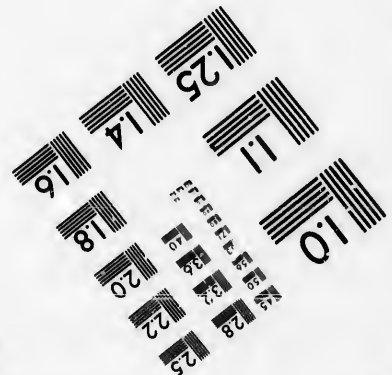
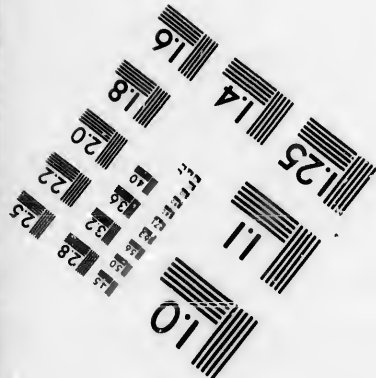
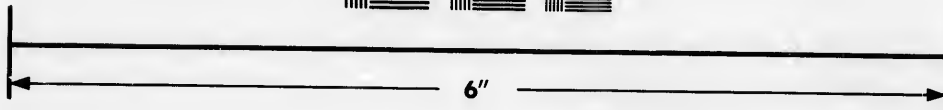
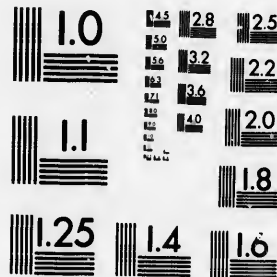


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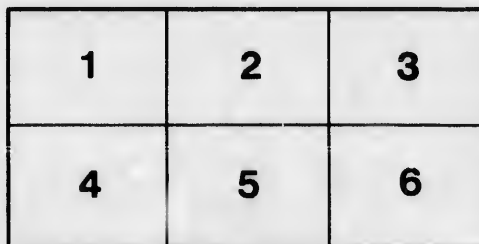
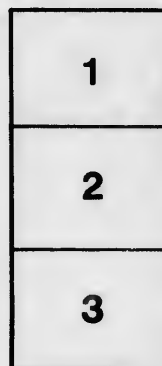
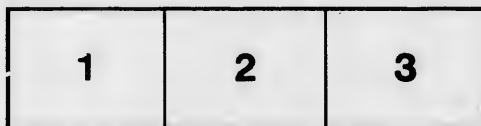
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THE LEAF-COLLECTOR'S  
HAND-BOOK AND HERBARIUM

AN AID IN THE PRESERVATION AND IN THE CLASSIFICATION OF SPECIMEN LEAVES OF THE TREES OF NORTHEASTERN AMERICA

BY

CHARLES S. NEWHALL

AUTHOR OF "THE TREES OF NORTHEASTERN AMERICA," ETC.

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ILLUSTRATED

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NEW YORK LONDON  
27 & 29 WEST TWENTY-THIRD ST. 27 KING WILLIAM ST., STRAND  
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1892

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## PREFACE.

The leaves described and pictured in the following pages represent all the native trees, and the most important introduced and naturalized trees of Northeastern America,\*—with the few exceptions named on page 213.

Those species are considered trees (in distinction from shrubs) which, as a rule, spring from the ground with a single branching trunk.†

How to use the book will be readily understood by consulting the following directions.

\* The names of introduced and naturalized species are enclosed in brackets.

† "Trees of Northeastern America," page 4.



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## DIRECTIONS.

1. *How to find the names of specimens.*—Compare any given specimen, first with the descriptions in the "Guide," on pages xiv and xv, and then with the illustrations to which the "Guide" directs.\*

2. *How to mount specimens.*—When the specimens have been pressed and *thoroughly dried*, and all their thick stems removed or pared, they should be fastened in their places opposite the corresponding illustrations, with strips of gummed paper an eighth of an inch or less in width.†

The compound leaves and the simple leaves, when they are larger than the allotted space, should be represented by sections of the leaf.

3. *How to preserve specimens.*—If the collection is attacked by insects, each leaf should be brushed lightly with a *saturated solution of corrosive sublimate and alcohol, increased by two thirds more of alcohol.*

4. *Notes.*—Interest and value will be added to the collection if full memoranda are kept of dates, localities, name of the finder, incidents, characteristics of the tree, etc.

5. It should be remembered that leaves from vigorous young sprouts are not usually the best specimens. It is seldom that two leaves, even upon the same mature branch, exactly agree, but they follow the type, while often the younger growth varies from it.‡

\* If fuller descriptions and comments are desired, they can be found in the author's work on "The Trees of Northeastern America."

† A supply of gummed paper will be found at the end of the volume.

‡ "The Trees of Northeastern America," page 4.





A-

Magnolia . . .  
Asimina . . .  
Cercis . . .  
Nyssa . . .  
Diospyros . . .  
Sassafras . . .

Z

Tilia . . .  
Ilex . . .  
Prunus . . .  
Pyrus . . .  
Crataegus . . .  
Amelanchier . . .  
Oxydendrum . . .  
Ulmus . . .  
Celtis . . .  
Morus . . .  
Broussonètia . . .  
Platanus . . .  
Bétula . . .  
Ostrya . . .  
Carpinus . . .  
Castanea . . .  
Fagus . . .  
Salix . . .  
Populus . . .



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## GUIDE.

Leaves, simple : *	{	alternatet	edge entire.	Go to A—I			
			" toothed.	" A—II			
			" lobed	{ Lobes, entire.	Go to A—III (a		
					{ Lobes, toothed.	" A—III (b	
Leaves, simple : *	{	opposite	edge entire.	Go to B—I			
			" toothed.	" B—II			
			" lobed	{ Lobes, entire.	Go to B—III (a		
				{ Lobes, toothed.	" B—III (b		
			Indeterminate.	Go to C—I			
Leaves, compound :	{	feather-shaped †	alternate,	edge	{ entire.	Go to D—l	
					{ toothed.	" D—l	
		hand-shaped §	opposite,	edge	{ entire.	Go to E—l	
					{ toothed.	" E—l	
		opposite,	edge	toothed.	Go to F—l		

\* The leaflets of a compound leaf can be distinguished from a simple leaf by absence of leaf-buds from the base of their stems.

† Referring to the arrangement of the leaves on the branch.

‡ *E. g.*, as in the hickories, sumachs, etc.

§ *E. g.*, as in the horse-chestnut, etc.

Magnolia  
 Papaw  
 Gum, sou  
 Judas-tre  
 Persimmo  
 Sassafras  
 Oak, will  
 Dog-woo  
 Willow,  
 Basswood  
 Hollies  
 Cherries  
 Plum .  
 Crab-app  
 Thorns  
 Shad-bus  
 Sorrel-tre  
 Elms .  
 Hackbern  
 Mulberry  
 Mulberry  
 Button-w  
 Birches  
 Hornbear  
 Hornbear  
 Chestnut  
 Beech .  
 Willows  
 Poplars  
 Oaks, che



## GUIDE (Continued).

NOTE.—Names in *italics* are given also under another division.

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from a simple leaf by

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LEAVES

A (continued)

I (continued)

Magnolias  
Papaw .  
Gum, sour  
Judas-tree  
Persimmon  
Sassafras .  
Oak, willow  
Dogwood, a  
*Willow, long*

II (continued)

Basswoods  
Hollies .  
Cherries .  
Plum . .  
Crab-apple  
Thorns .  
Shad-bush  
Sorrel-tree  
Elms . .  
Hackberry  
Mulberry .  
Buttonwood  
Birches .  
Hornbeam, 1  
Hornbeam  
Chestnut .  
Beech . .  
Willows .  
Poplars .  
Oaks, chestnut

GUIDE (Continued).

NOTE.—Names in *italics* are given also under another division.

LEAVES—SIMPLE		<i>III (edge lobed)</i>	LEAVES—COMPOUND		
<i>A (alternate)</i>		<i>(a) (lobes entire)</i>	<i>I feather-shaped</i>		
<i>I (edge entire)</i>			<i>D (edge alternate)</i>		
			<i>I (entire)</i>		
	PAGE			PAGE	
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Papaw . . . . .	7	Oaks . . . . .	99	Locusts . . . . .	165
Gum, sour . . . . .	11	<i>Sassafras</i> . . . . .	15	Coffee-tree, Kentucky .	167
Judas-tree . . . . .		<i>Buttonwood</i> . . . . .	45	Locust, honey . . . . .	169
Persimmon . . . . .	13	<i>(b) (lobes toothed)</i>		Sumach, poison . . . . .	175
<i>Sassafras</i> . . . . .	15	Gum, sweet . . . . .	115		
Oak, willow . . . . .	111	Poplar, silver-leaf . . .	81	<i>II (edge toothed)</i>	
Dogwood, alt.-leaved .	121	<i>Mulberry</i> . . . . .	43	Sumach, staghorn . . .	173
<i>Willow, long-beaked</i> .	67	Oaks . . . . .	88	Ash, mountain . . . . .	177
				Walnut, black . . . . .	179
<i>II (edge toothed)</i>		<i>B (opposite)</i>		Butternut . . . . .	179
		<i>I (edge entire)</i>		Hickories . . . . .	181
Basswoods . . . . .	19	Dogwood, flowering . .	119	<i>Locust, honey</i> . . . . .	169
Hollies . . . . .	21	Fringe-tree . . . . .	123		
Cherries . . . . .	23	Catalpa . . . . .	125	<i>E (opposite)</i>	
Plum . . . . .	25	<i>II (edge toothed)</i>		<i>I (edge entire)</i>	
Crab-apple . . . . .	27	Black haw . . . . .	129	<i>Ash, red and white</i> . .	190
Thorns . . . . .	29	Viburnum, sweet . . . .	129	<i>II (edge toothed)</i>	
Shad-bush . . . . .	35	<i>III (edge lobed)</i>		Ash-leaved maple . . .	193
Sorrel-tree . . . . .	37	<i>(a) (lobes entire)</i>		Ash, black, blue, green,	
Elms . . . . .	39	<i>(b) (lobes toothed)</i>		red, and white, 195-203	
Hackberry . . . . .	41	Maples . . . . .	133		
Mulberry . . . . .	43			<i>2 hand-shaped</i>	
Buttonwood . . . . .	45	<i>C (indeterminate)</i>		<i>F (opposite)</i>	
Birches . . . . .	47	<i>I</i>		<i>I (edge toothed)</i>	
Hornbeam, Hop . . . . .	53	Pines, cedars, spruce,		Buckeyes . . . . .	207
Hornbeam . . . . .	55	etc. . . . .	145	Horse-chestnut . . . . .	209
Chestnut . . . . .	57				
Beech . . . . .	59				
Willows . . . . .	61				
Poplars . . . . .	79				
Oaks, chestnut . . . . .	95				

TR

TREES WITH SIMPLE LEAVES

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LEAVES ALTERNATE

(EDGE ENTIRE)

A I





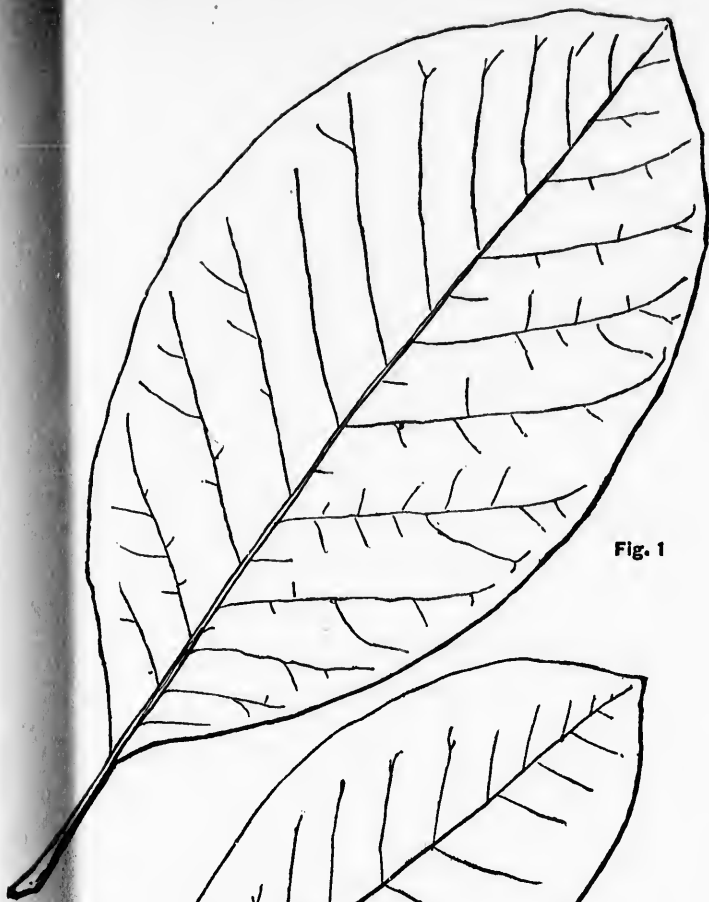


Fig. 1

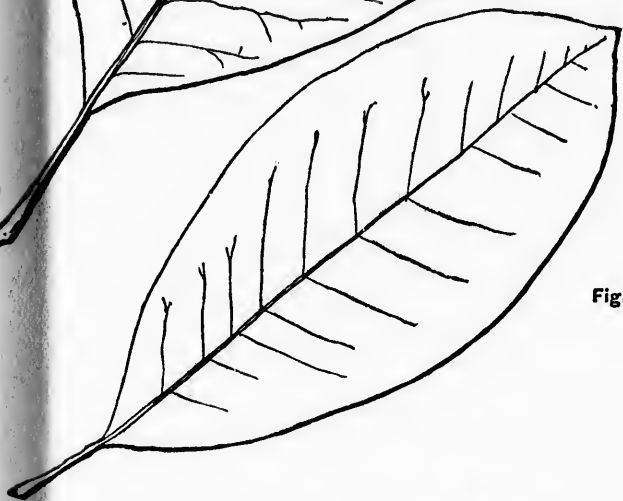
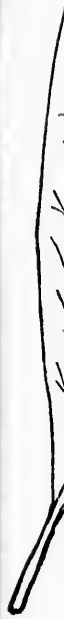


Fig. 2

Fig. 1.—Cucumber Tree. (*M. acuminata*, L.)

Fig. 2.—Sweet Bay. (*M. glauca*, L.)

NATURAL SIZE.



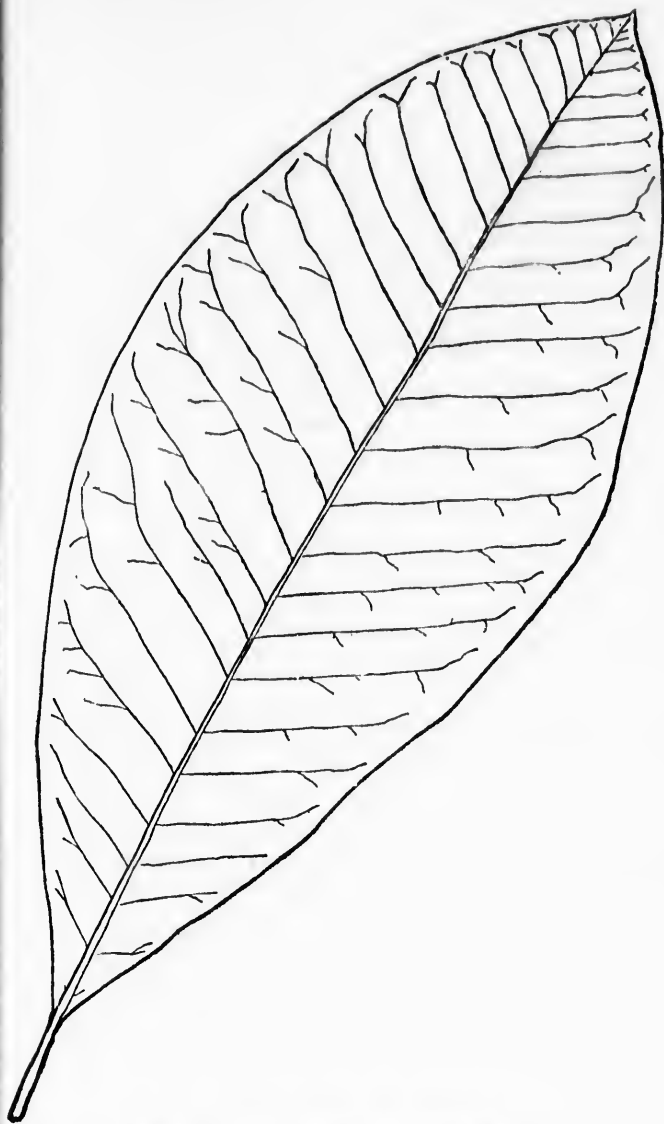
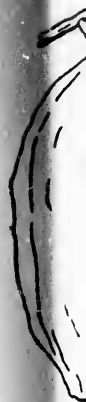


Fig. 3.—Umbrella Tree. (*M. tripetala*, L.)  
ONE THIRD NATURAL SIZE.



LEAF,



Fig. 4.—Papaw. *A. triloba* (L.), Dunal.  
LEAF, NATURAL SIZE. FRUIT, TWO THIRDS NATURAL SIZE.



