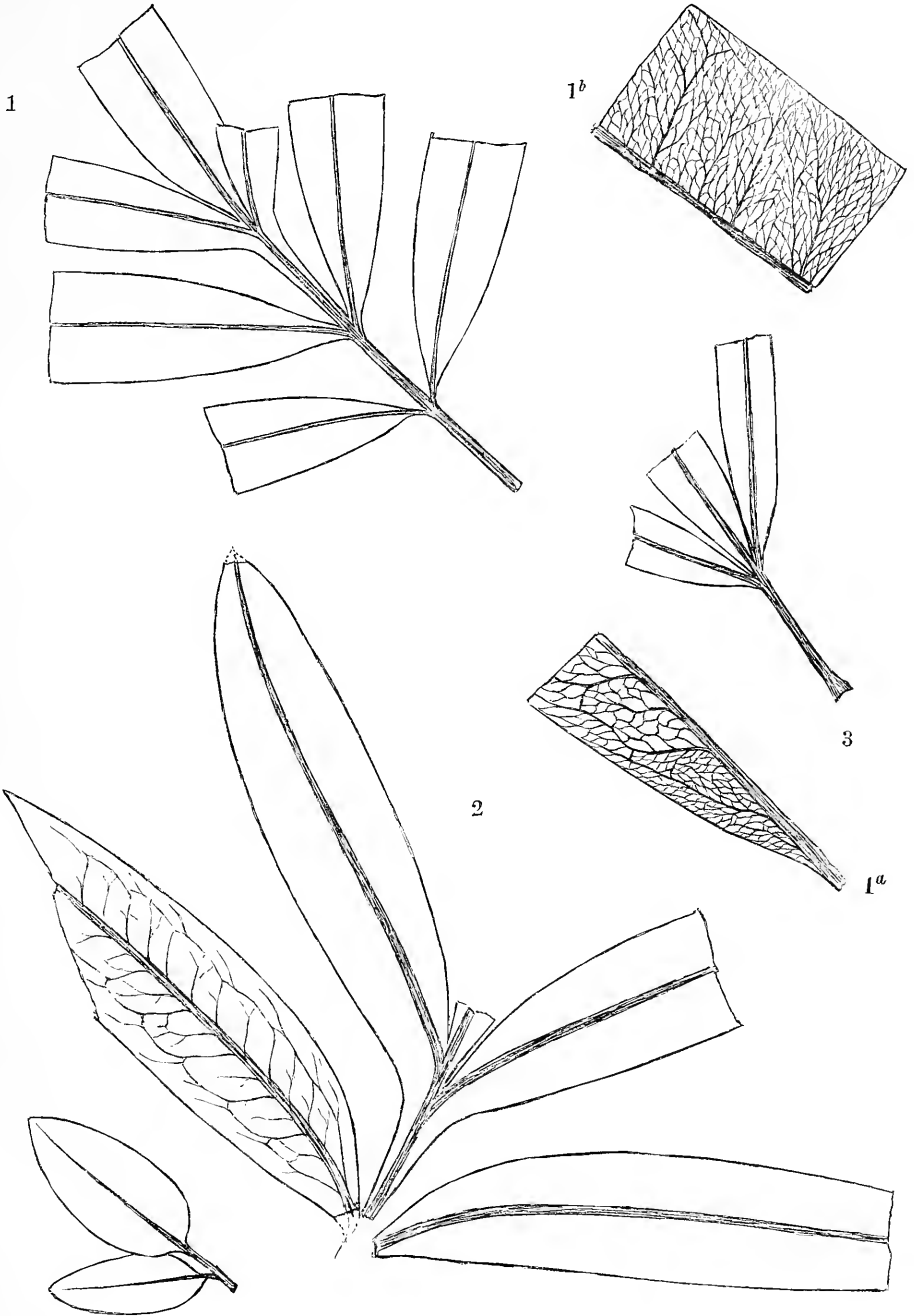


PLATE CLIV.

PLATE CLIV.

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1. Upper part of a small compound leaf.	297
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FIG. 6. <i>SAPINDOPSIS PARVIFOLIA</i> , sp. nov.	300
6. Upper part of a compound leaf.	300

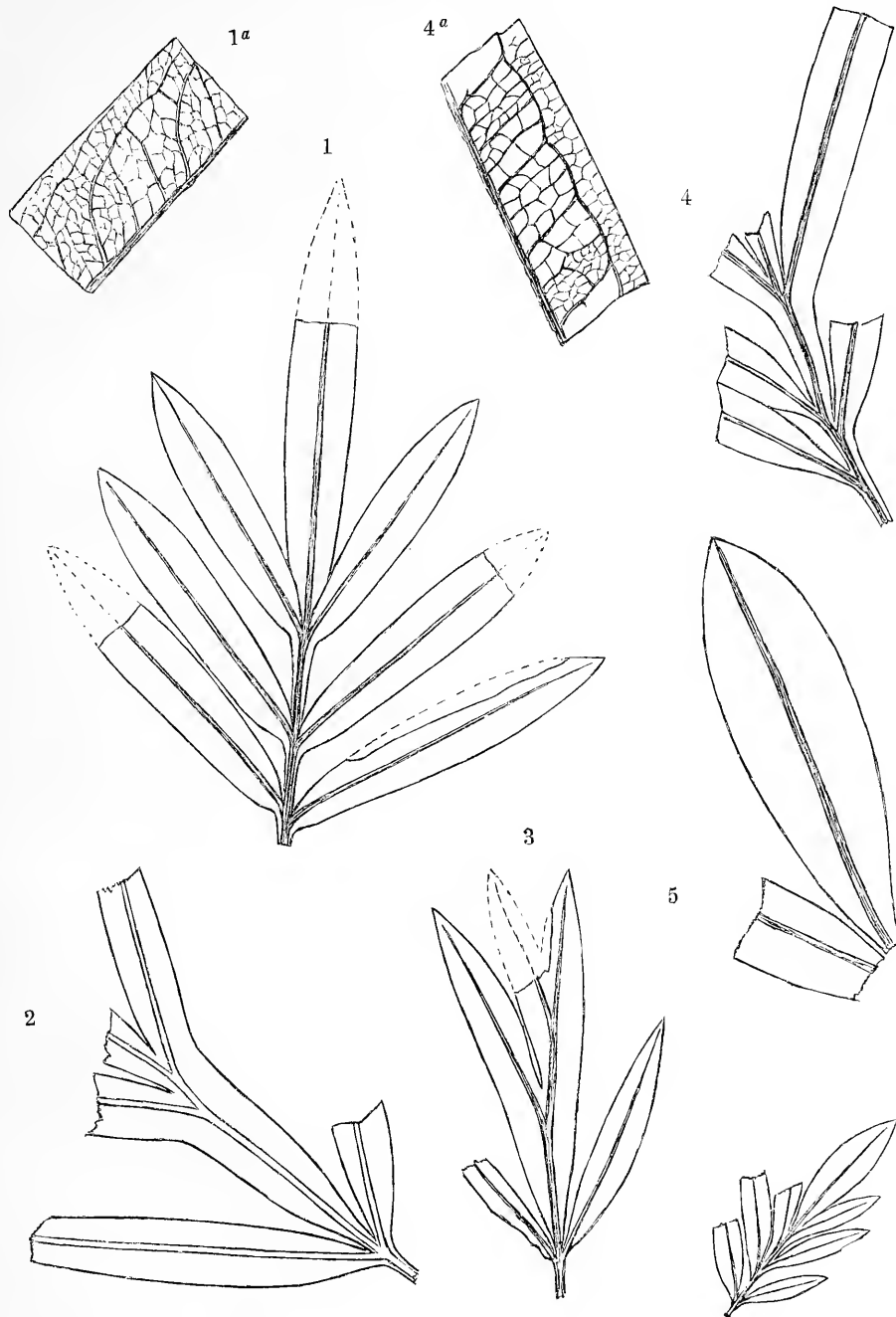


PLATE CLV.

PLATE CLV.

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9. Fragment of a leaf	311
9 ^a . Portion of 9 magnified three diameters	311

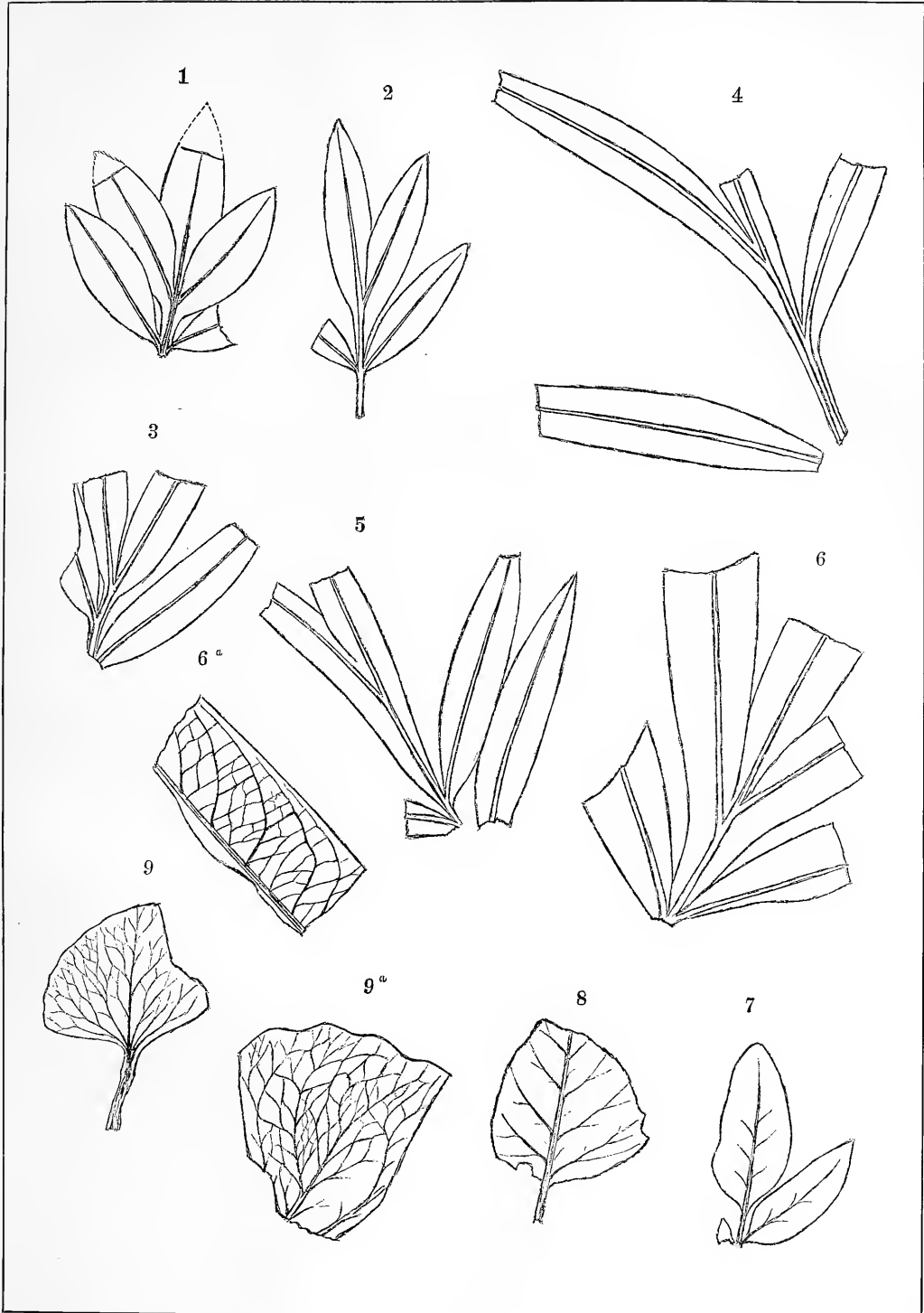


PLATE CLVI.