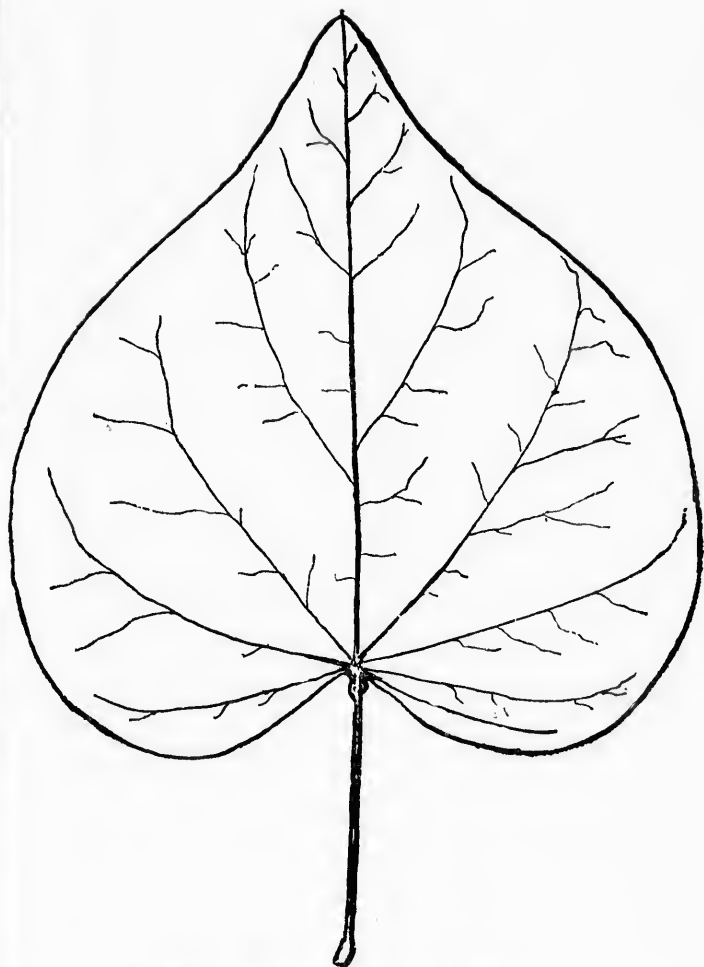


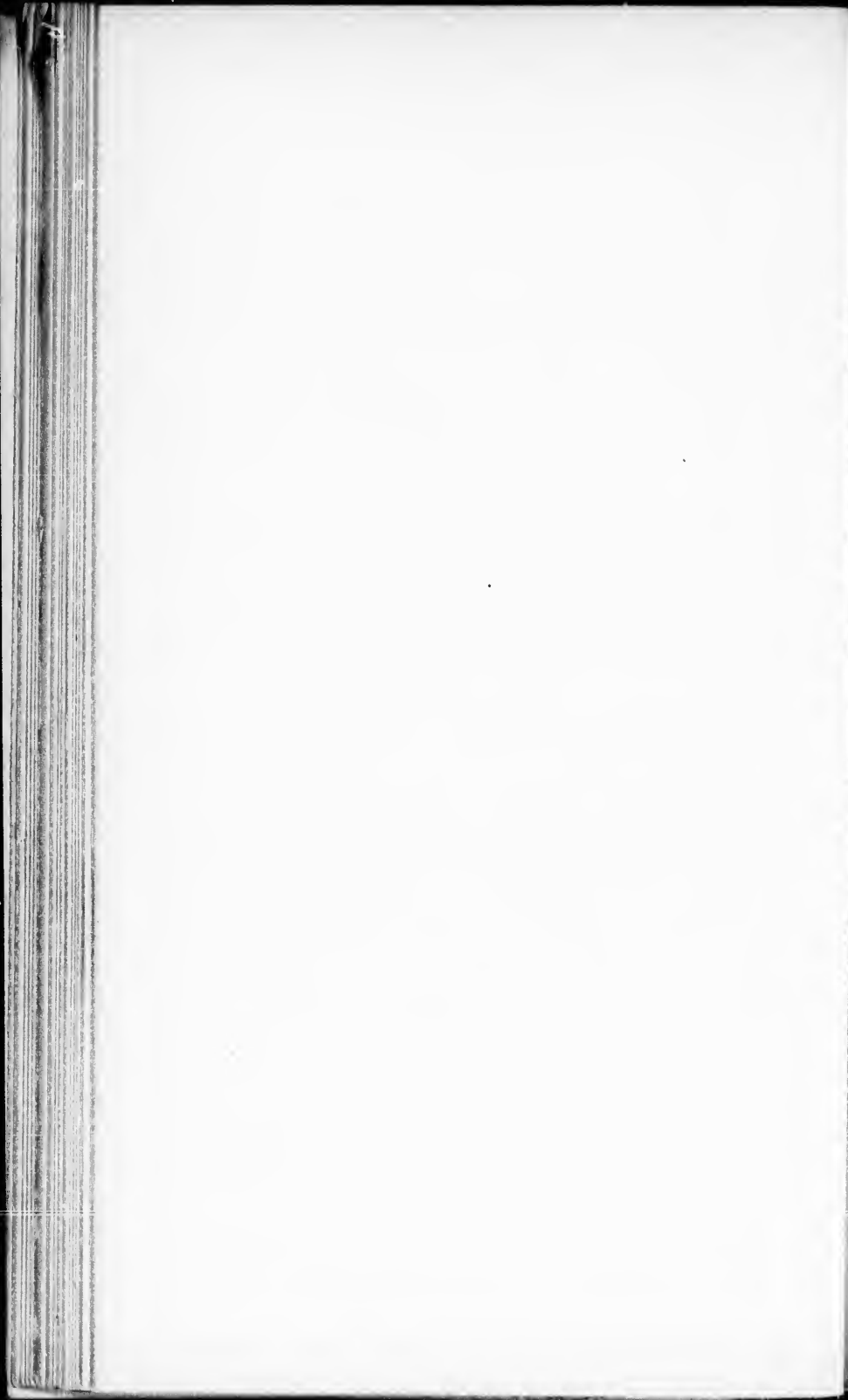
Fig. 5.—Red Bud. (*C. Canadensis*, L.)  
NATURAL SIZE.







Fig. 3.—Sour Gum. (*N. sylvatica*, M<sub>s</sub> sh.)  
NATURAL SIZE.



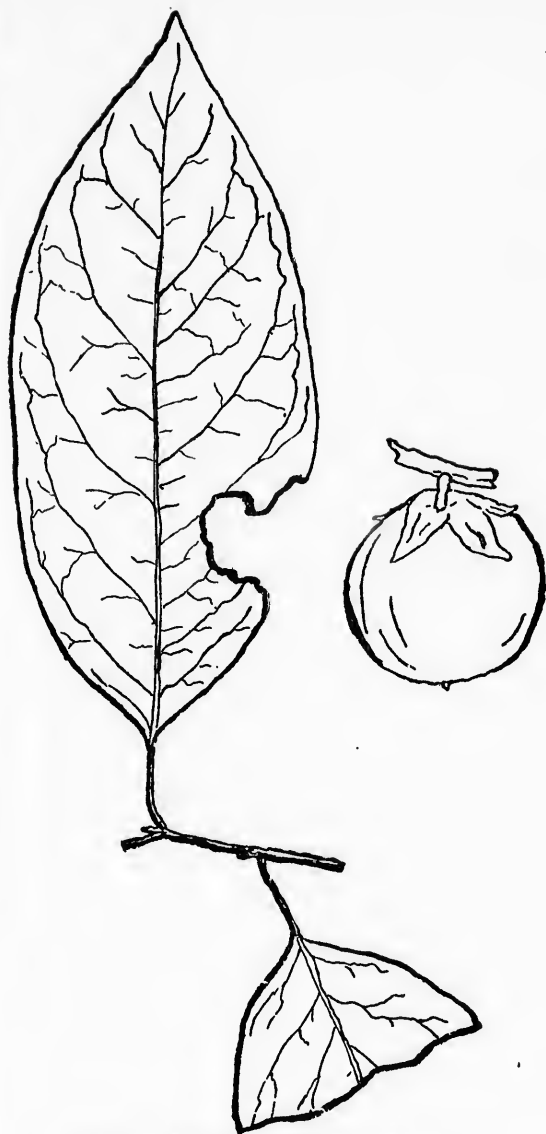


Fig. 7.—Persimmon. (*D. Virginiana*, L.)  
NATURAL SIZE.



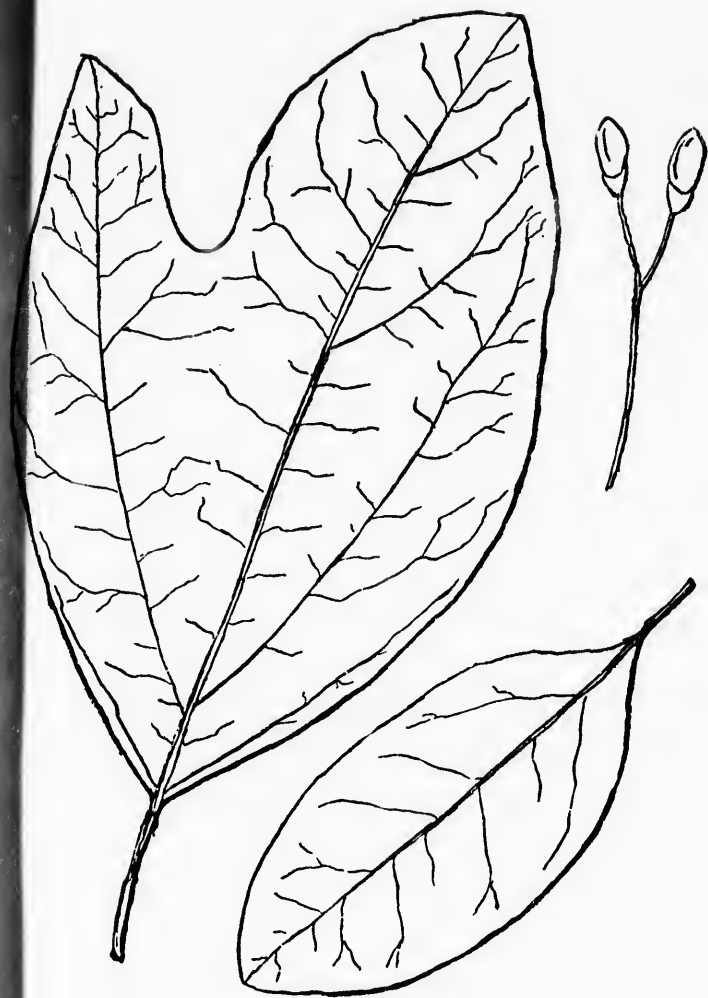


Fig. 8.—Sassafras. (*S. officinale*, Nees.)  
NATURAL SIZE.

TRI

TREES WITH SIMPLE LEAVES

LEAVES ALTERNATE

CONTINUED

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(EDGE TOOTHED)

A II





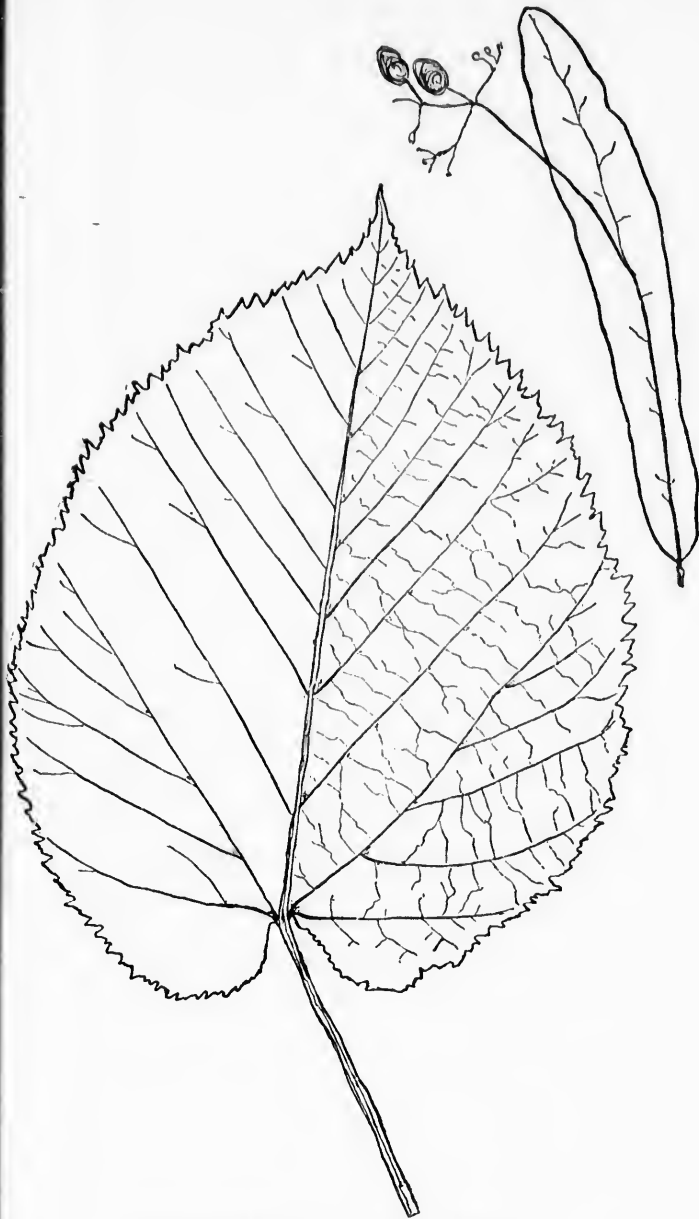


Fig. 9.—Basswood. (*T. Americana*, L.)  
NATURAL SIZE.



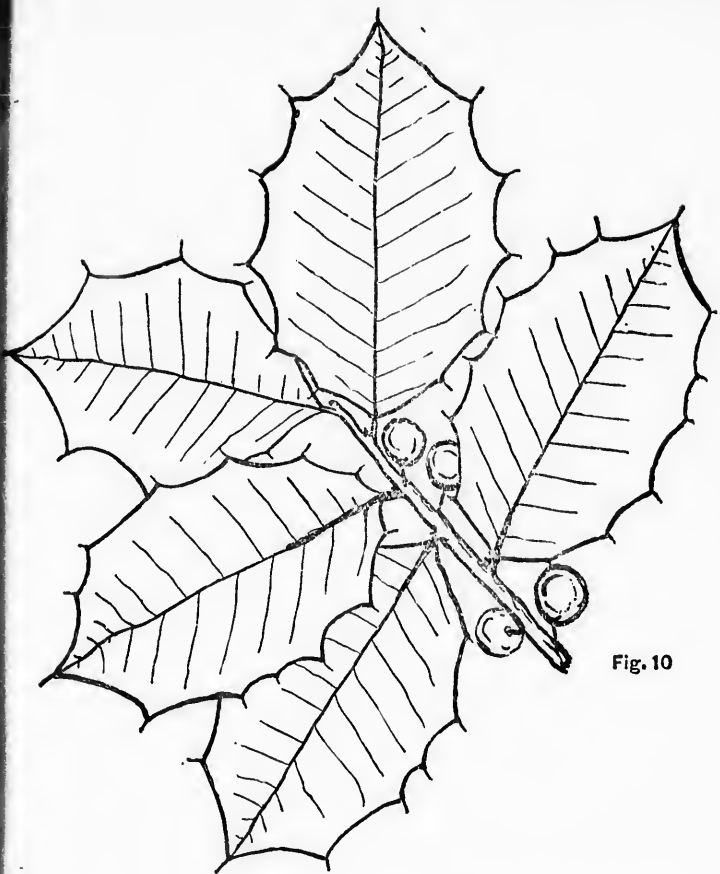


Fig. 10

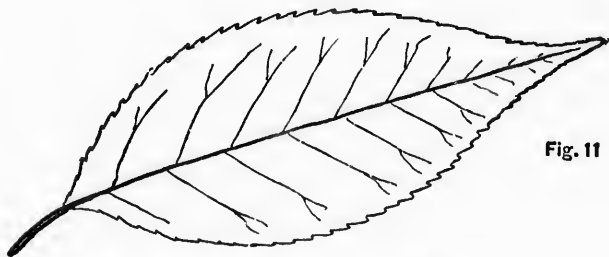


Fig. 11

Fig. 10.—American Holly. (*I. opaca*, Ait.)

Fig. 11.—*I. monticola*.

NATURAL SIZE.



Fi  
Fig

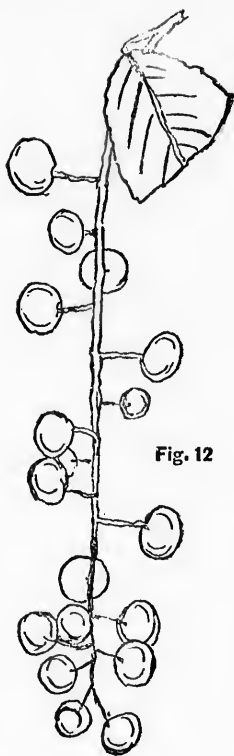
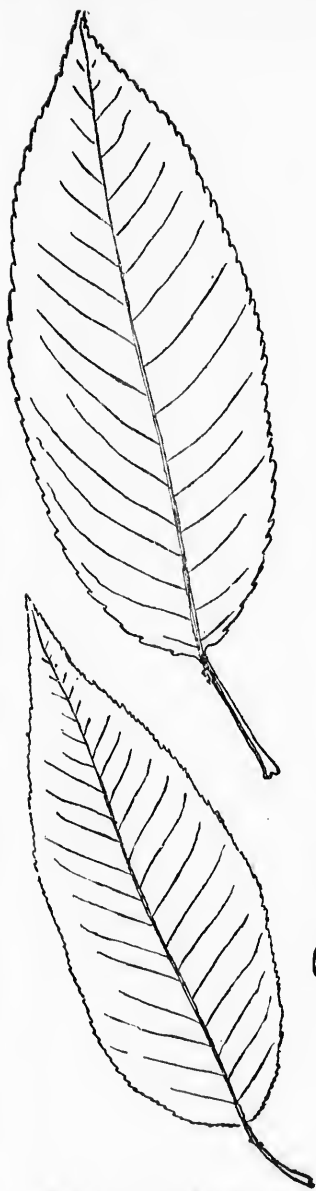


Fig. 12

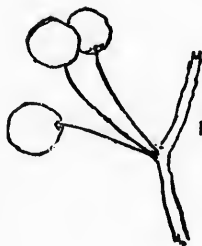


Fig. 13

Fig. 12.—Wild Black Cherry. (*P. serotina*, Ehr.)  
Fig. 13.—Wild Red Cherry. (*P. Pennsylvanica*, L.)  
NATURAL SIZE.





Fig. 14.—Wild Plum. (*P. Americana*, Marsh.)  
NATURAL SIZE.





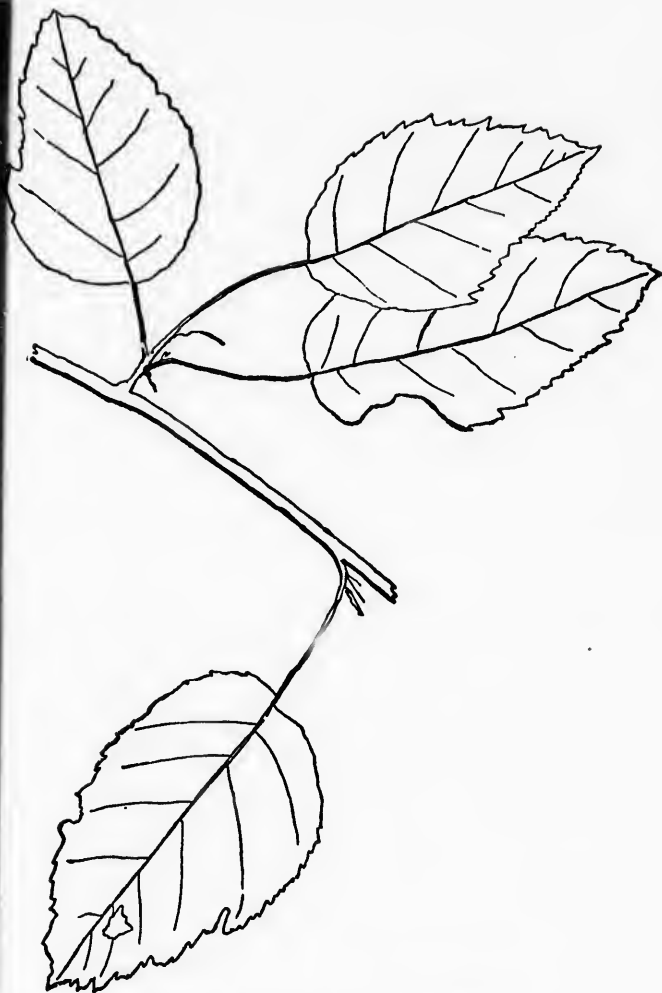


Fig. 15.—Crab-Apple. (*P. coronaria*, L.)  
NATURAL SIZE.



Fig



Fig. 16

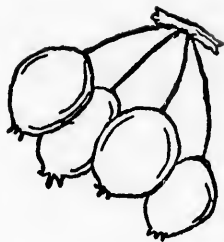


Fig. 17

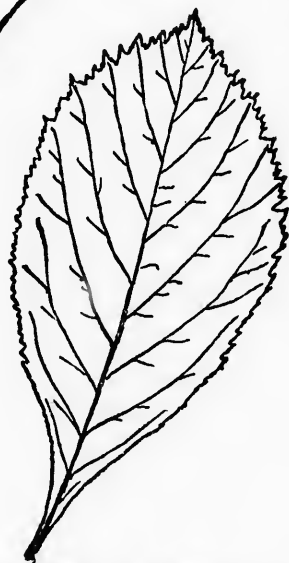


Fig. 16.—White Thorn and Fruit. (*C. coccinea*, L.)  
Fig. 17.—Black Thorn. (*C. tomentosa*, L.)  
NATURAL SIZE



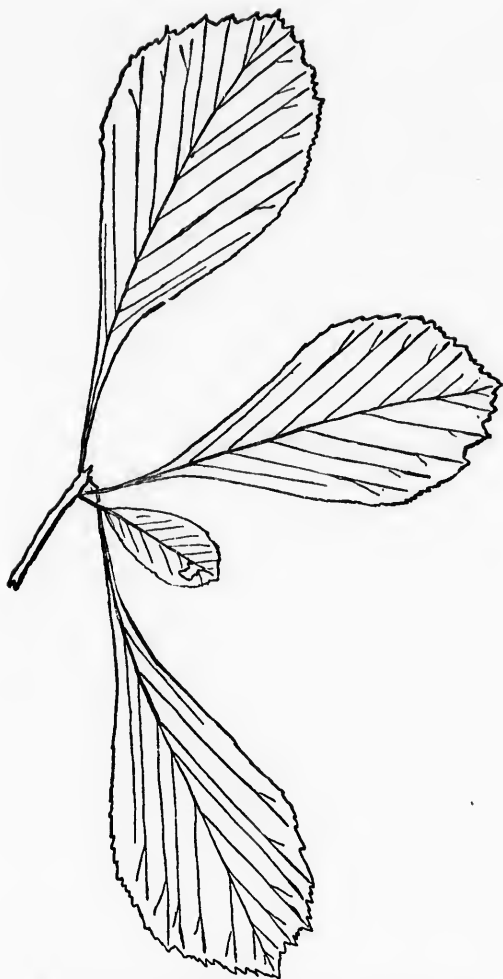


Fig. 18.—Common Thorn. (*C. punctata*, Jac.)  
NATURAL SIZE.



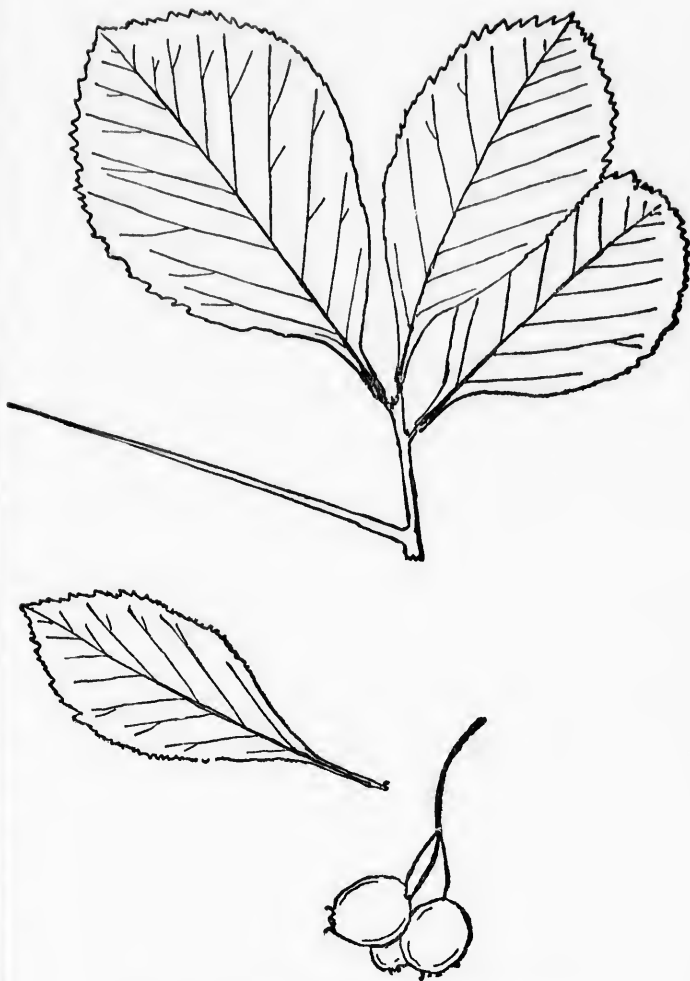


Fig. 19.—Cockspar Thorn. (*C. crus-galli*, L.)  
NATURAL SIZE.





Fig.

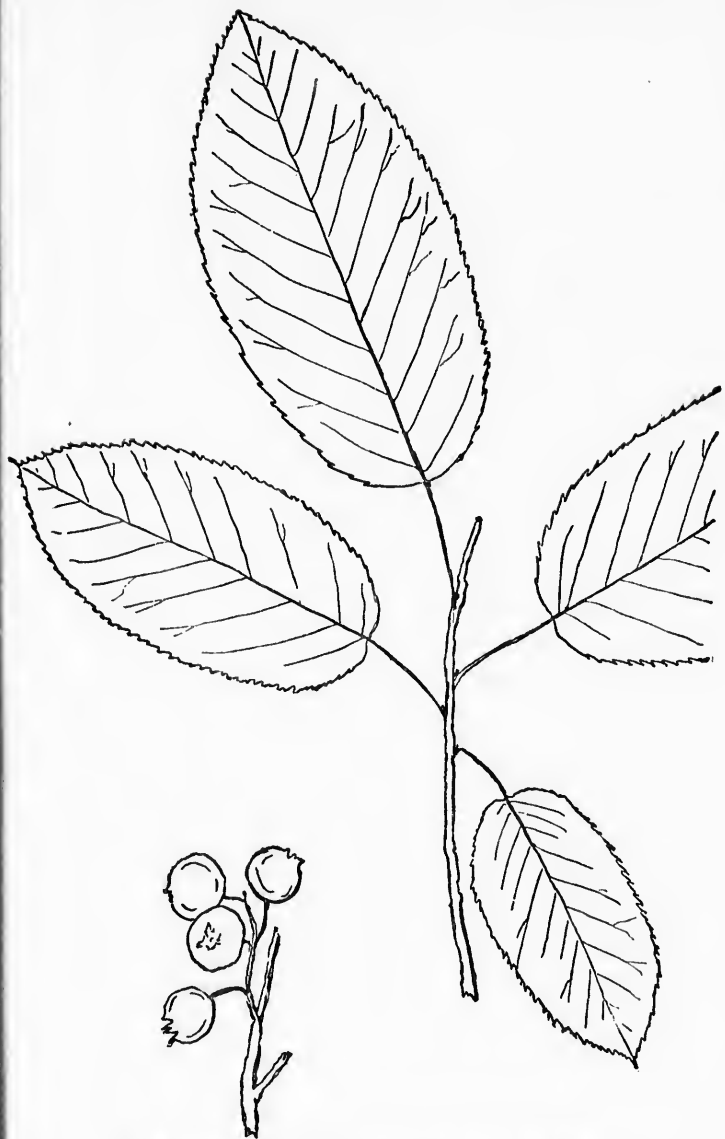


Fig. 29.—Shad-bush. *A. Canadensis* (L.), Medik.  
NATURAL SIZE.



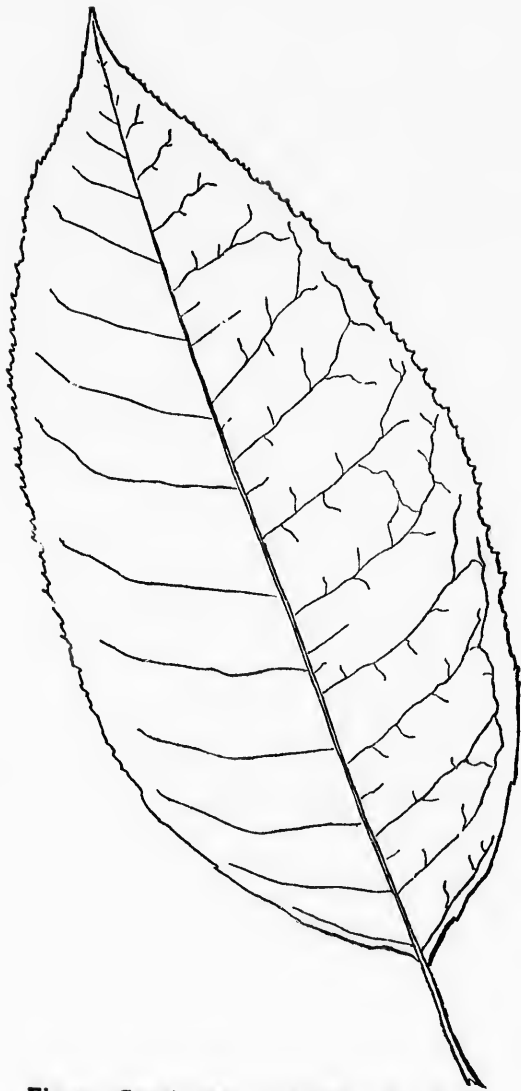


Fig. 21.—Sorrel Tree. *O. arboreum* (L.), D. C.  
NATURAL SIZE.



F

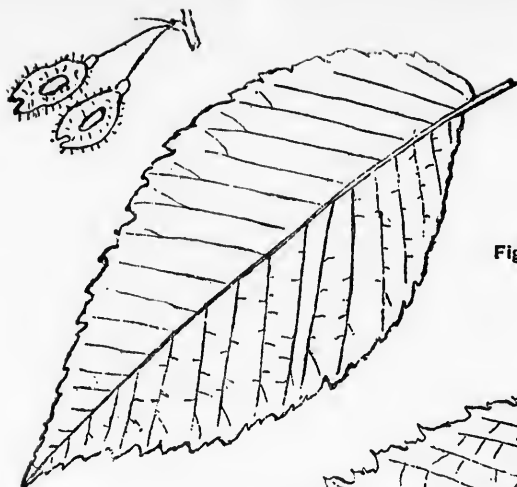


Fig. 22

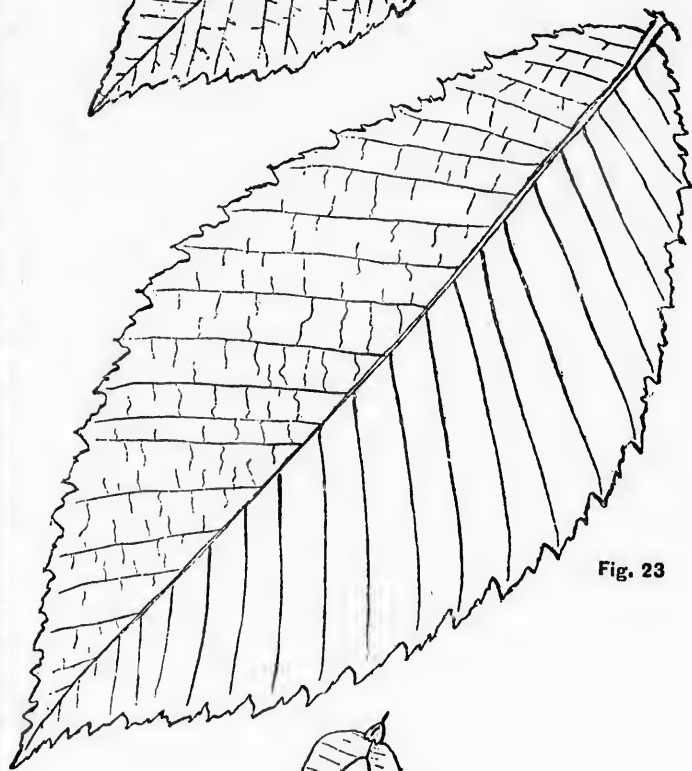


Fig. 23

Fig. 22.—White Elm. (*U. Americana*, L.)  
Fig. 23.—Slippery Elm. (*U. fulva*, Michaux.)

NATURAL SIZE.





Fig. 24.—Hackberry. (*C. occidentalis*, L.)  
NATURAL SIZE.





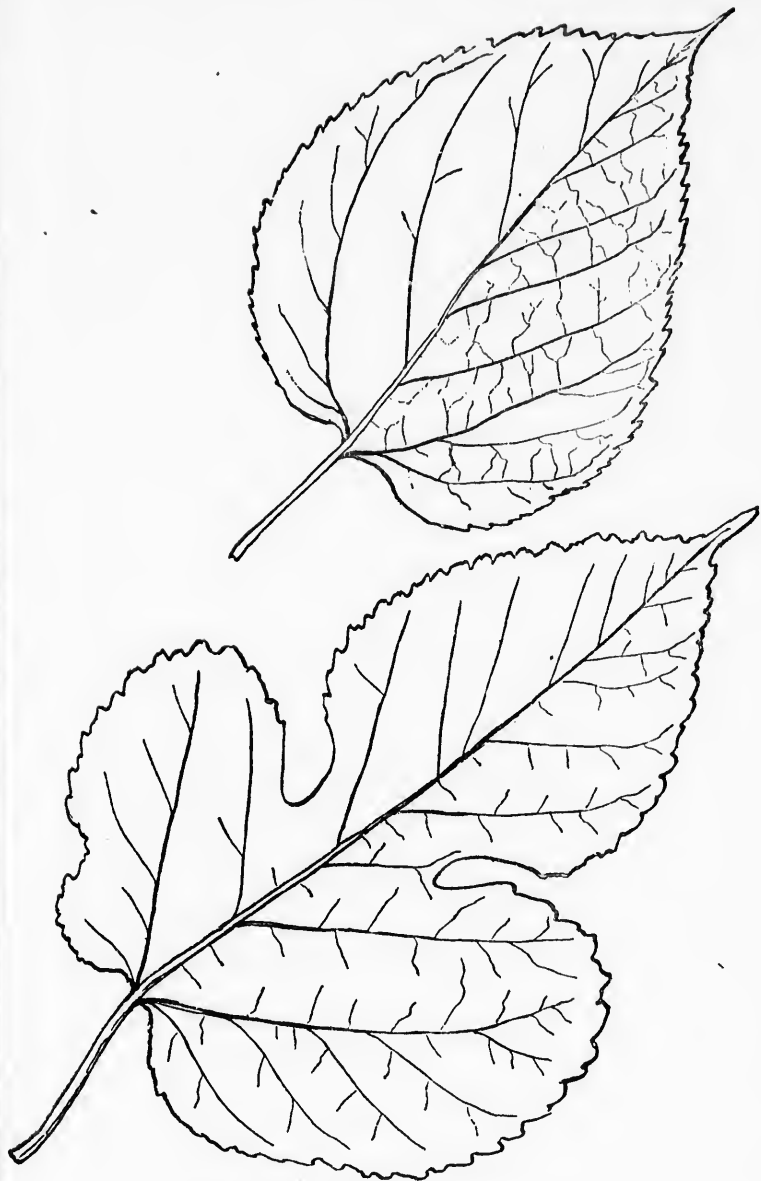


Fig. 25.—Red Mulberry. (*M. rubra*, L.)  
NATURAL SIZE.