PLATE CLVI.

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2. Small fragment of a leaf	286
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12. Fragment of a leaf	290
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13. Small portion of a leaf	301

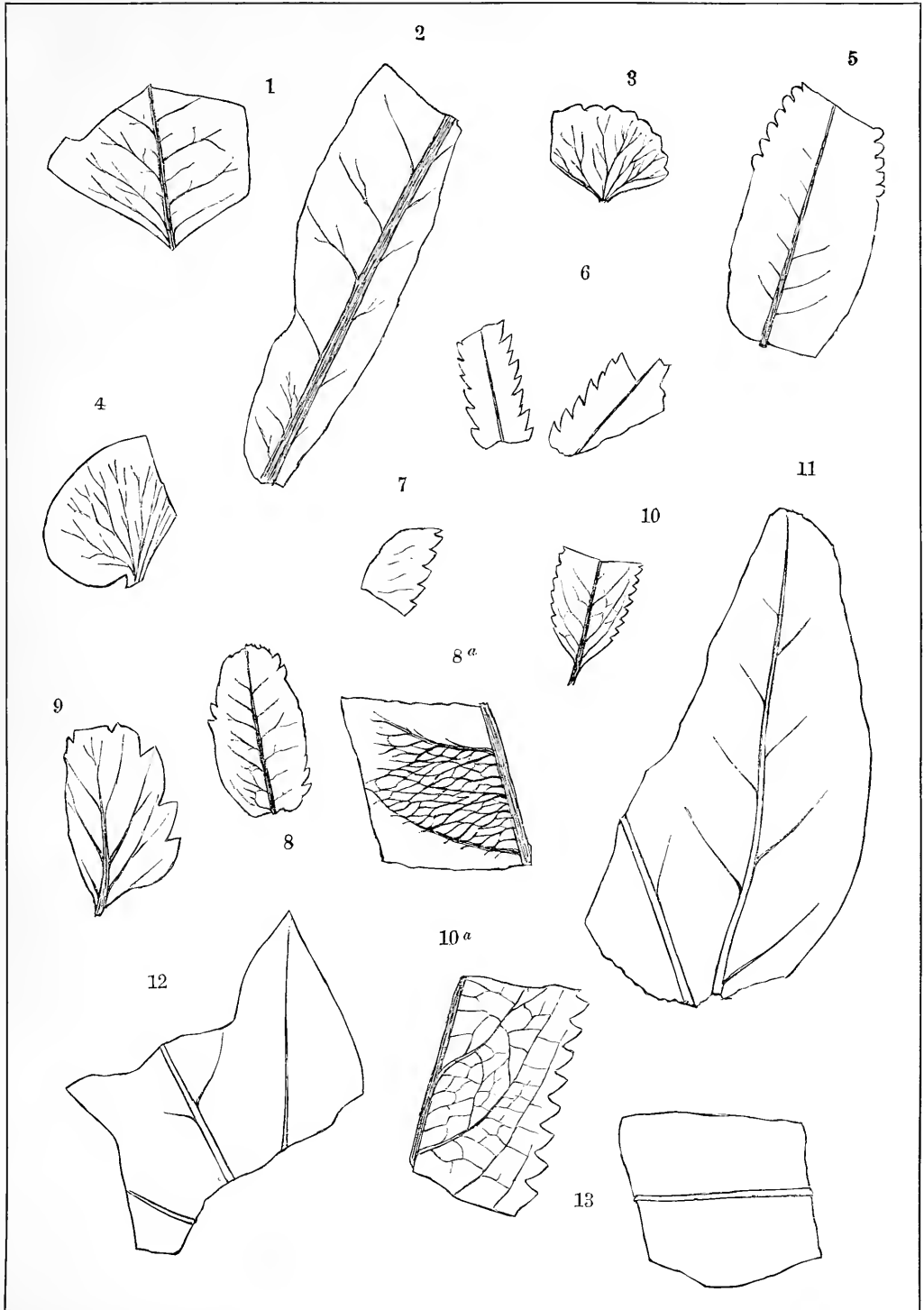


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PLATE CLVII.

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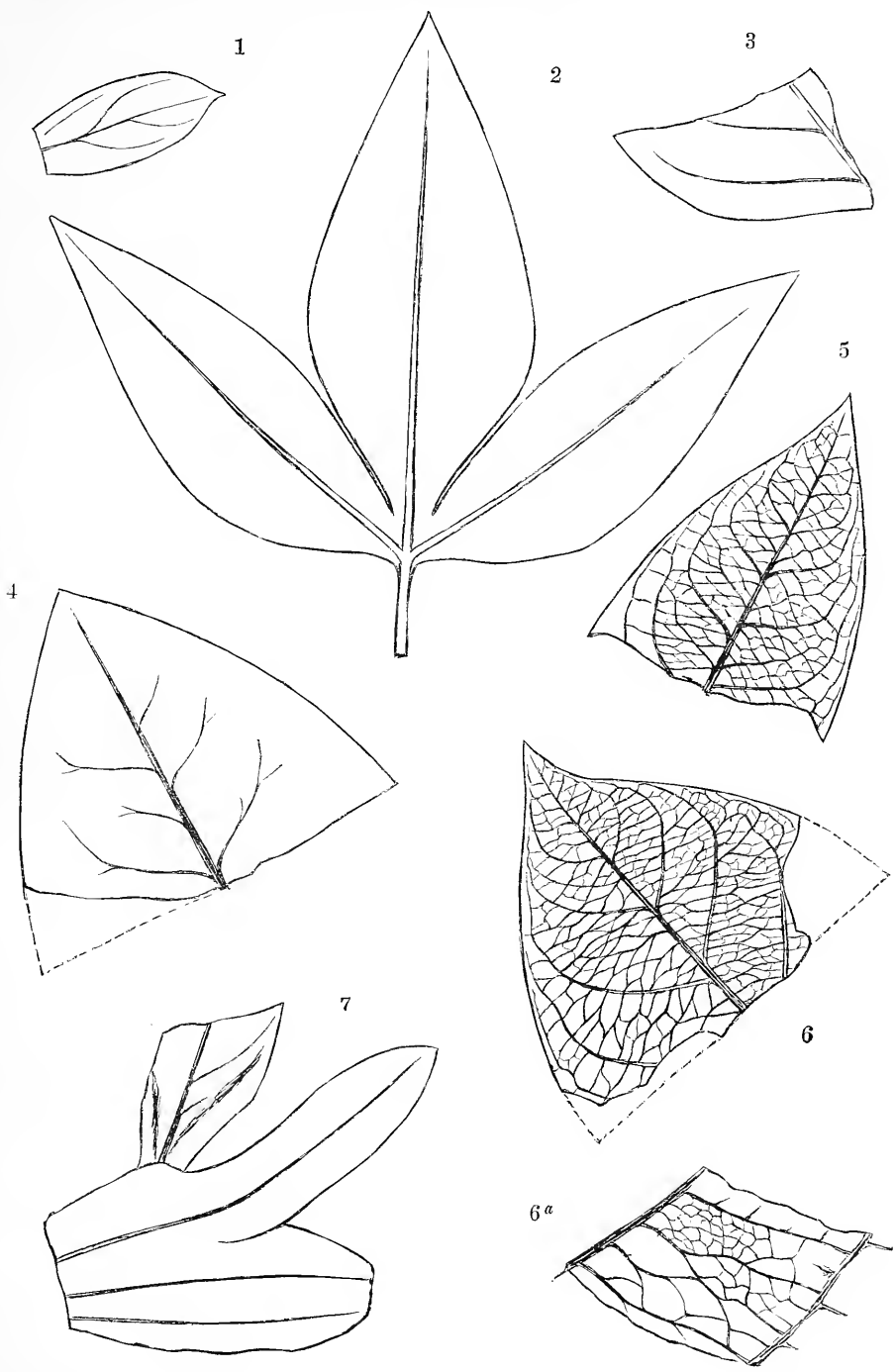


PLATE CLVIII.

PLATE CLVIII.