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Fig. 26.—Buttonwood. (*P. occidentalis*, L.)  
NATURAL SIZE.



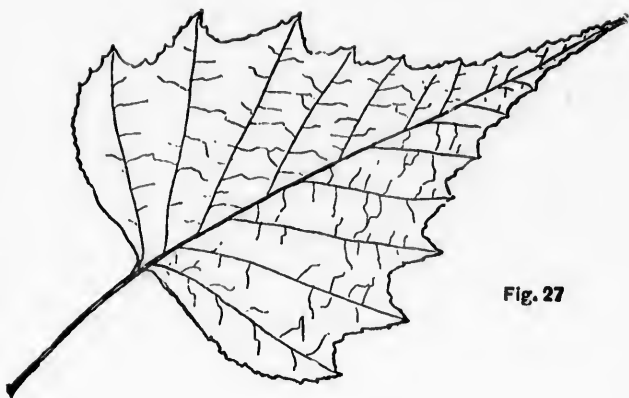


Fig. 27

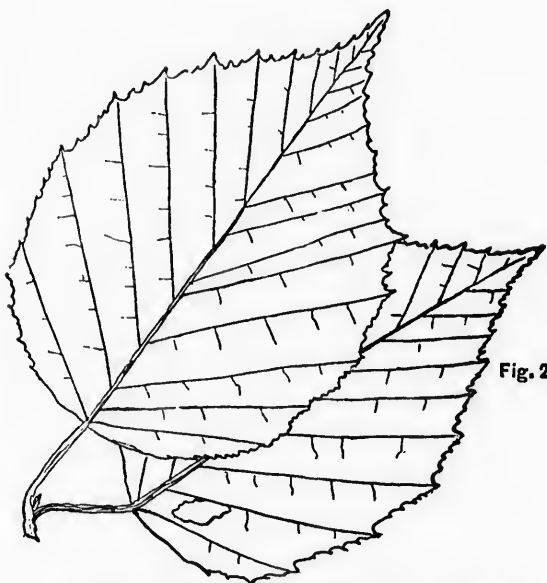


Fig. 28

Fig. 27.—White Birch. (*B. populifolia*, Marsh.)  
Fig. 28.—Paper Birch. (*B. papyrifera*, Marsh.)

NATURAL SIZE.



7



Fig. 29

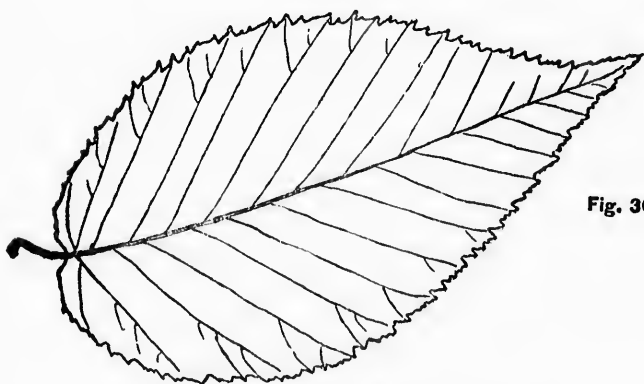


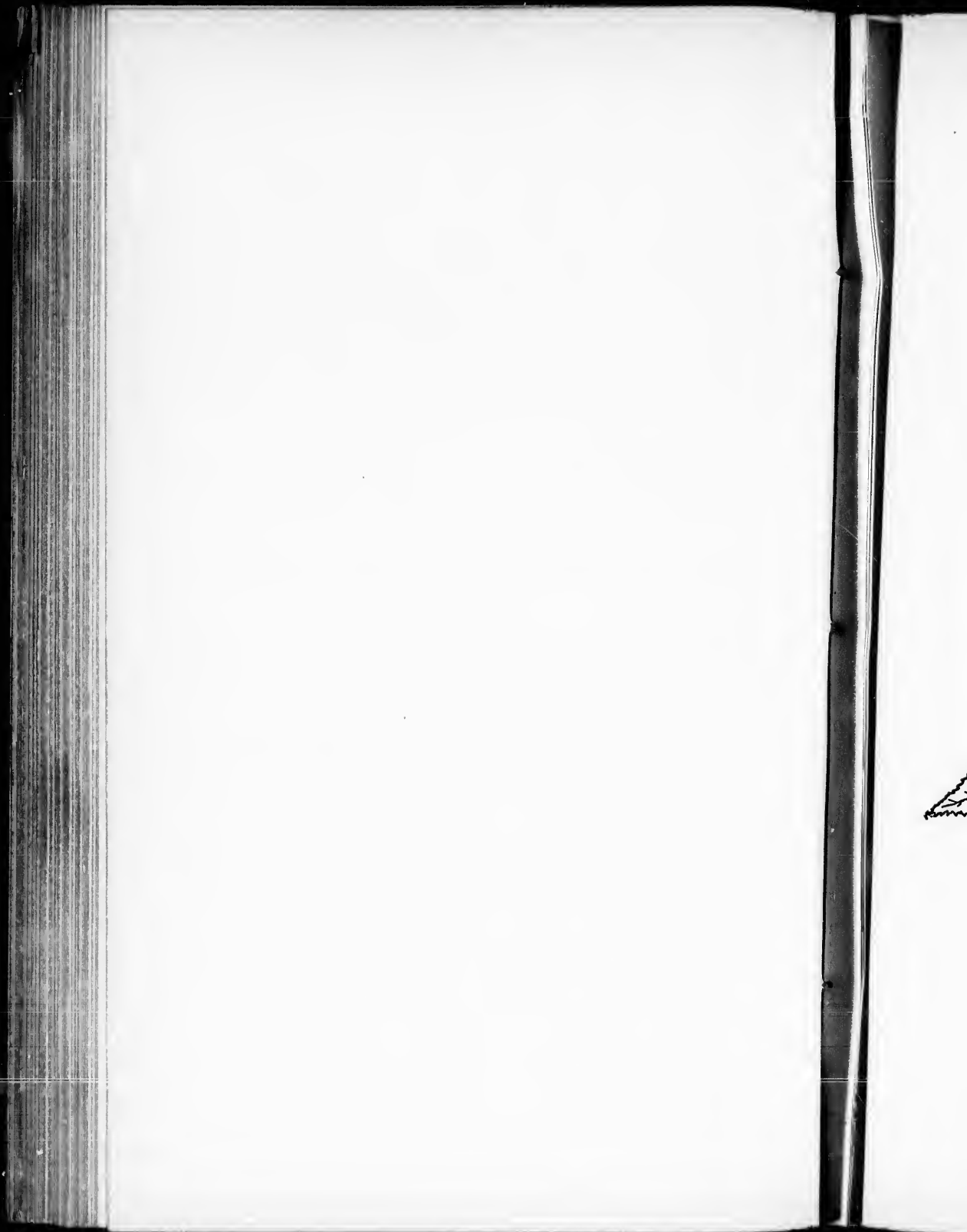
Fig. 30

Fig. 29.—Red Birch. (*B. nigra* L.)

Fig. 30.—Yellow Birch. (*B. lutea*, Michaux, f.)

NATURAL SIZE.





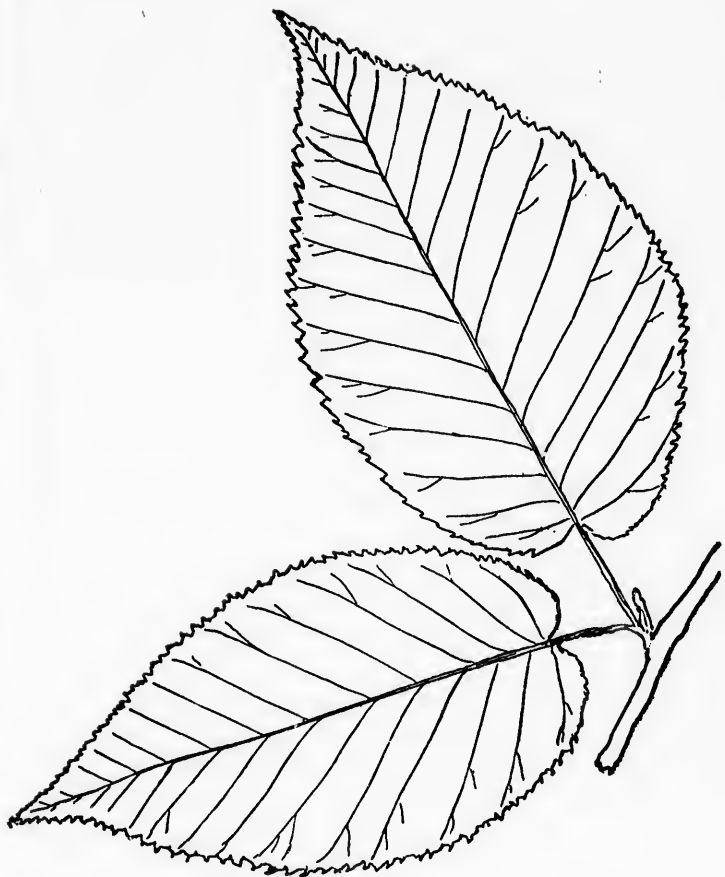
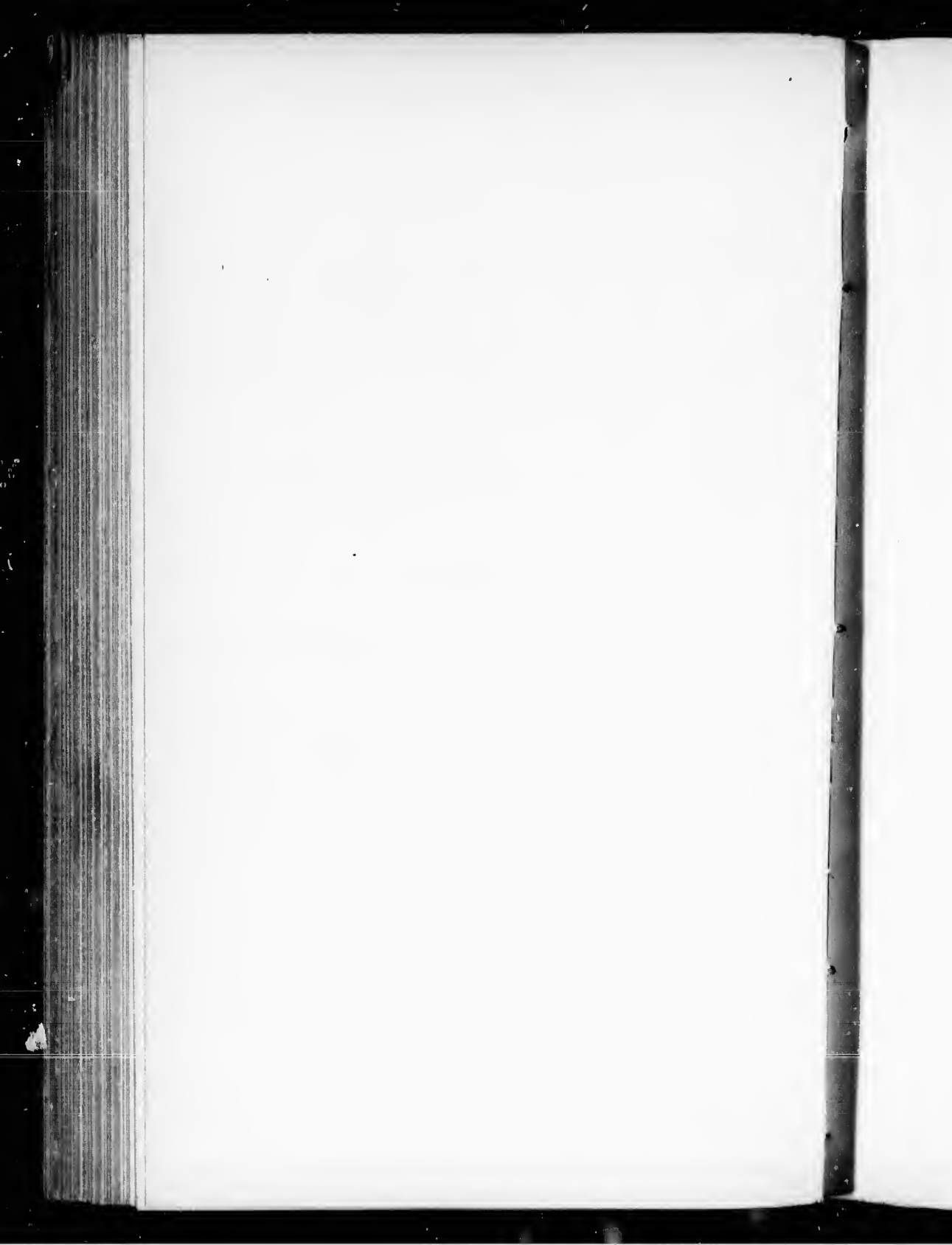


Fig. 31.—Sweet Birch. (*B. lenta*, L.)  
NATURAL SIZE.



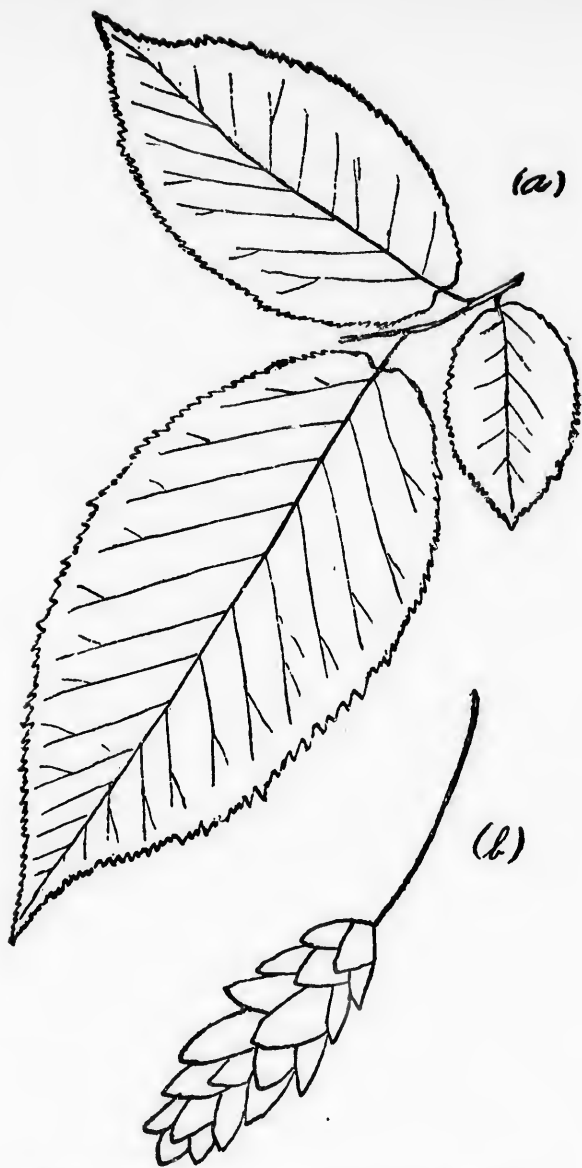
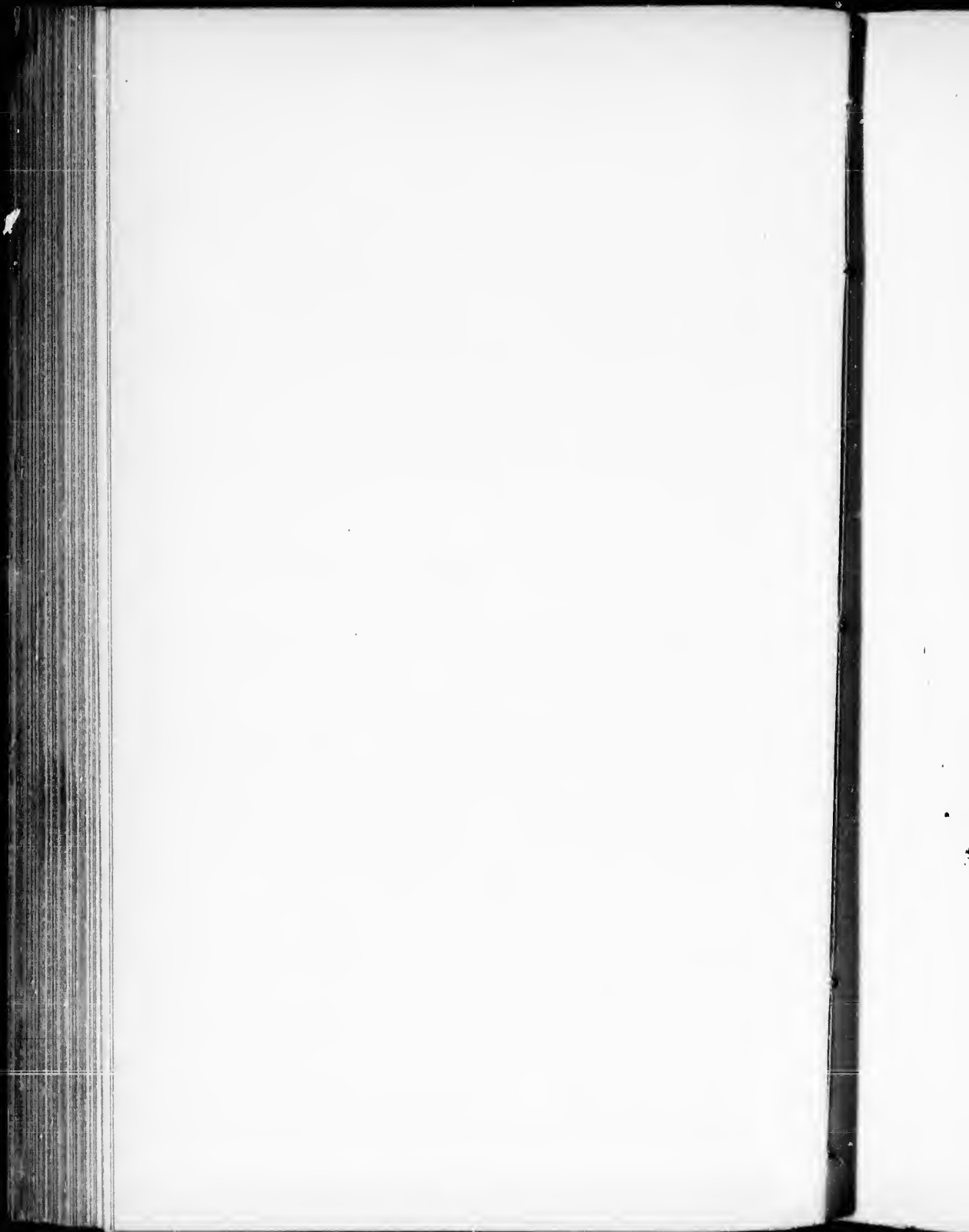
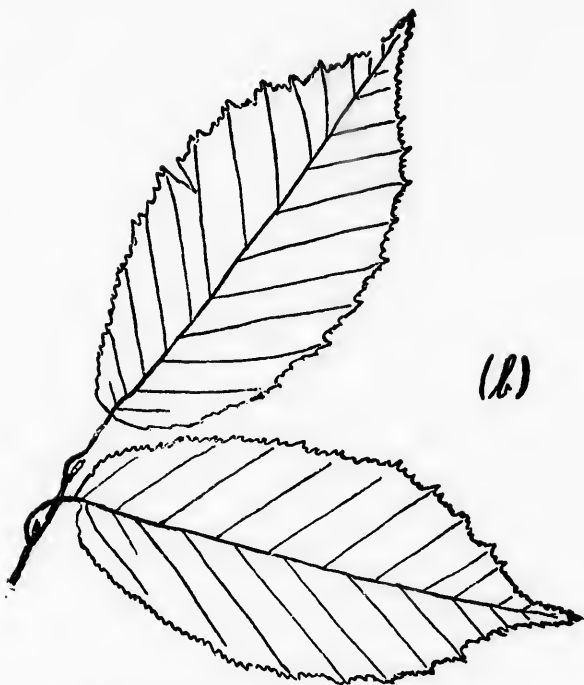


Fig. 32.—Hop-Hornbeam. *O. Virginiana* (Mill), Willd.  
a. Leaves. b. Fruit.  
NATURAL SIZE.





(a)



(b)

Fig. 33.—Hornbeam. (*C. Caroliniana*, Walt.)  
a. Fruit scales. b. Leaves.

NATURAL SIZE.



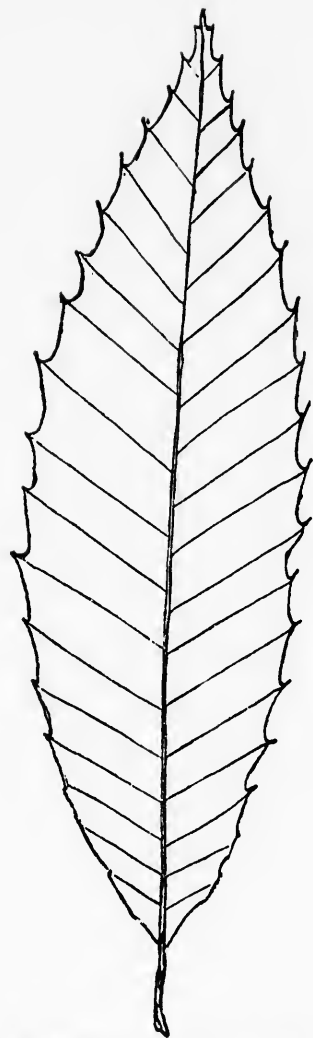


Fig. 34.—Chestnut. *C. Sativa* (L.), var. *Americana* (Michaux), Sarg.  
NATURAL SIZE.





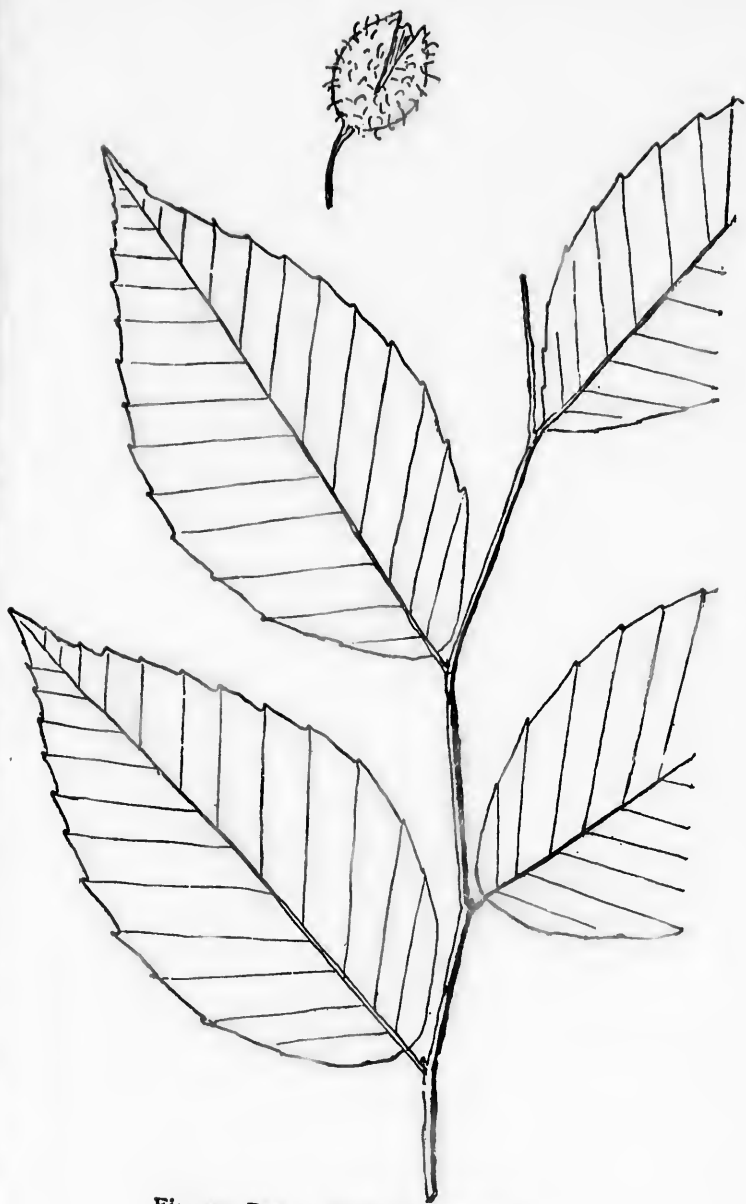


Fig. 35.—Beech. (*F. ferruginea*, Ait.)  
NATURAL SIZE.



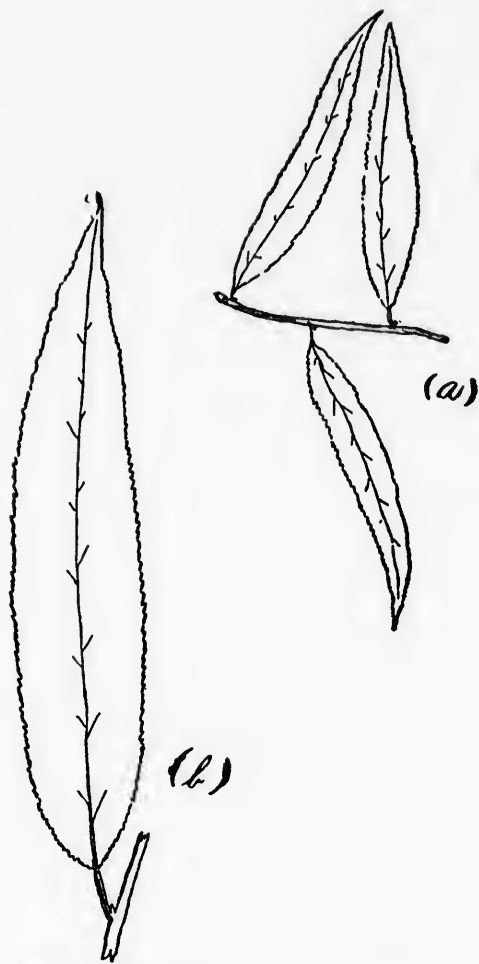


Fig. 36.—Black Willow. (*S. nigra*, Marsh.)  
a. Commonest form. b. Large form.  
NATURAL SIZE.



Fig.

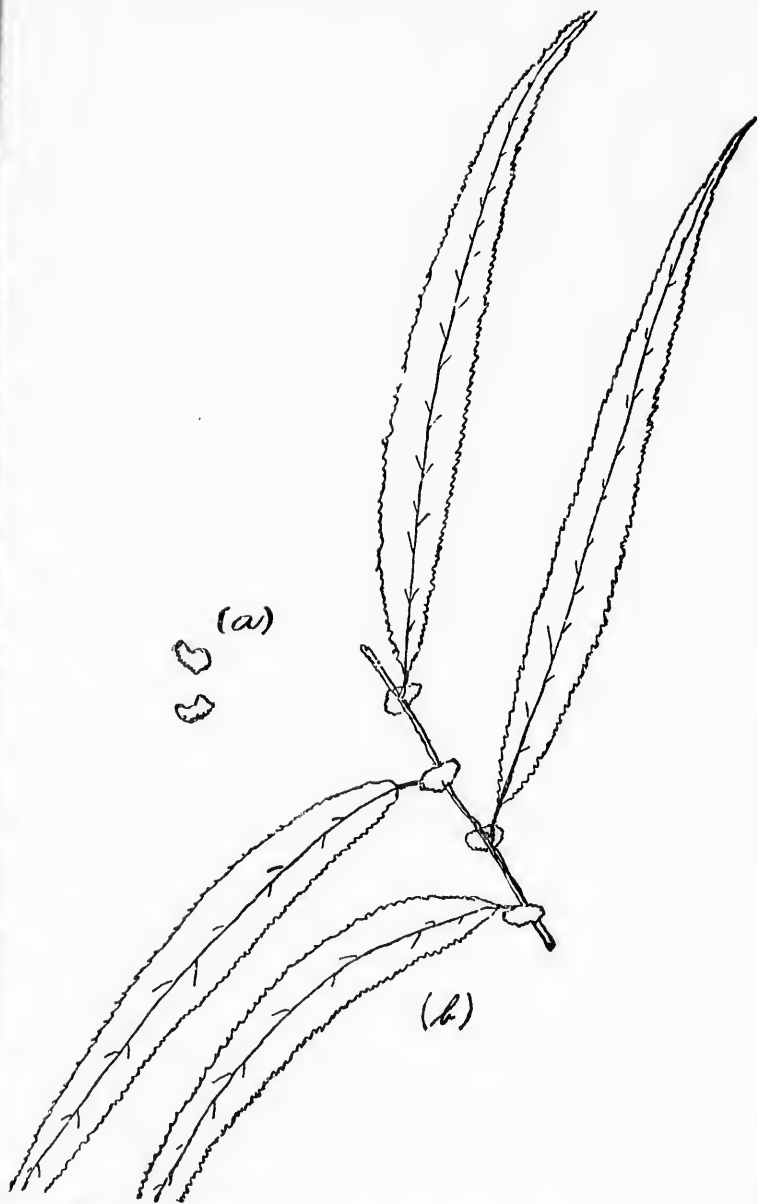


Fig. 37.—Scythe-leaved Willow. (*S. n.*, var. *falcata*, Torr.)  
a. Stipules. b. Leaves.  
NATURAL SIZE.

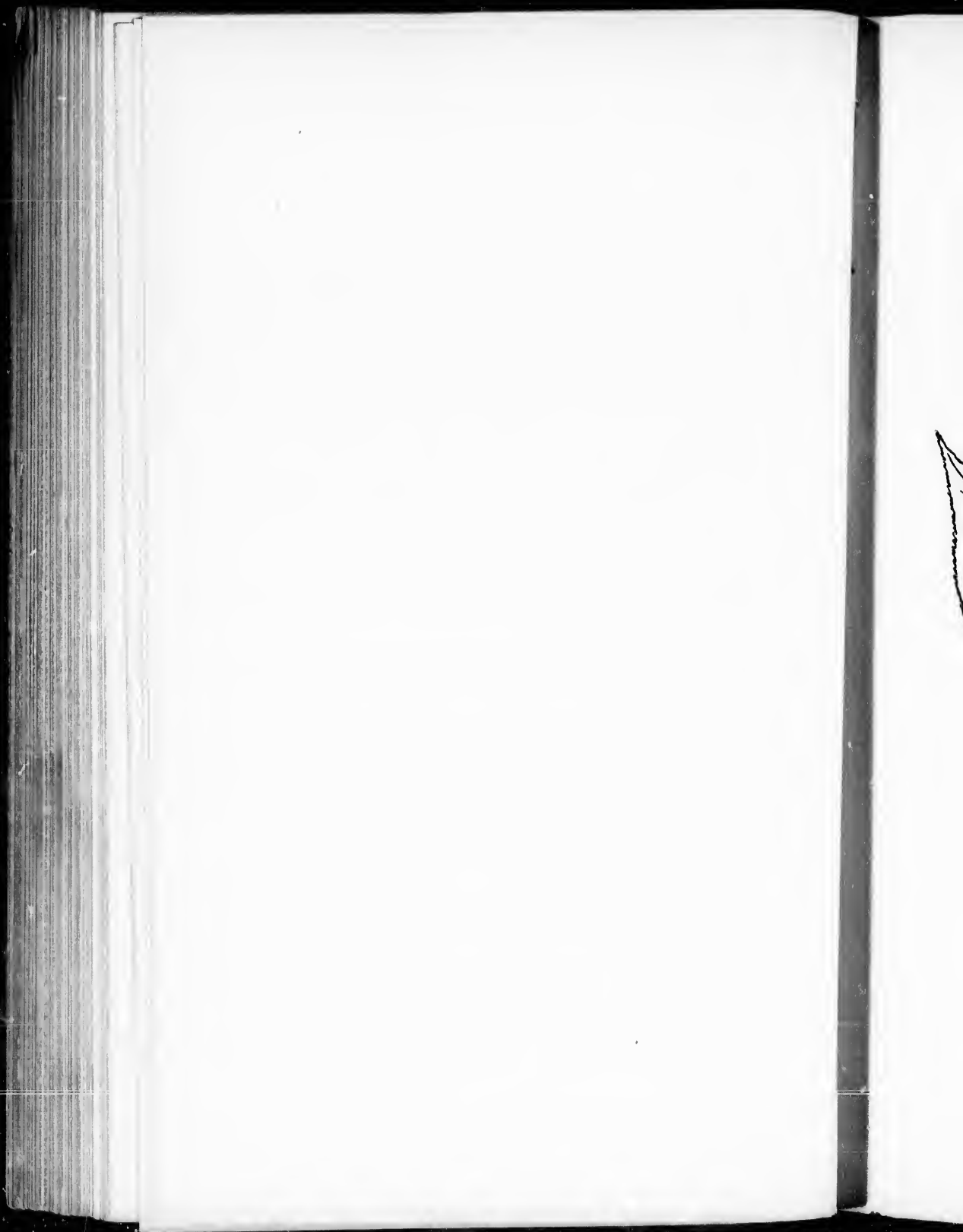




Fig. 33.—Shining Willow. (*S. lucida*, Muhl.)  
NATURAL SIZE.







Fig. 39.—Long-beaked Willow. (*S. rostrata*, Richards.)  
NATURAL SIZE.

Fig.