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1. Small fragment of a leaf.	313
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7 ^a . Portion of 7 magnified three diameters.	313
FIG. 8. <i>CELASTROPHYLLUM BROOKENSE</i> , sp. nov.	305
8. Fragment of a small leaf.	305

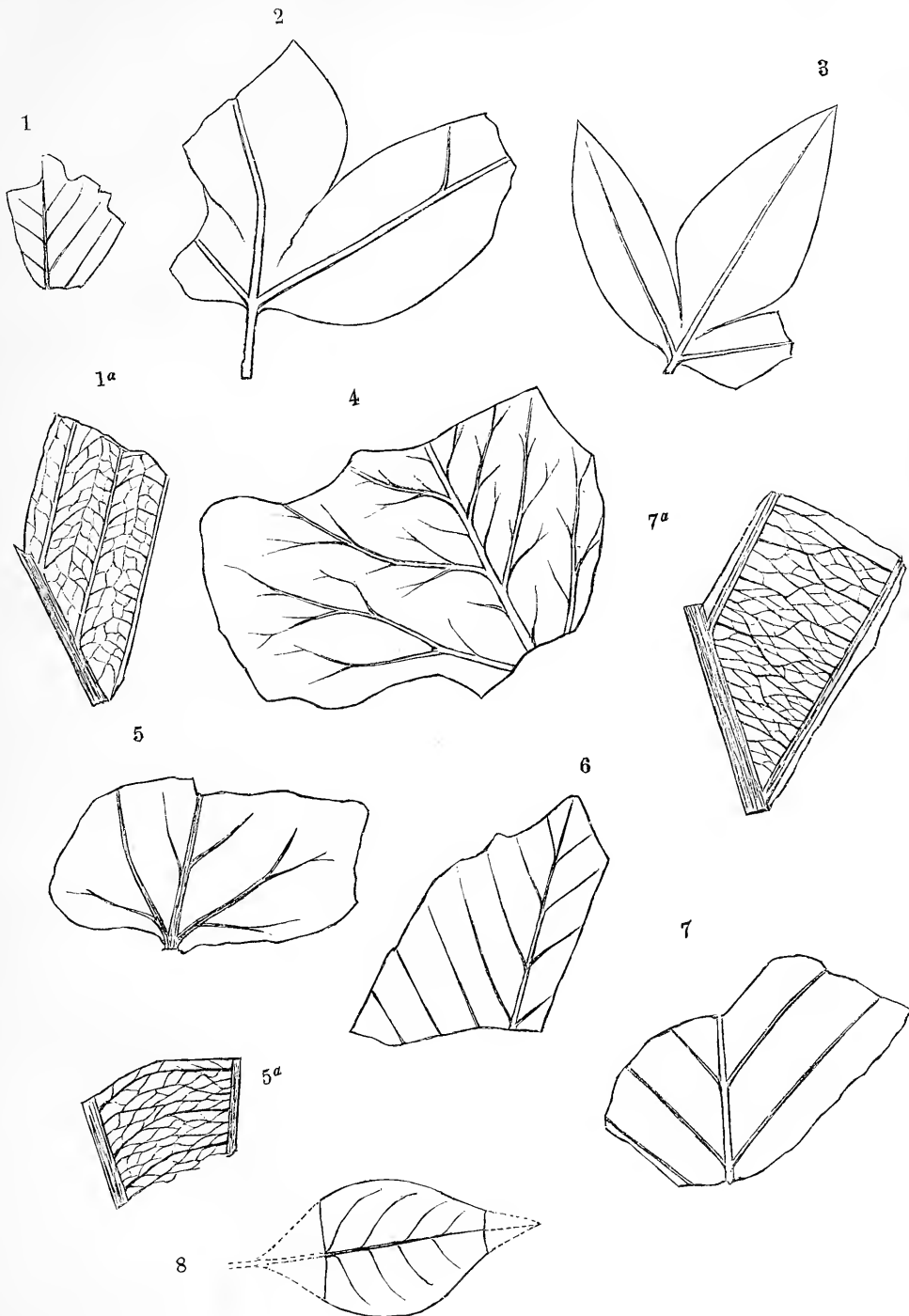


PLATE CLIX.

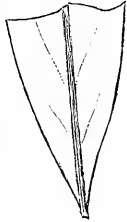
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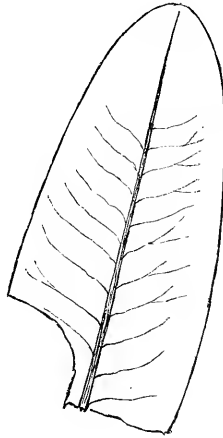
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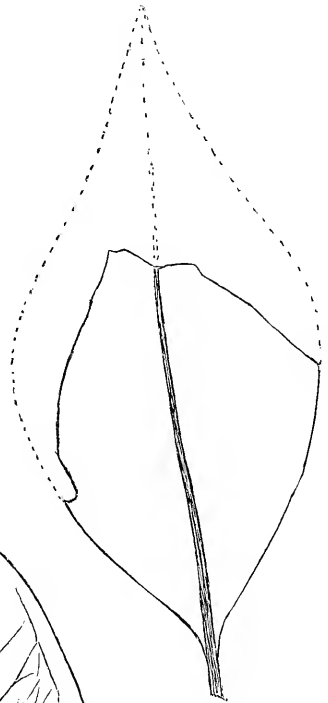
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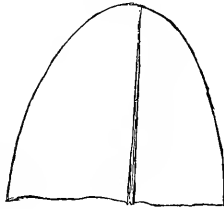
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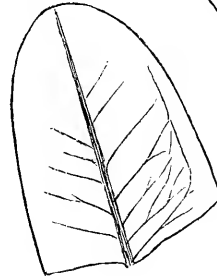
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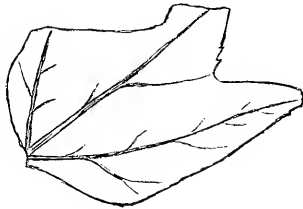
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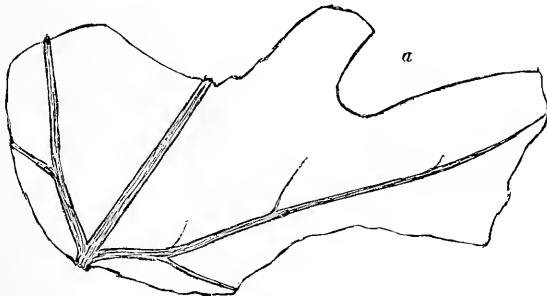
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4



a



10

9

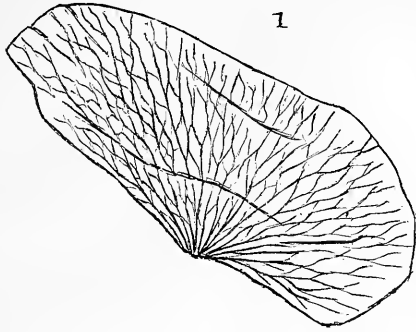


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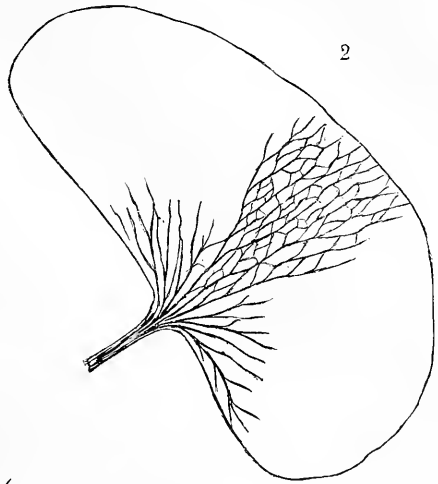
PLATE CLX.

PLATE CLX.

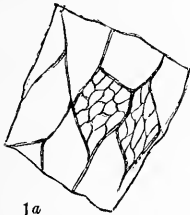
	Page.
FIGS. 1, 2. <i>PROTEOPHYLLUM RENIFORME</i> , sp. nov	282
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1 ^a . Portion of 1 magnified three diameters	282
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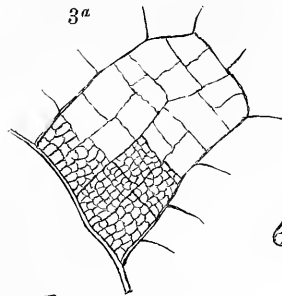
1



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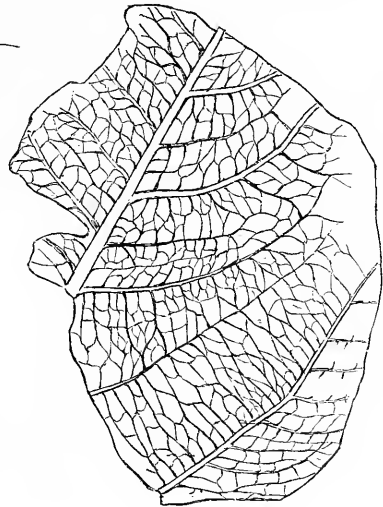


1a



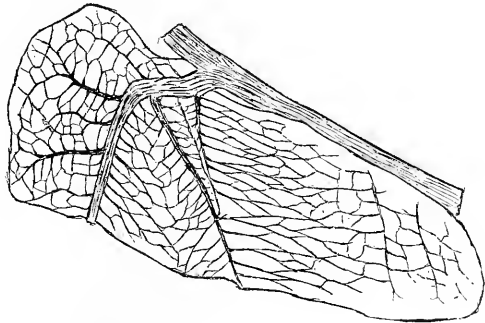
3a

4



3

6



5

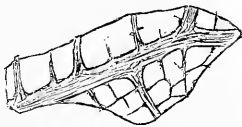
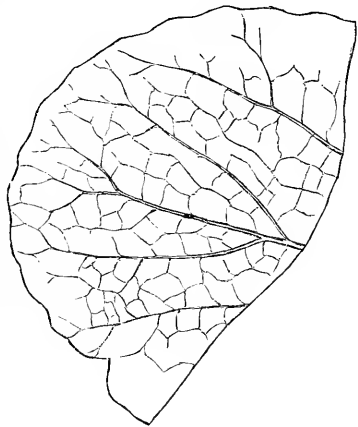


PLATE CLXI.

PLATE CLXI.