Fig. 4



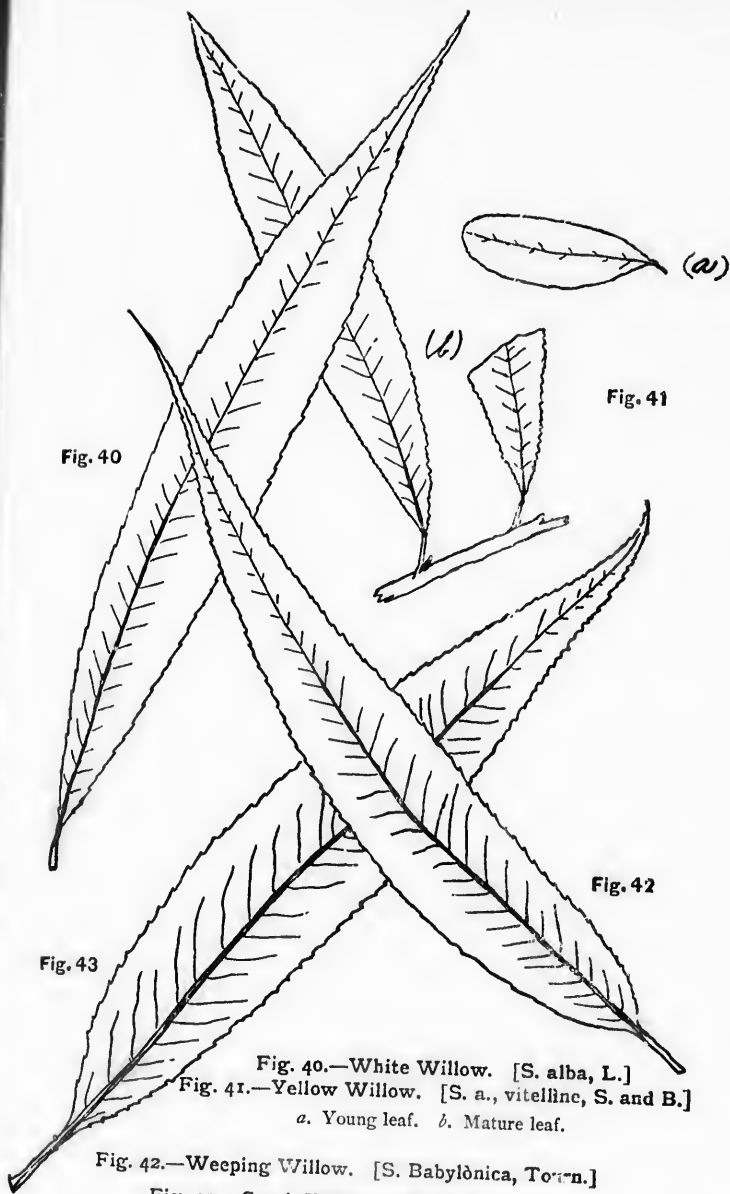


Fig. 40

Fig. 41

Fig. 42

Fig. 43

Fig. 40.—White Willow. [*S. alba*, L.]

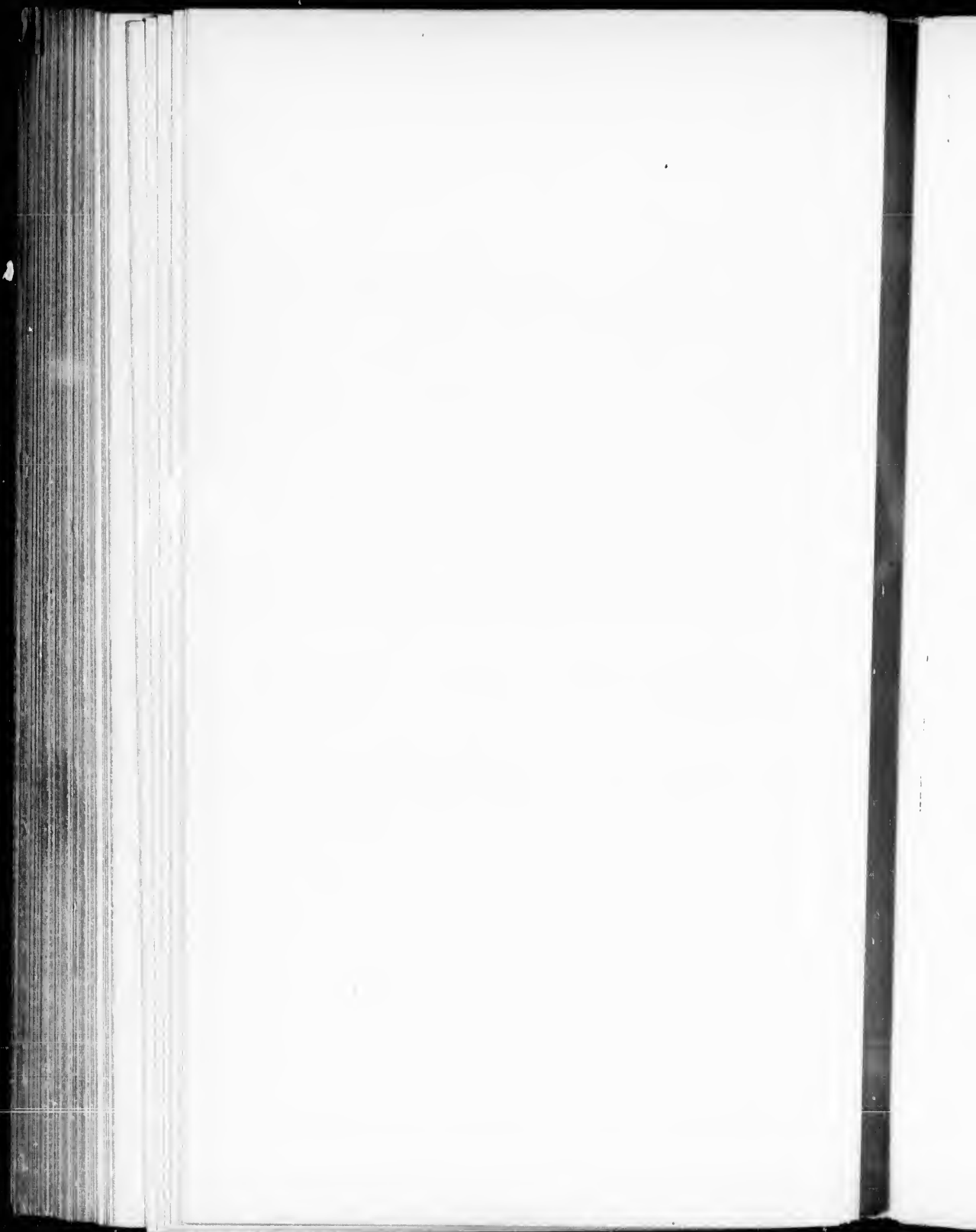
Fig. 41.—Yellow Willow. [*S. a., vitellina*, S. and B.]

*a.* Young leaf. *b.* Mature leaf.

Fig. 42.—Weeping Willow. [*S. Babylonica*, Torr.]

Fig. 43.—Crack Willow. [*S. fragilis*, L.]

NATURAL SIZE.



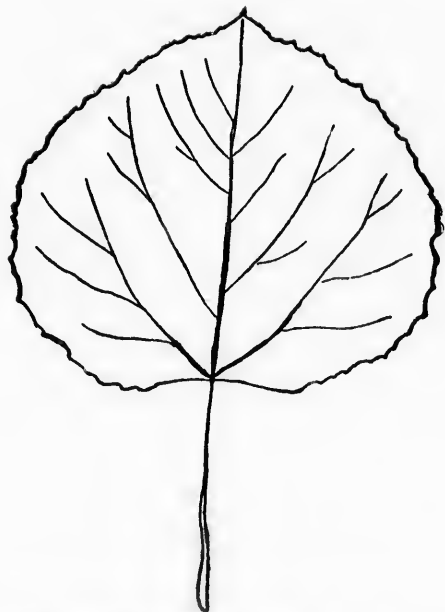


Fig. 44.—Aspen. (*P. tremuloides*, Michx.)  
NATURAL SIZE.

Fig

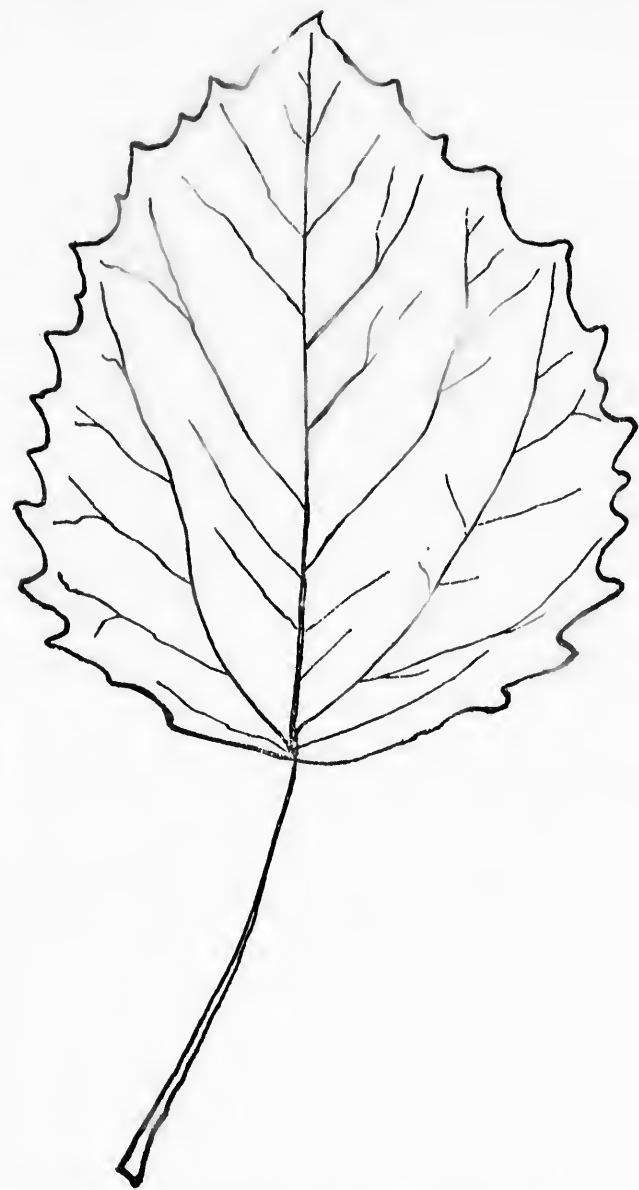
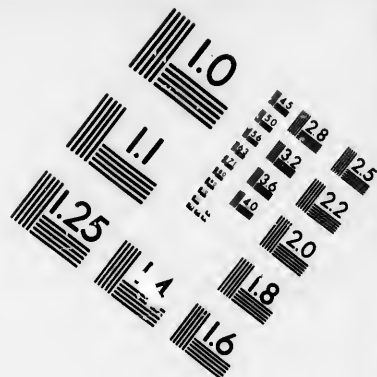
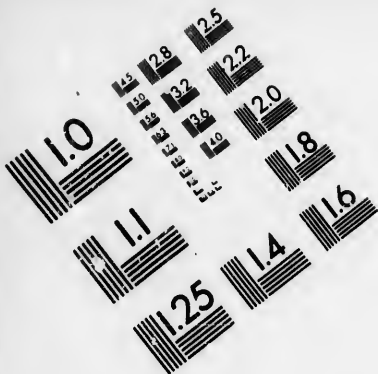


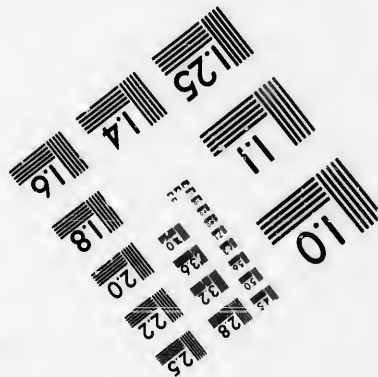
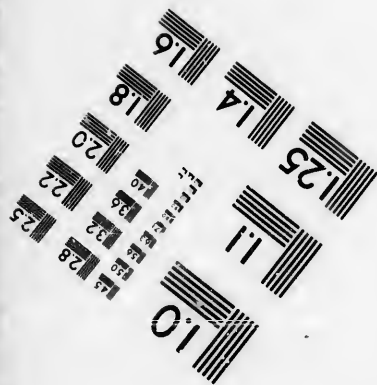
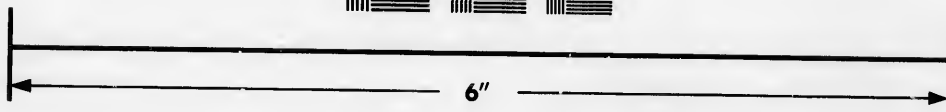
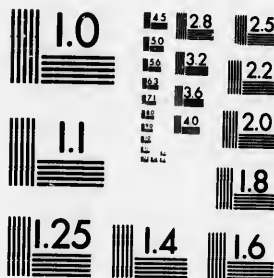
Fig. 45.—Large Toothed Aspen. (*P. grandidentata*, Michx.)  
NATURAL SIZE.







**IMAGE EVALUATION  
TEST TARGET (MT-3)**



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Corporation**

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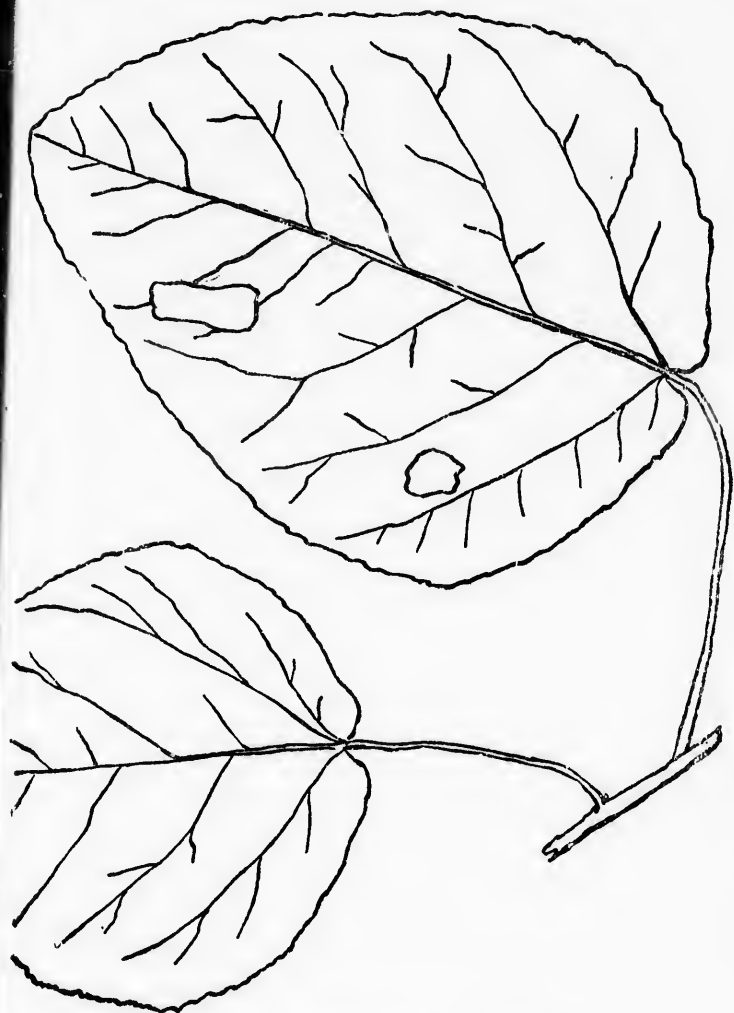
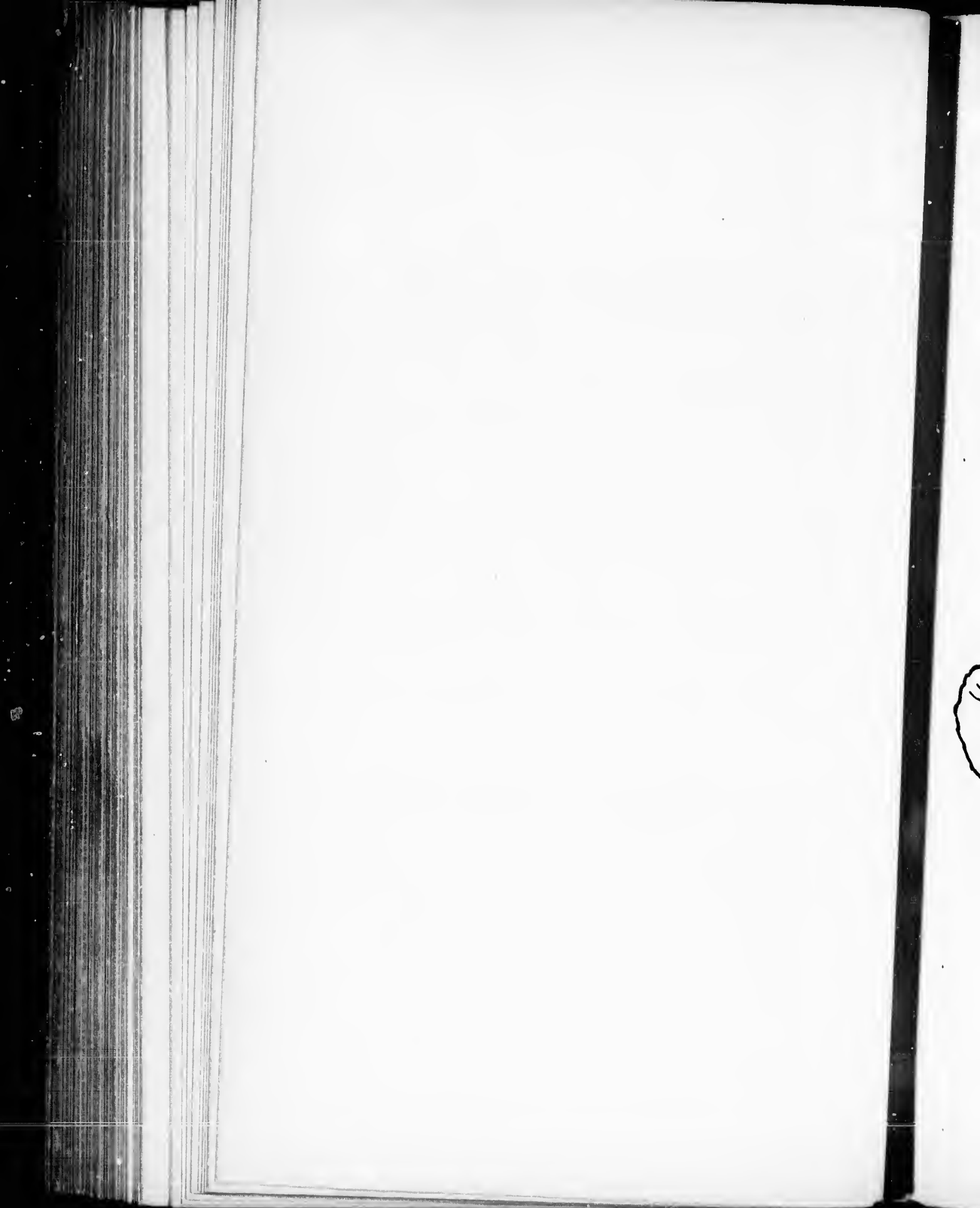


Fig. 46.—Downy-leaved Poplar. (*F. heterophylla*, L.)  
NATURAL SIZE.