	Page.
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1. Fragment of a leaf showing mainly the basal portion	321
1 ^a . Portion of 1 magnified three diameters.....	321
2. Summit of a smaller leaf	321

2



1

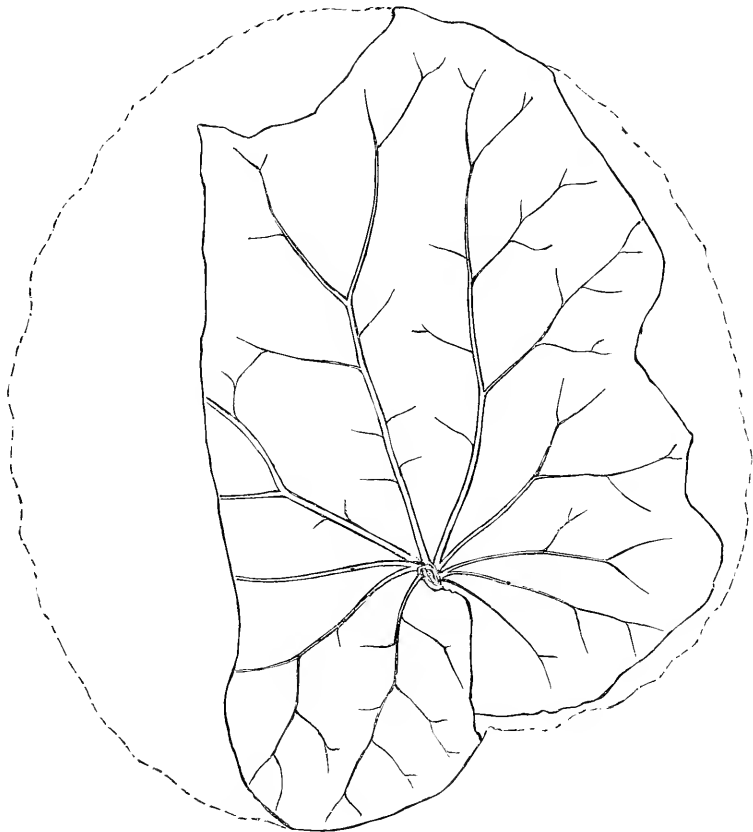
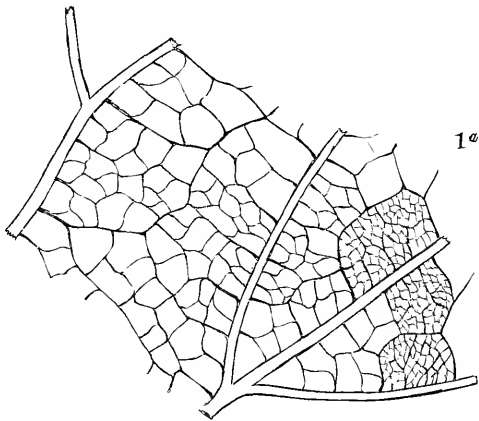
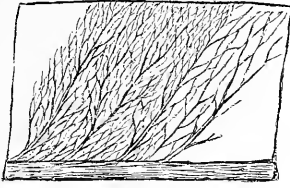


PLATE CLXII.

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1. Nearly entire leaf	324
FIG. 2. ARALLEPHYLLUM ACEROIDES, sp. nov.	319
2. Lower portion of a large leaf	319
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4. Fragment of a leaf	325
4 ^a . Portion magnified to show nervation	325

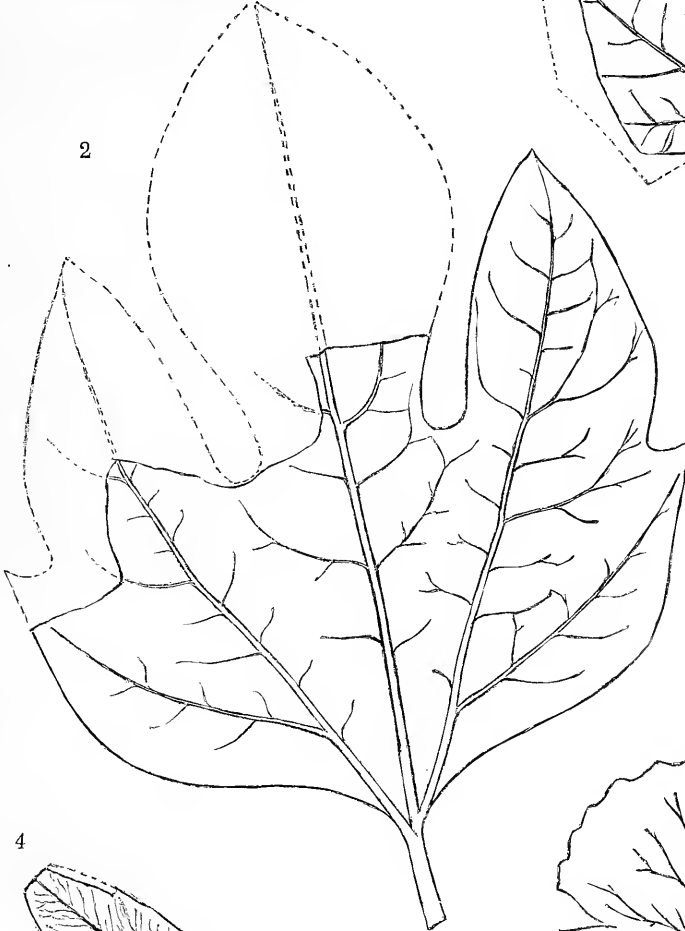
4^a



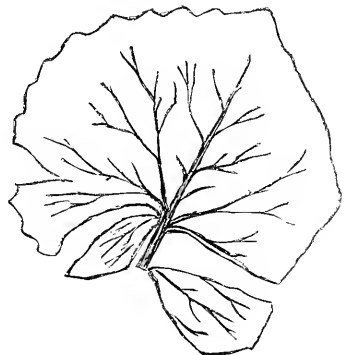
1



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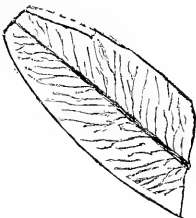


PLATE CLXIII.

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7. An entire leaf	312
7 ^a . Portion of 7 magnified three diameters	312
FIG. 8. ACERIPHYLLUM ARALIOIDES, sp. nov.	321
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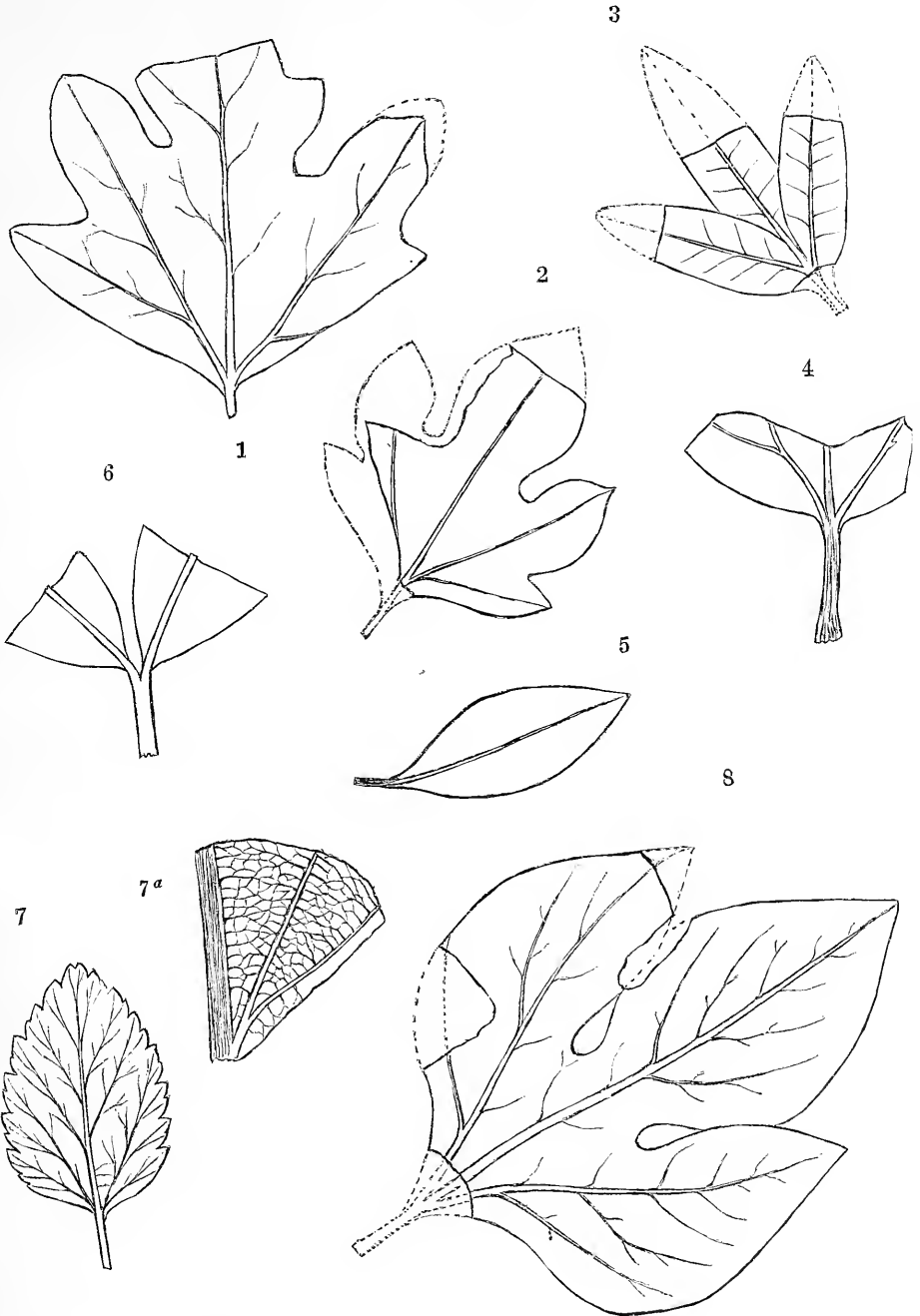
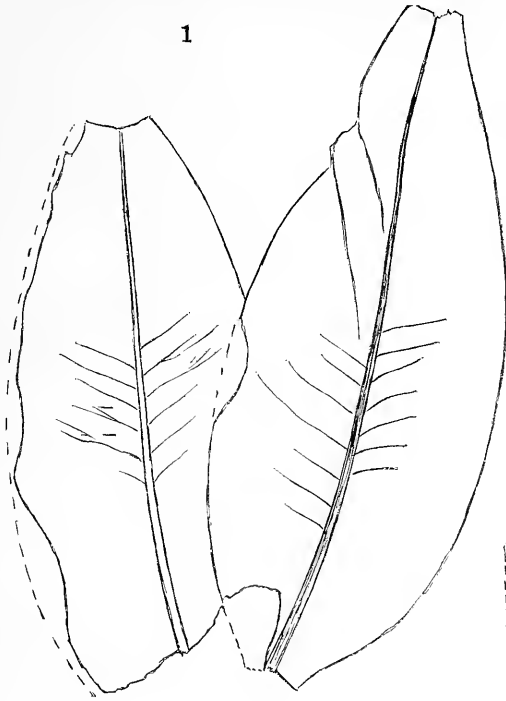