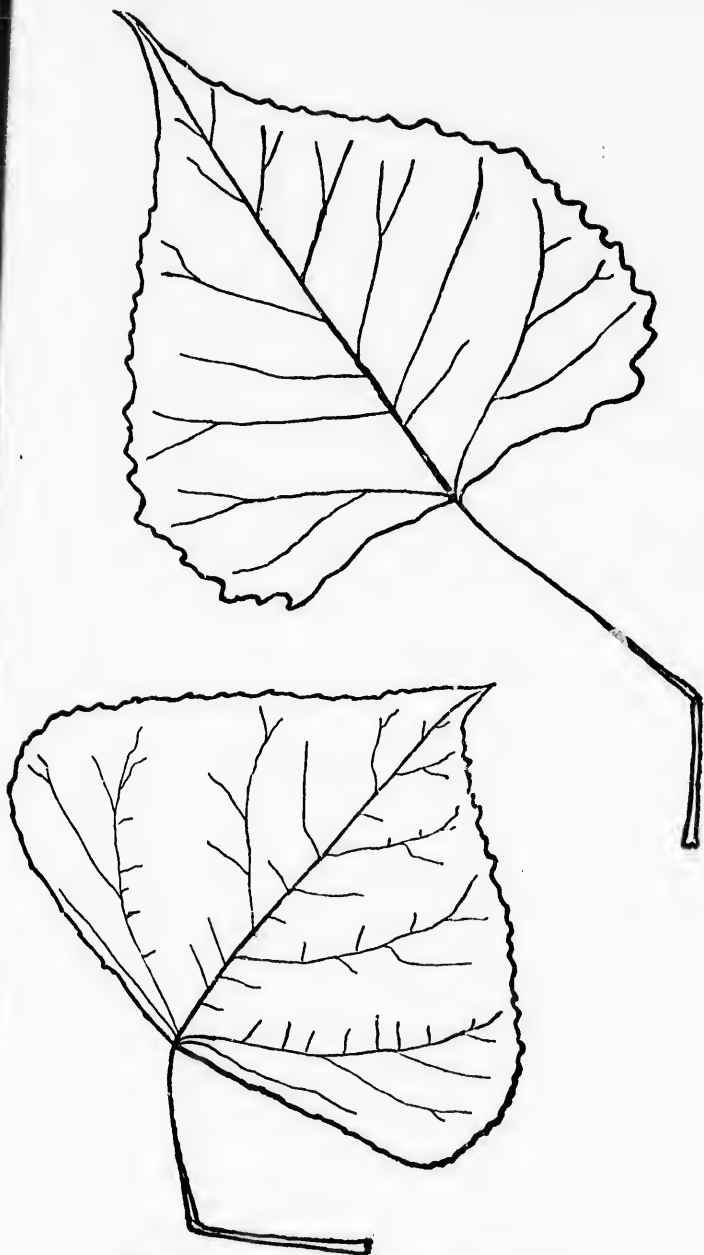


Fig. 47.—Cottonwood. (*P. monillifera*, Ait.)  
NATURAL SIZE.





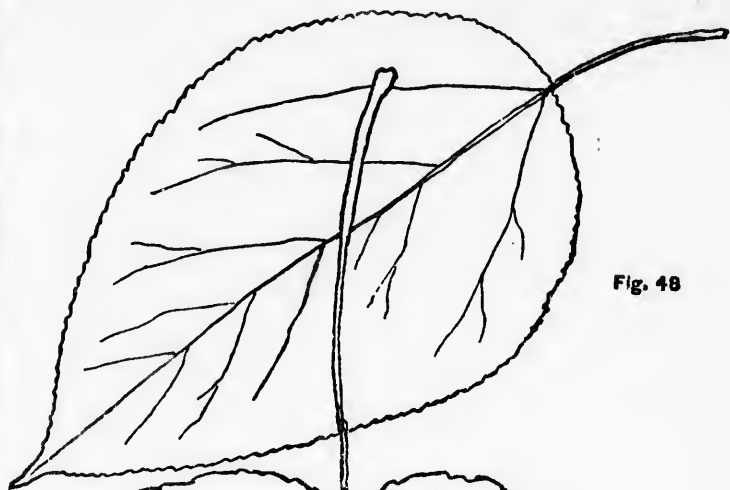


Fig. 48

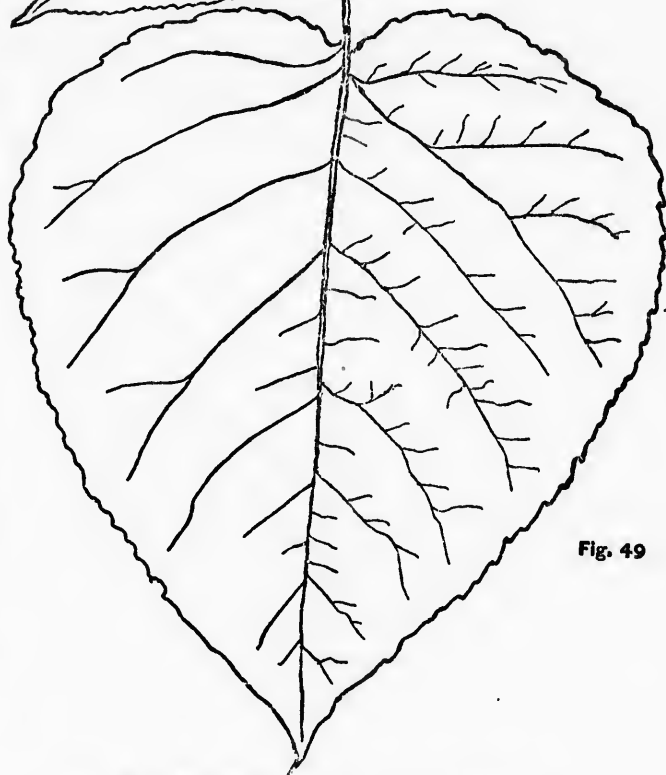
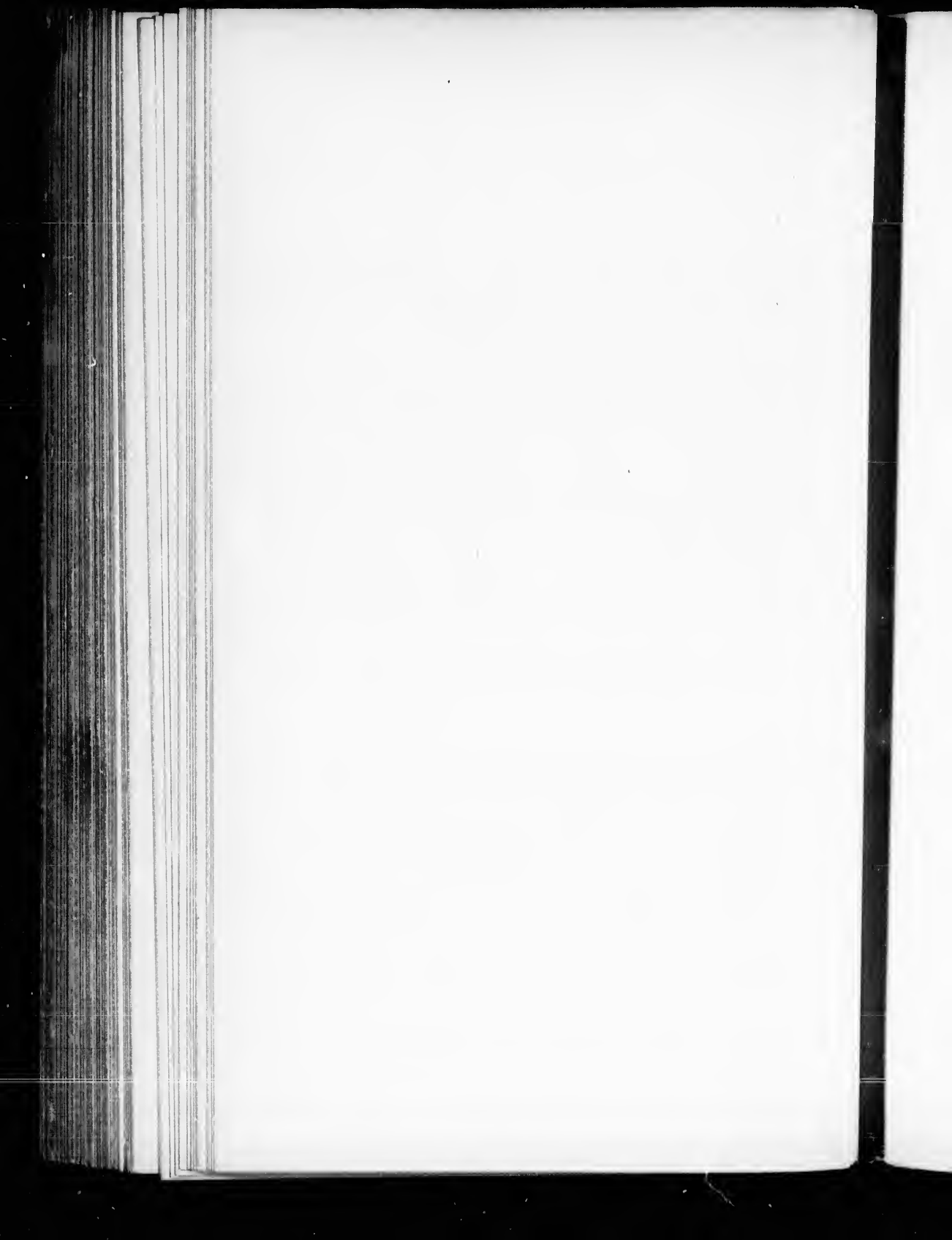


Fig. 49

Fig. 48.—Balsam Poplar. (*P. balsamifera*, L.)  
Fig. 49.—Balm of Gilead. *P. b. candicans* (Ait.), Gray.  
NATURAL SIZE.



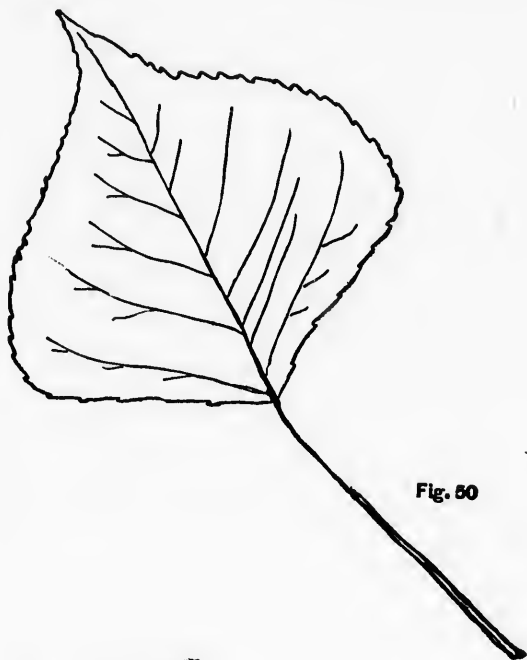


Fig. 50

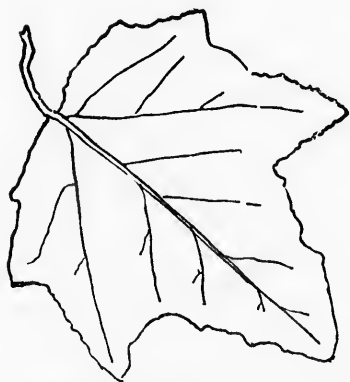
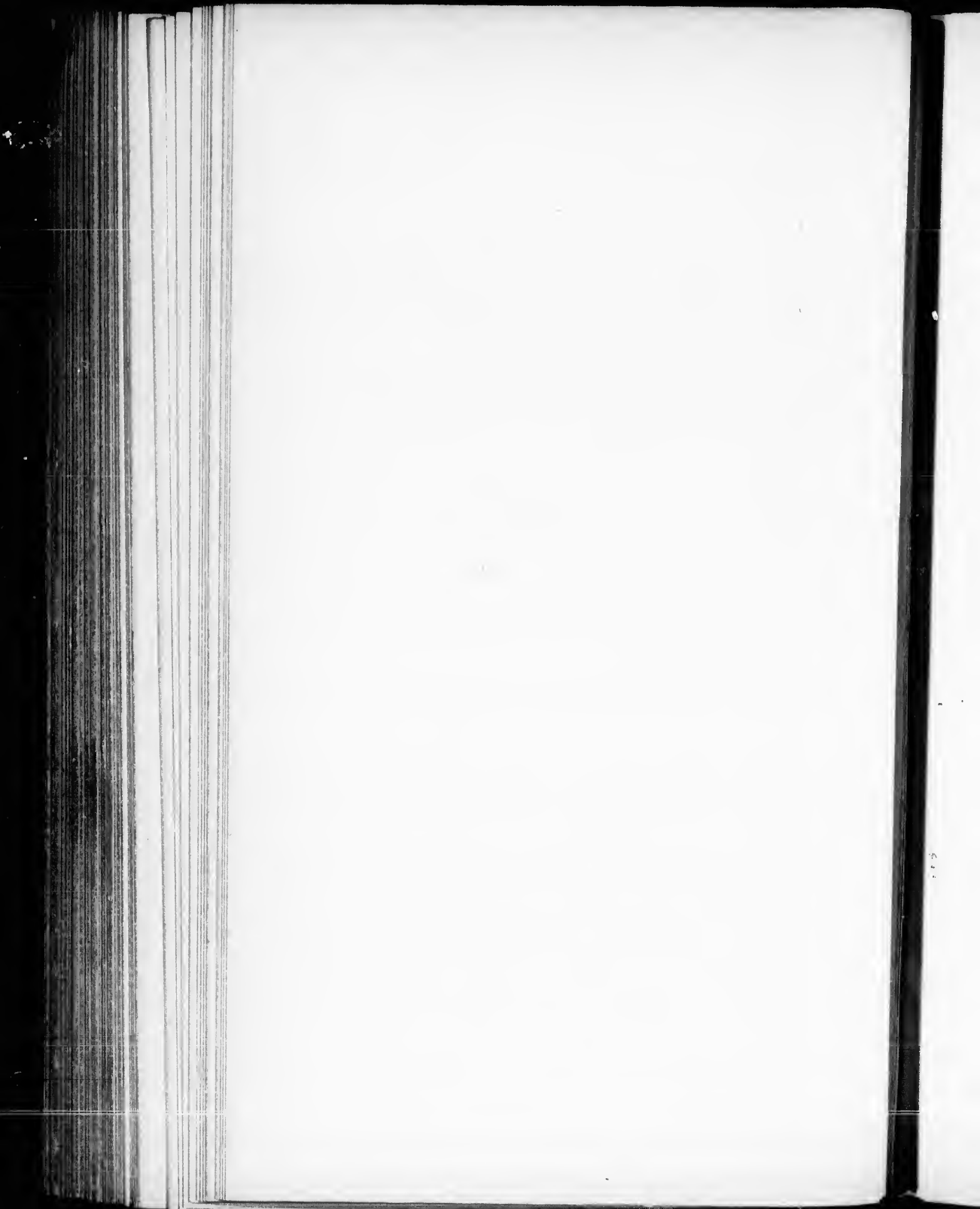


Fig. 51

Fig. 50.—Lombardy Poplar. [*P. dilatata*, Ait.]  
Fig. 51.—Silver-Leaf Poplar. [*P. alba*, L.]

NATURAL SIZE.



TREES WITH SIMPLE LEAVES  
LEAVES ALTERNATE

CONTINUED

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(EDGE LOBED)

A III

(a) and (b)





Fig. 52.—Tulip Tree. (*L., tulipifera, L.*)  
NATURAL SIZE.





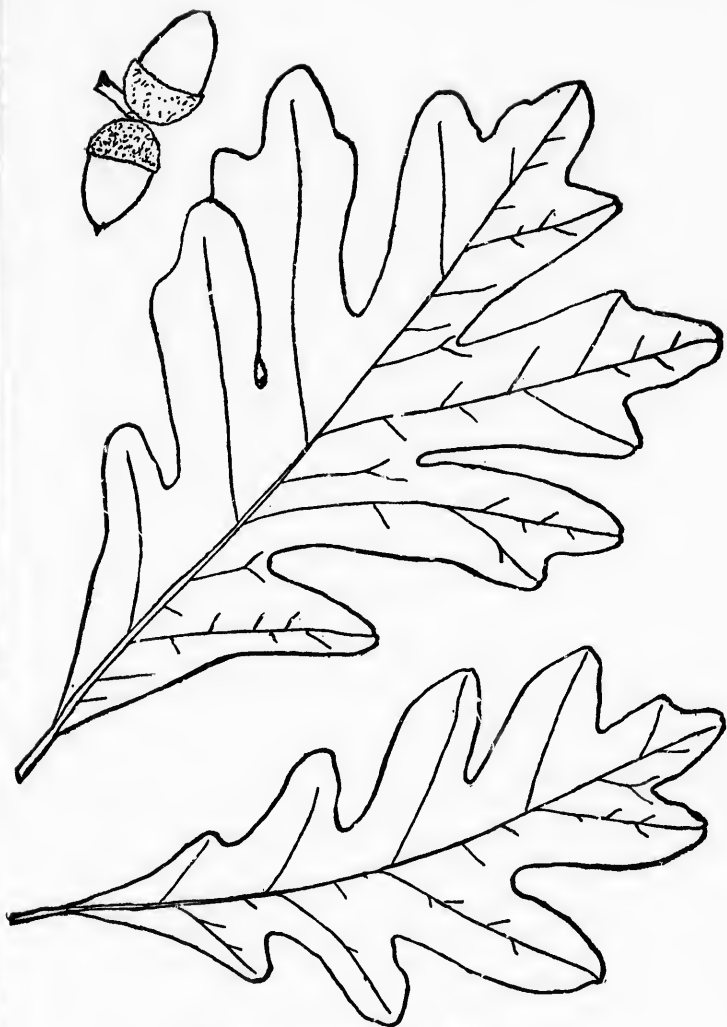


Fig. 53.—White Oak. (*Q. alba*, L.)  
LEAVES AND FRUIT REDUCED ONE FOURTH.