PLATE CLXIV

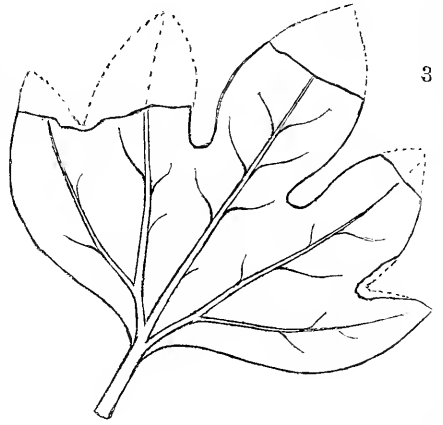
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4. Nearly complete leaf	290
FIG. 5. <i>SASSAFRAS CRETACEUM</i> , Newb., var <i>HETEROLOBUM</i>	289
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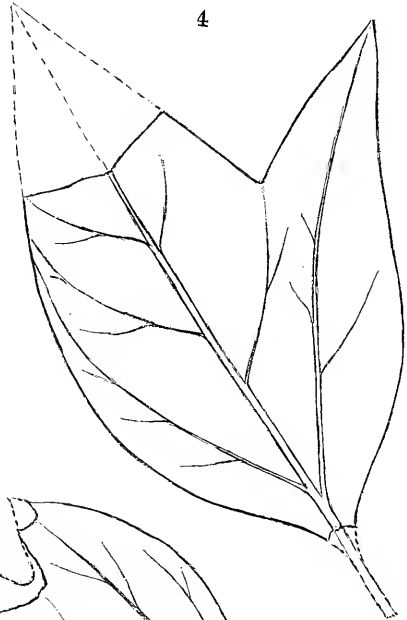
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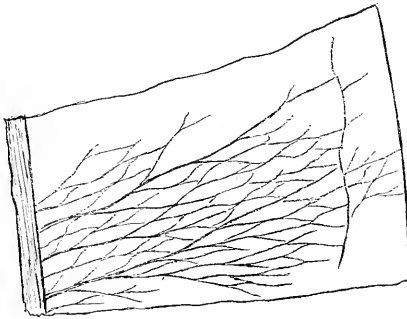
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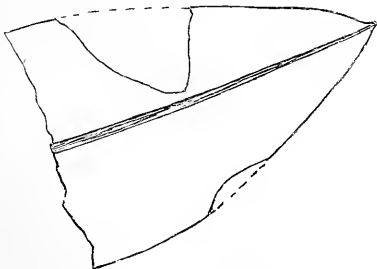
4



1^a



2



5



PLATE CLXV.

PLATE CLXV.

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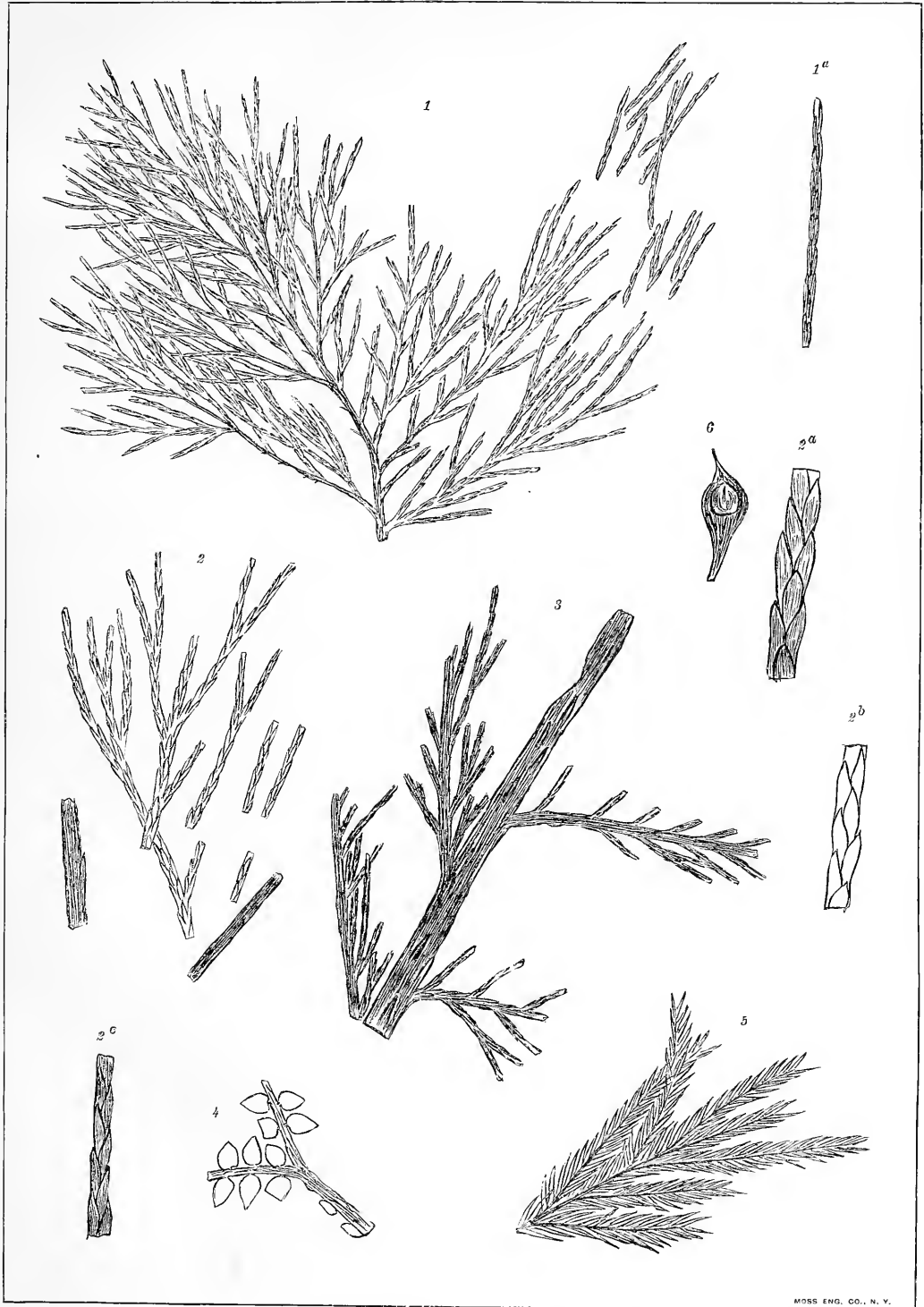


PLATE CLXVIII.

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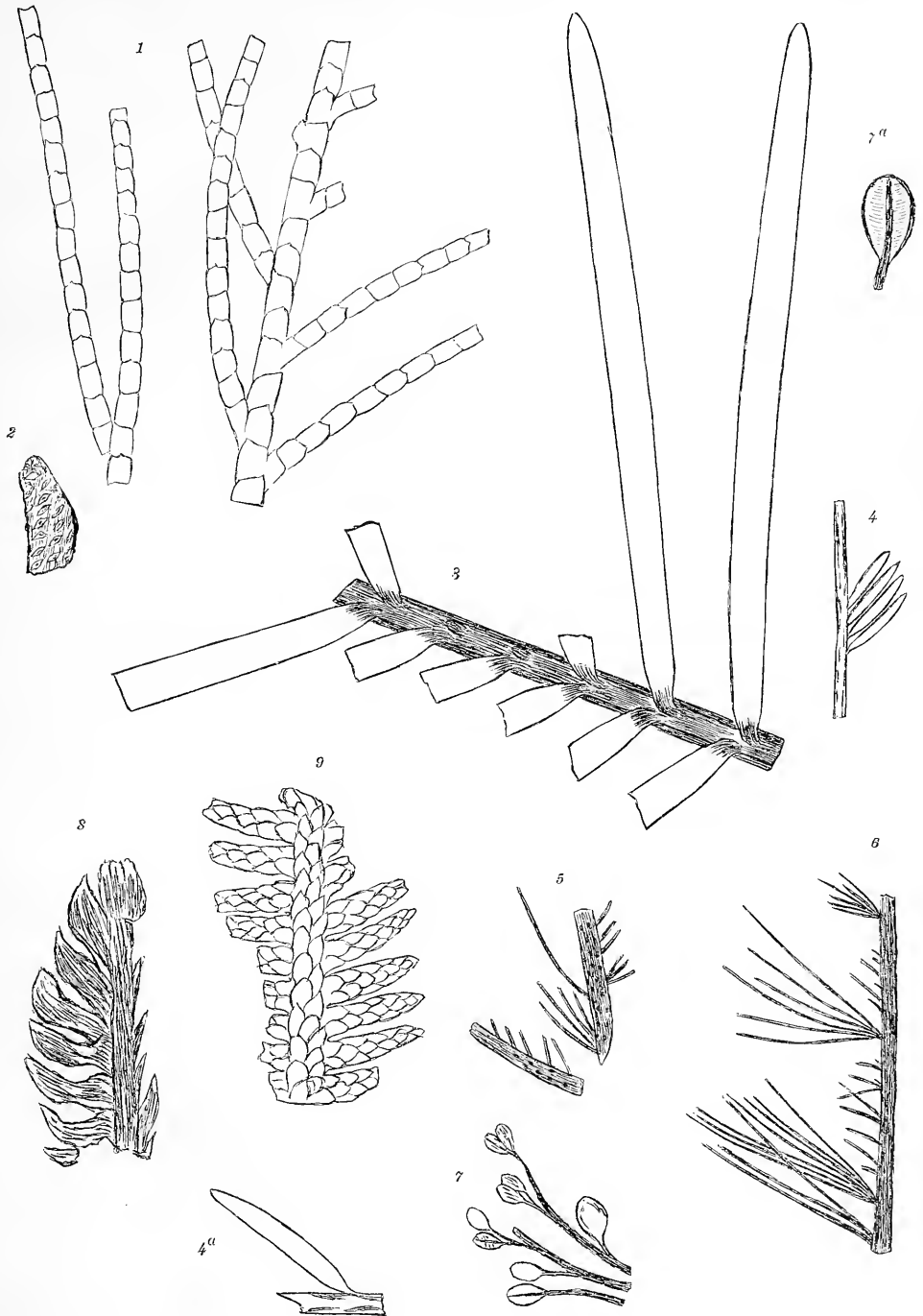


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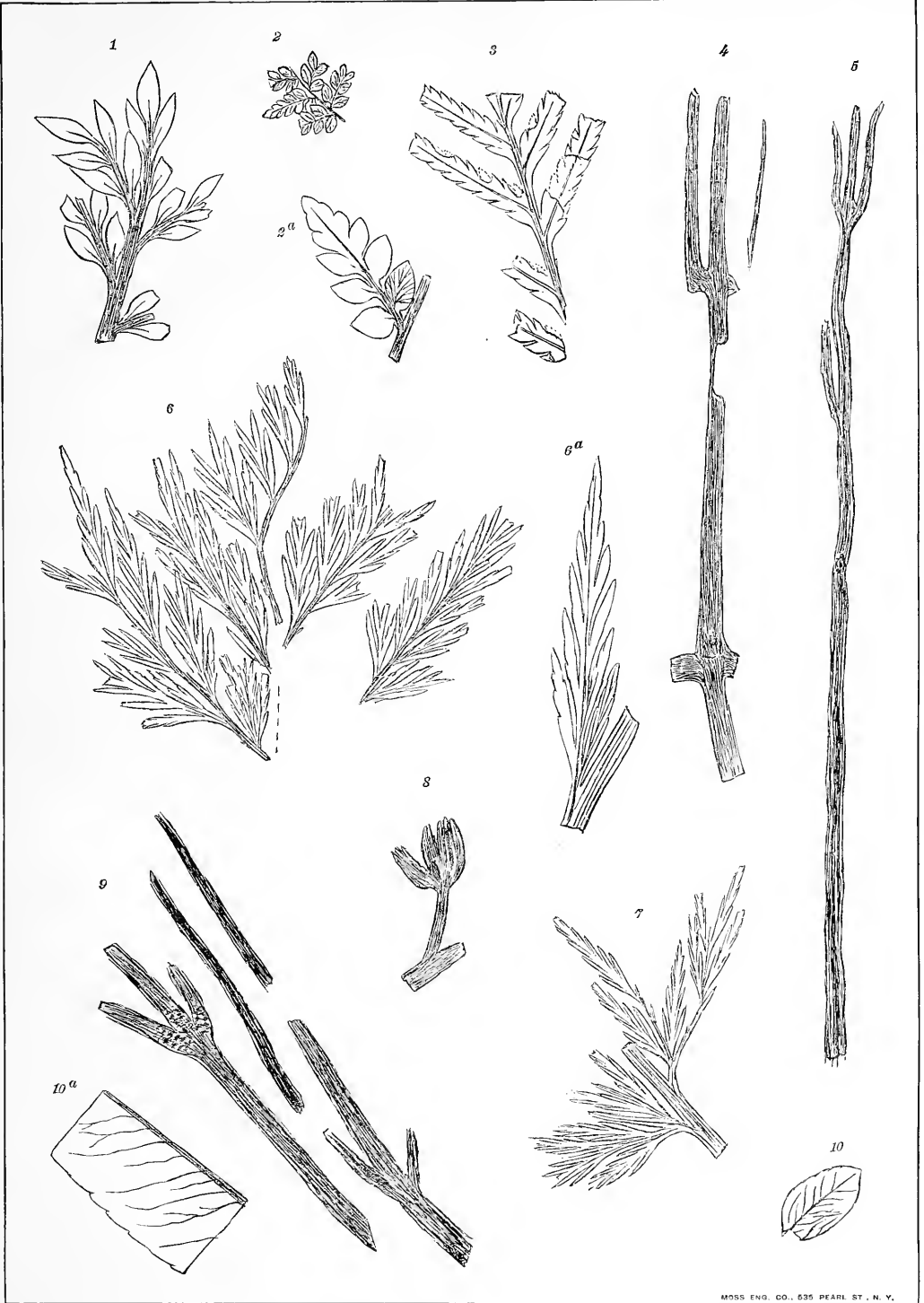


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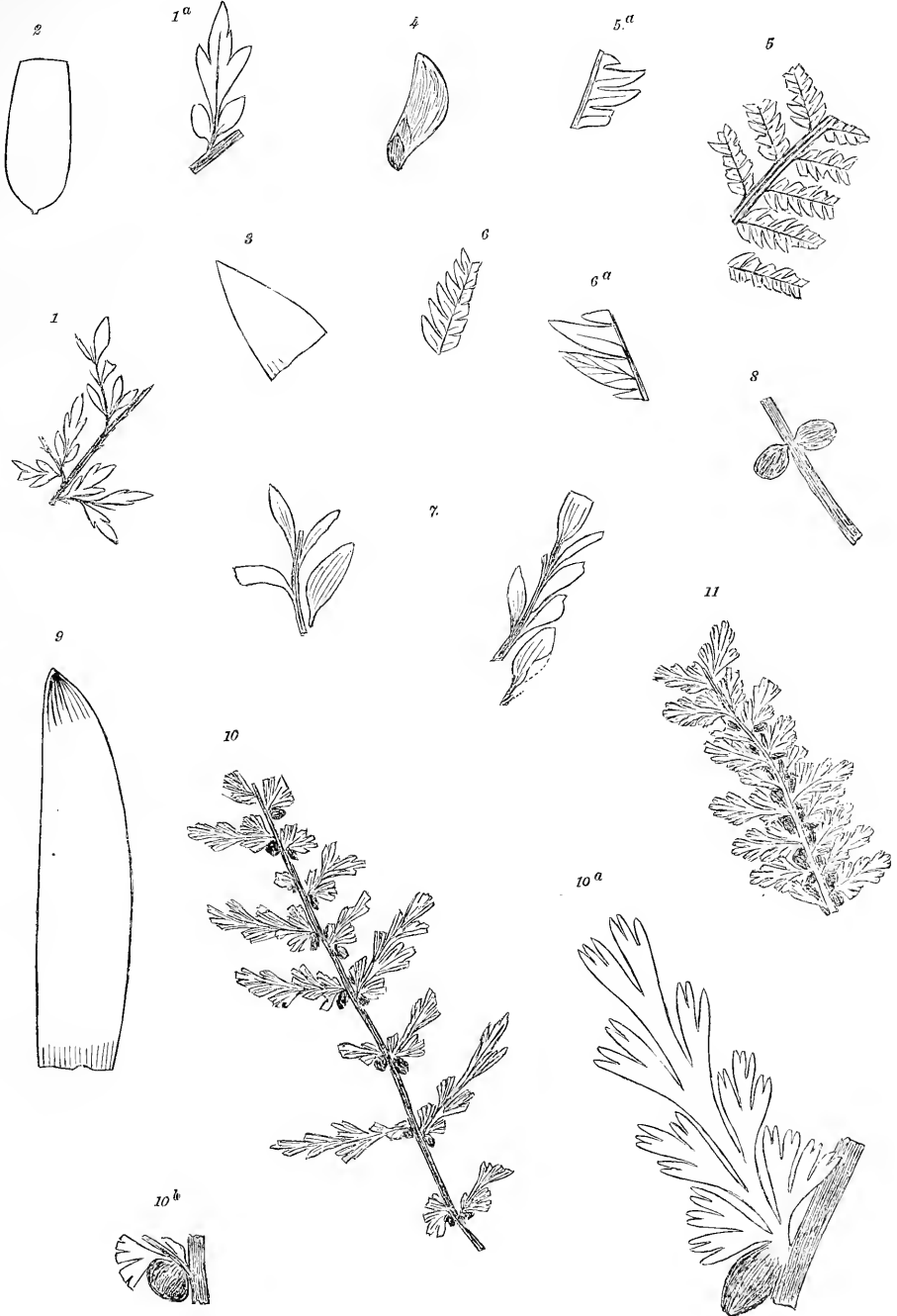


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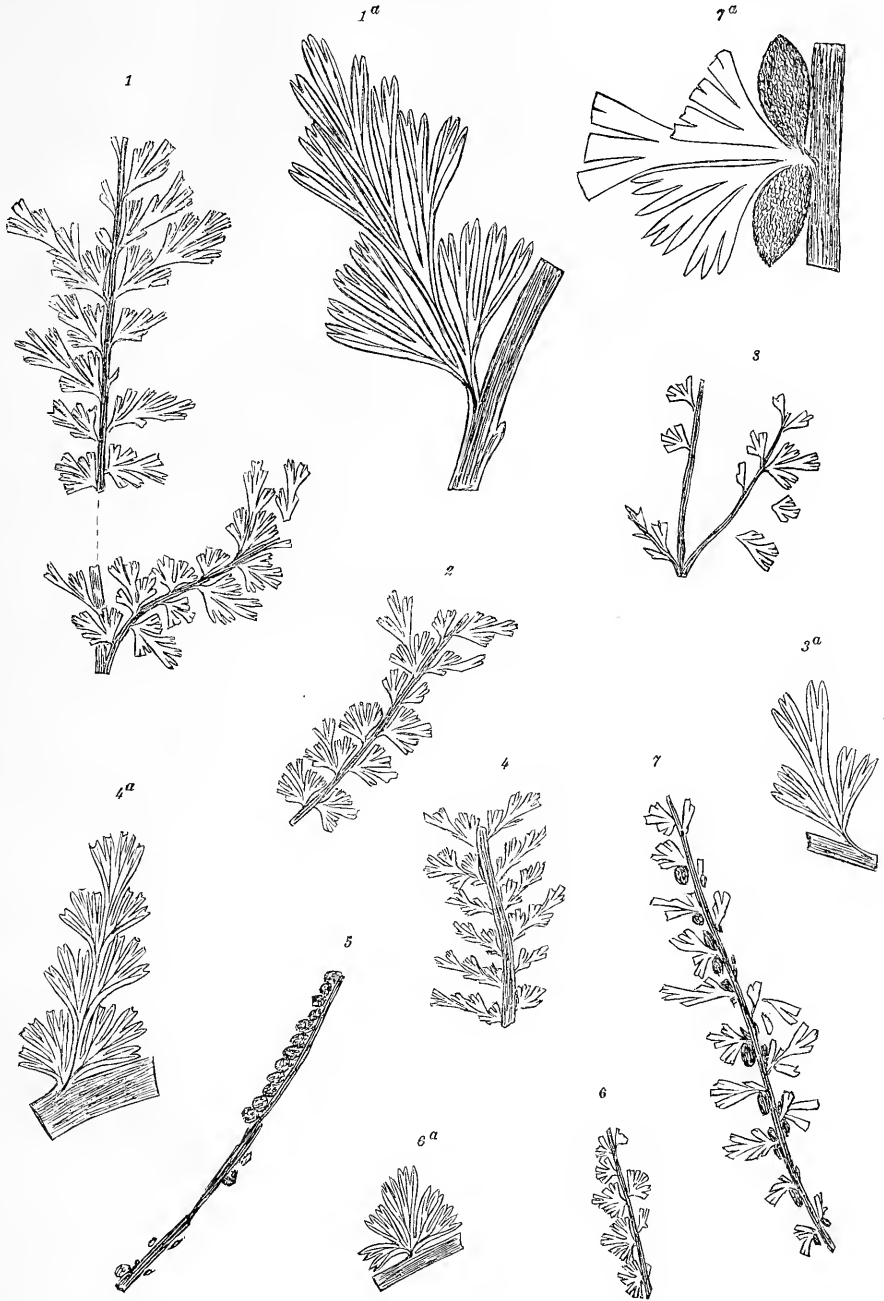


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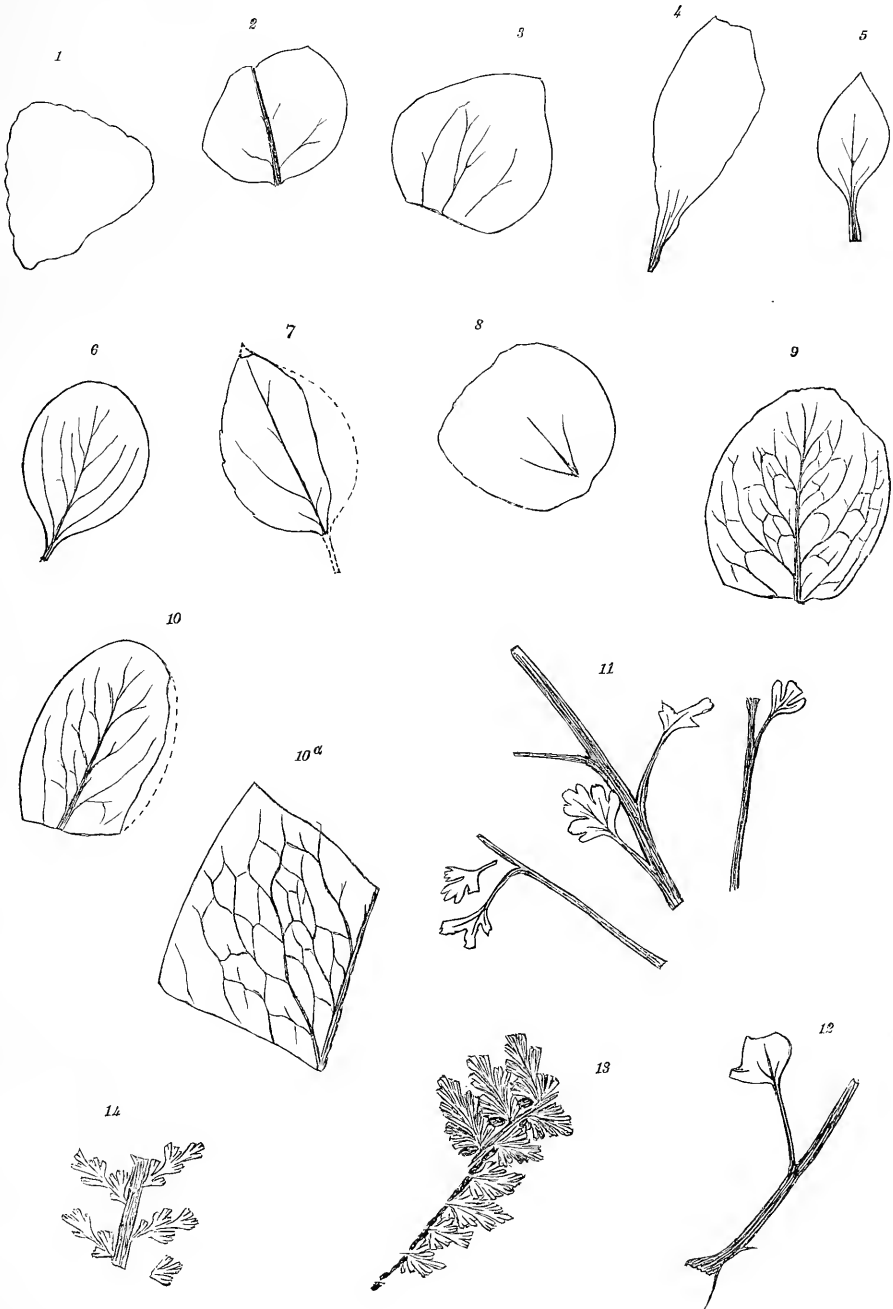


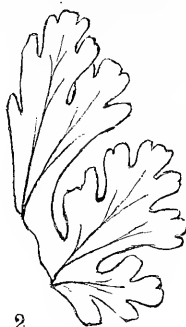
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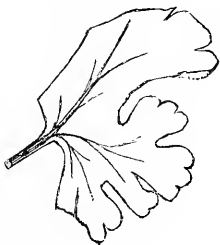
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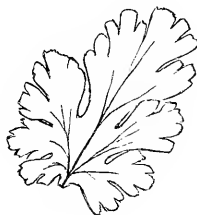
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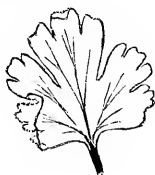
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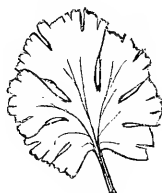
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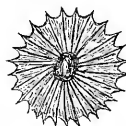
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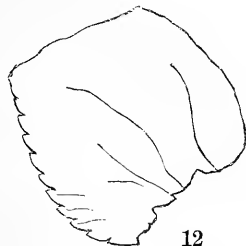
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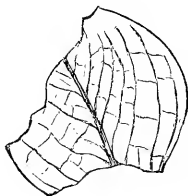
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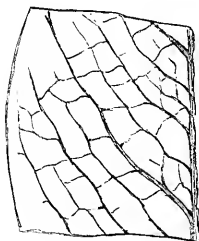
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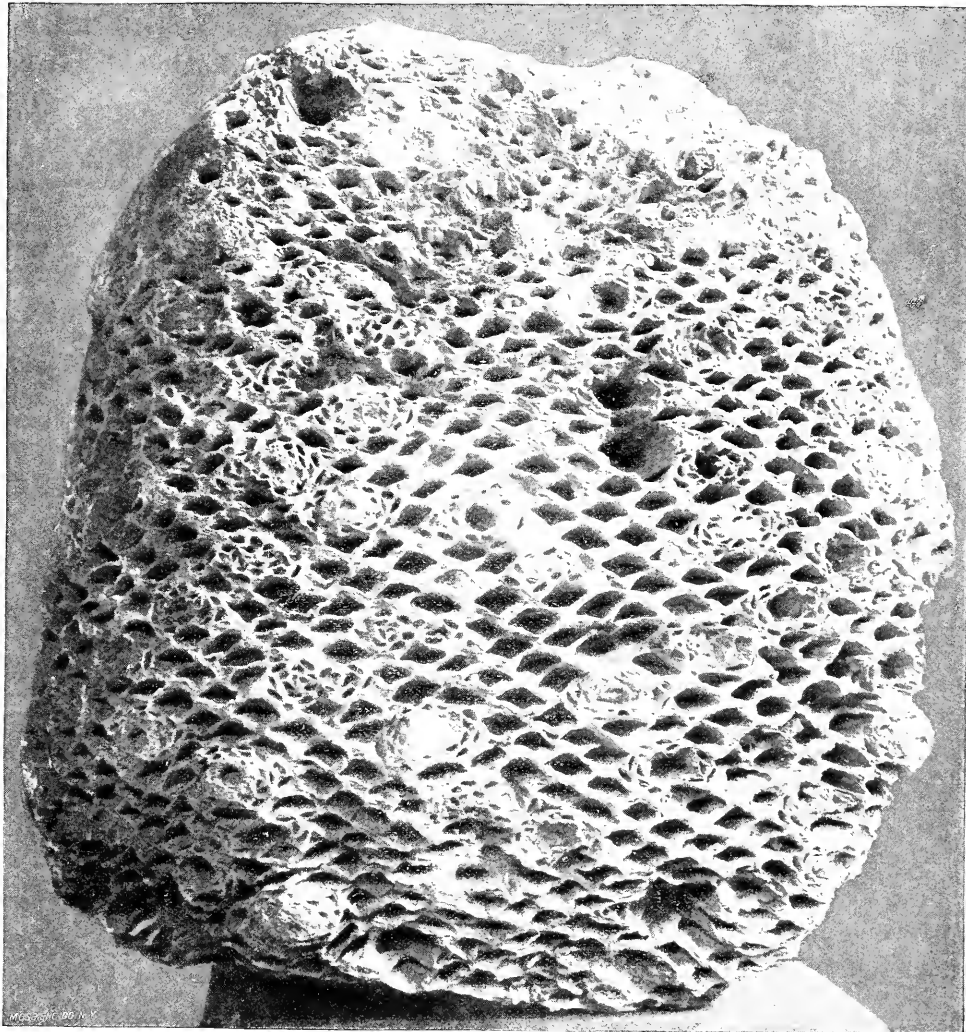


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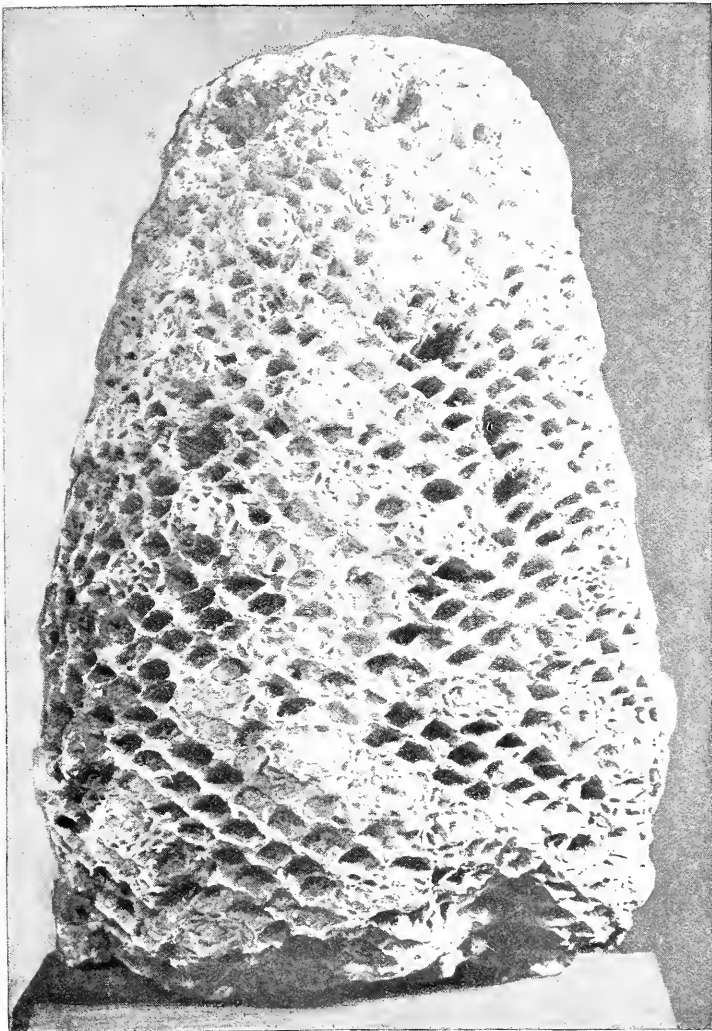


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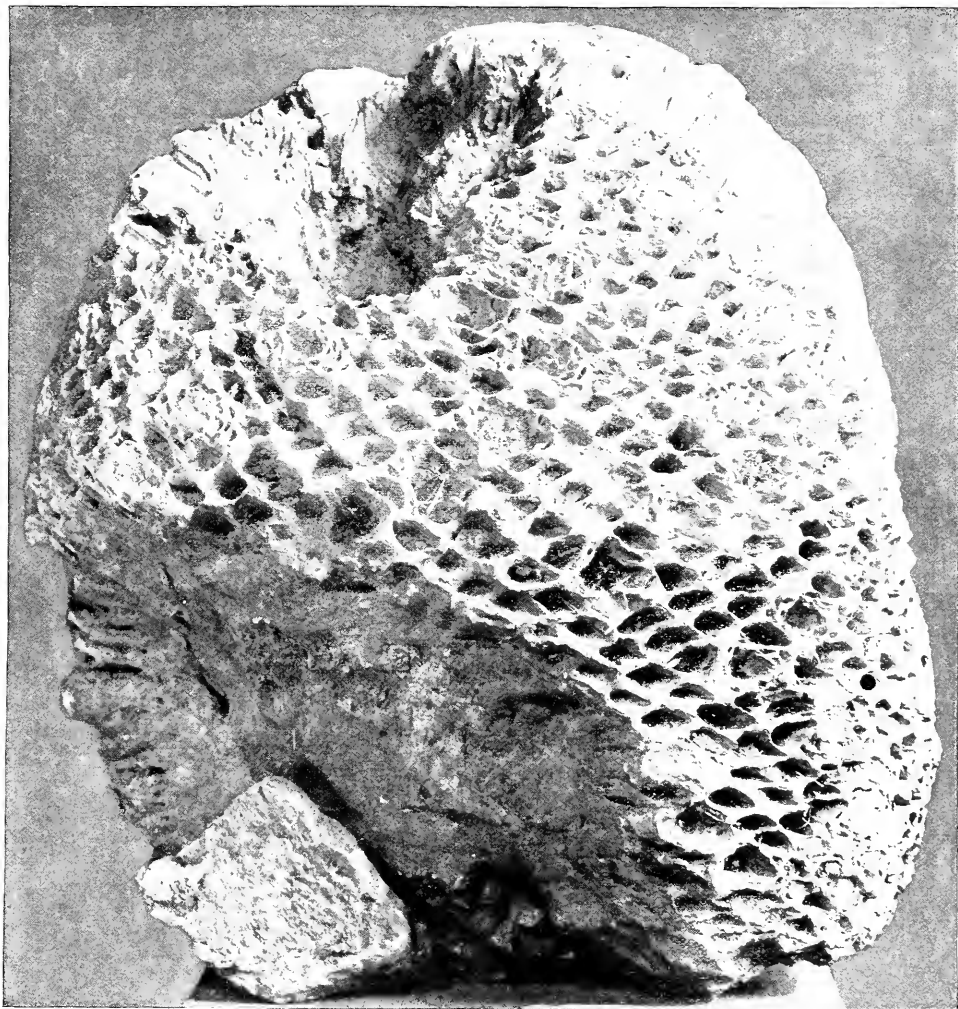


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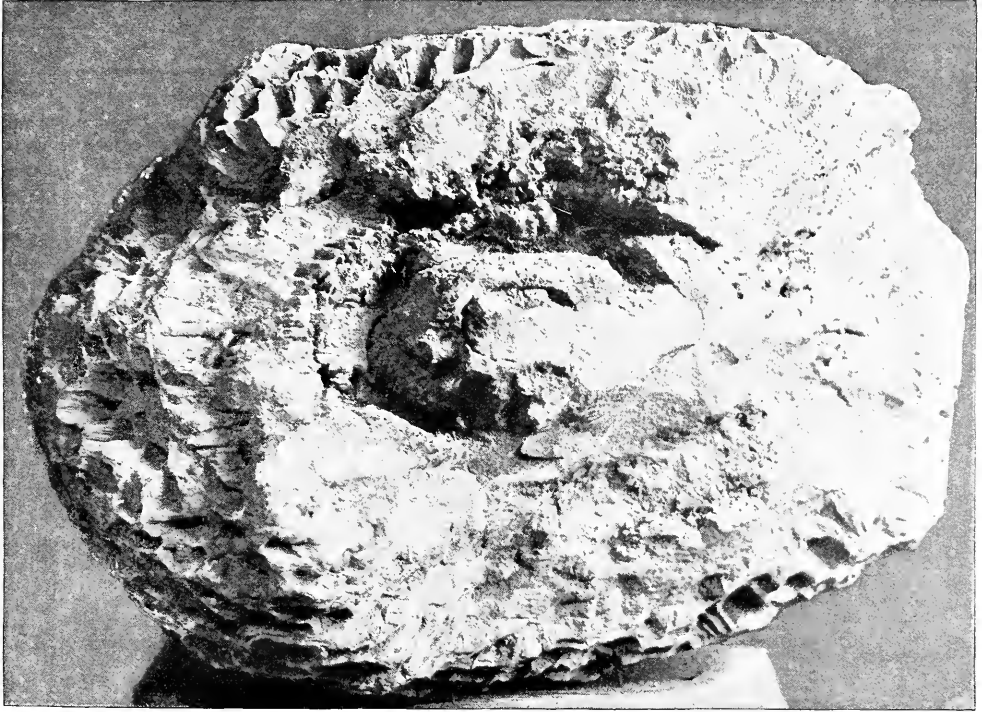


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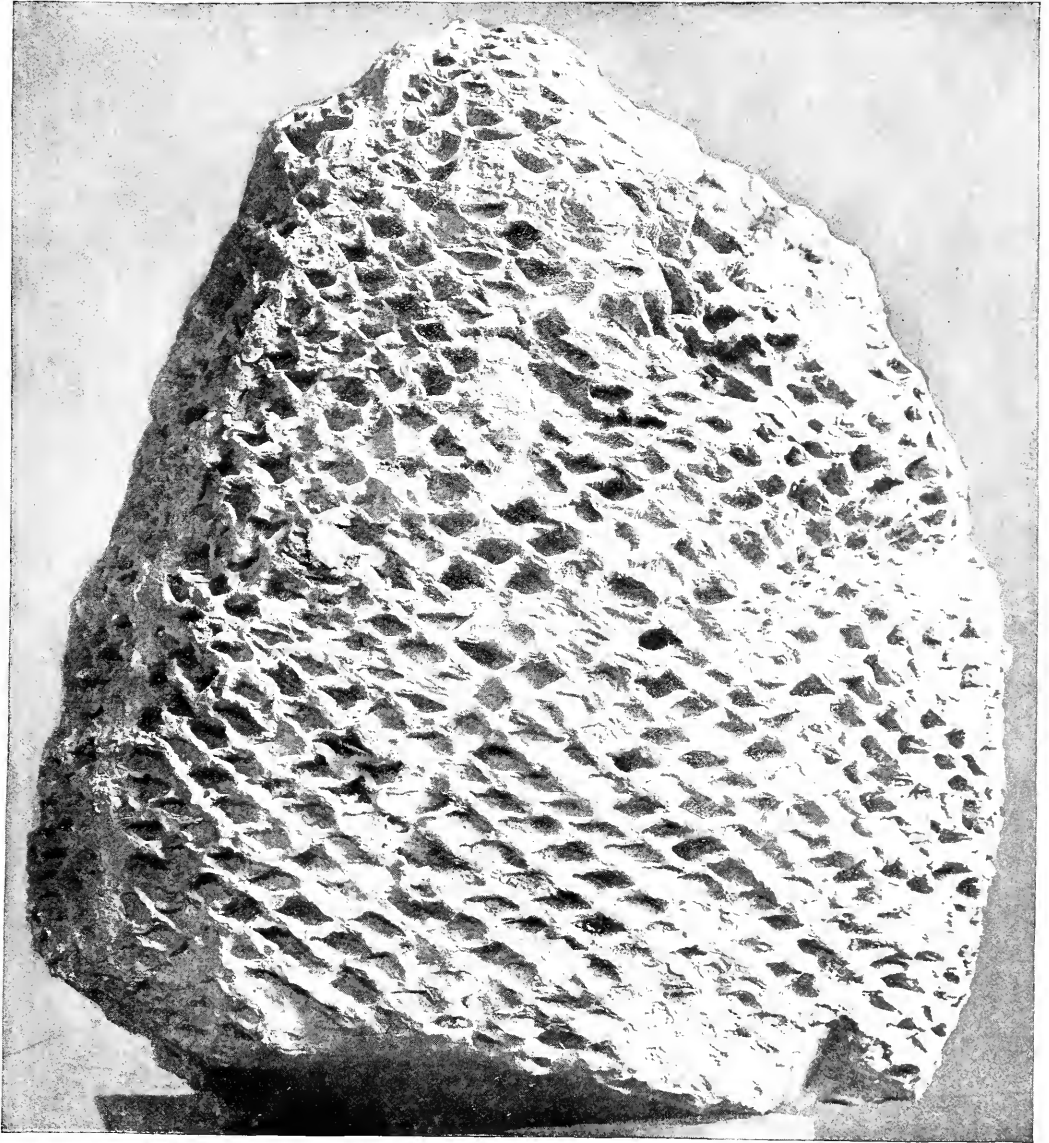


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