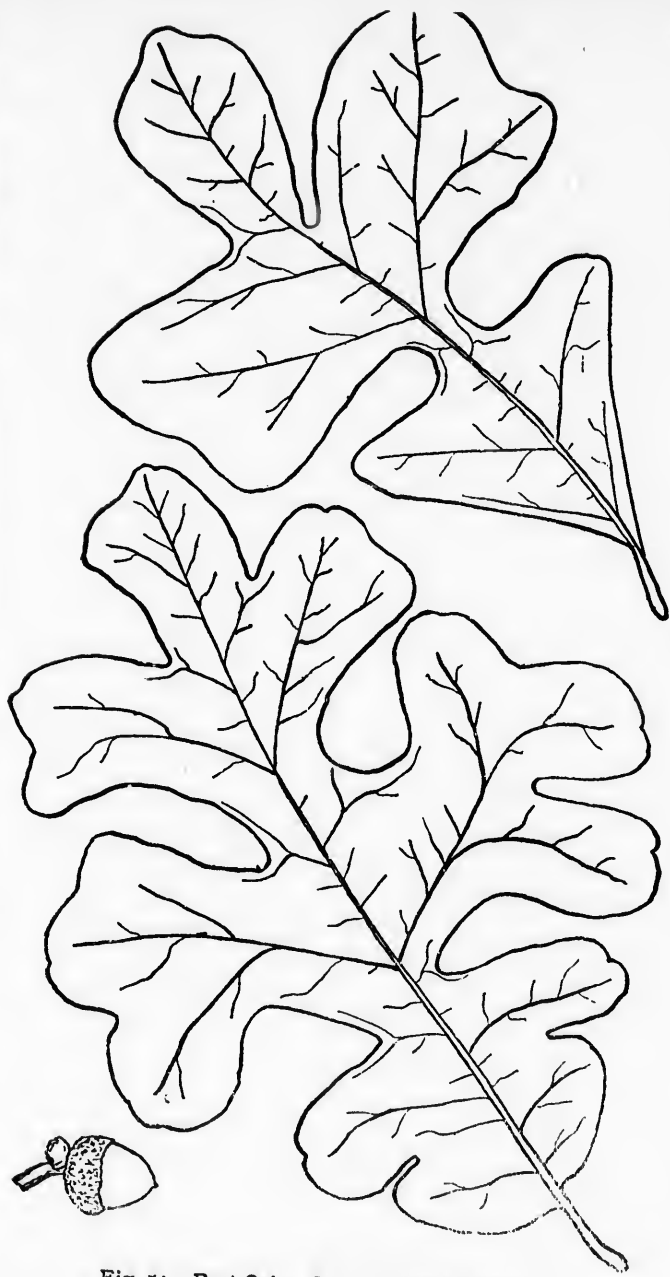


Fig. 54.—Post Oak. *Q. minor* (Marsh), Sarg.  
LEAVES AND FRUIT REDUCED ONE FOURTH.

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Fig. 55.—Burr Oak. (*Q. macrocarpa*, Michx.)  
LEAVES AND FRUIT REDUCED ONE FOURTH.

2

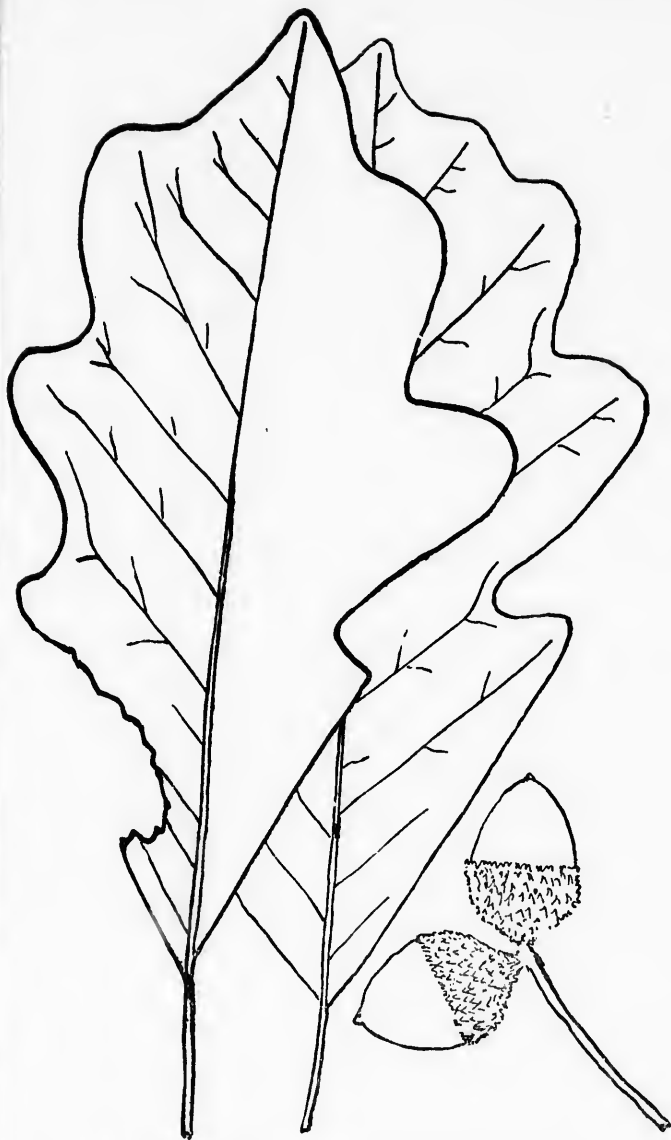


Fig. 56.—Swamp White Oak. (*Q. bicolor*, Willd.)  
NATURAL SIZE.





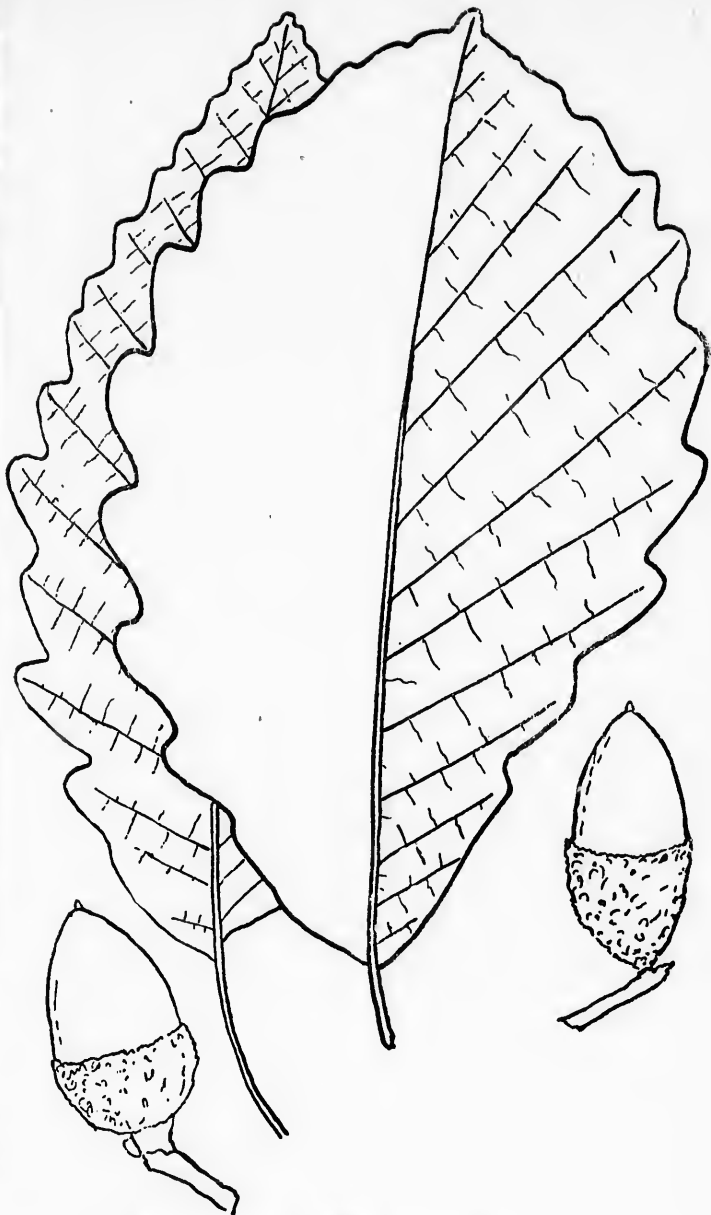


Fig. 57.—Chestnut Oak. (*Q. prinus*, L.)  
NATURAL SIZE.



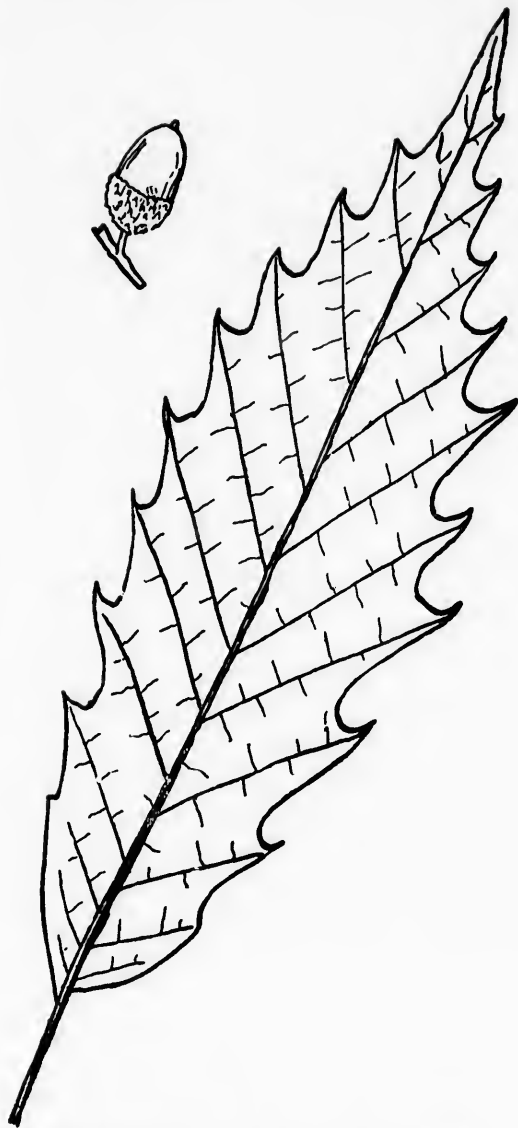


Fig. 58.—Yellow Chestnut Oak. *Q.* (Muhl.), Engelm.  
NATURAL SIZE.





Fig. 59.—Black Jack. (*Q. nigra*, L.)  
NATURAL SIZE.

100

100

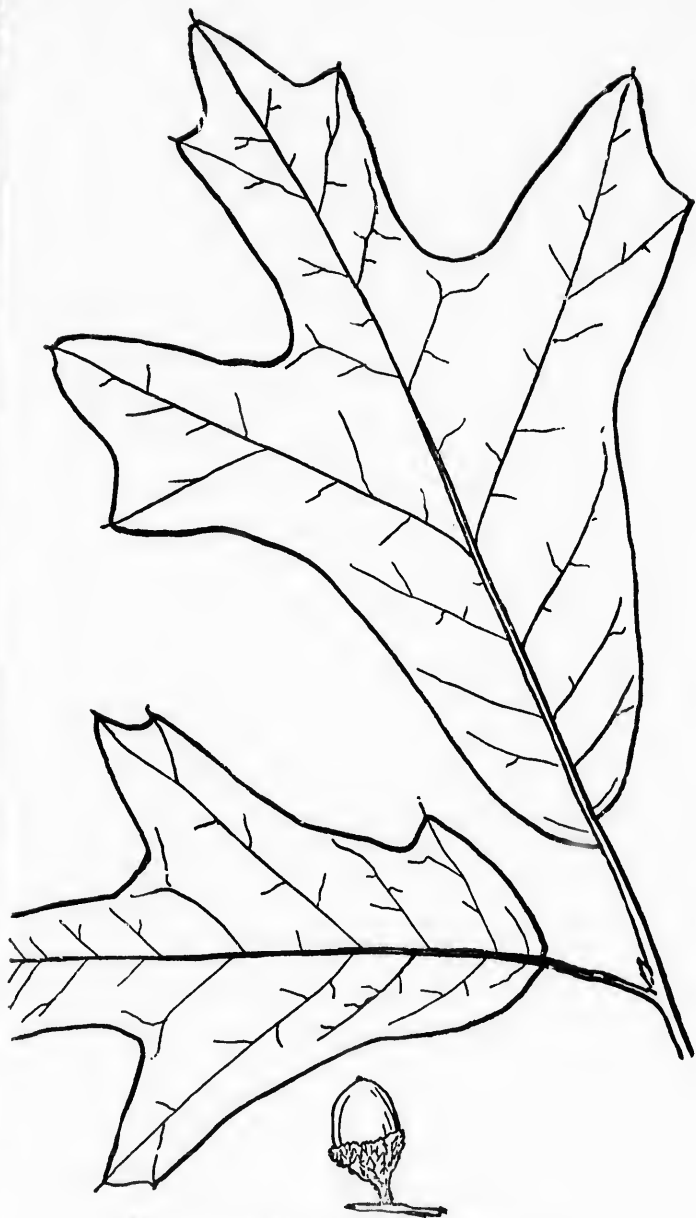


Fig. 60.—Spanish Oak. (*Q. cuneata*, Wang.)  
NATURAL SIZE.

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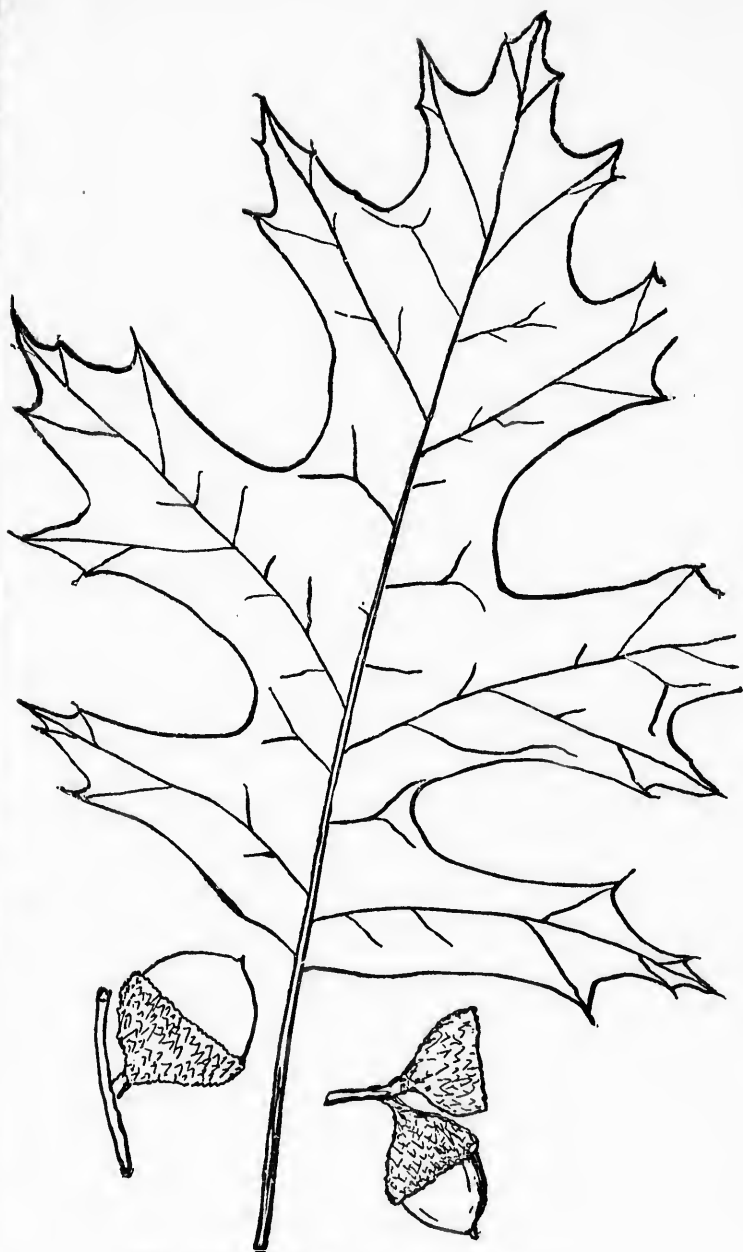


Fig. 61.—Scarlet Oak. (*Q. coccinea*, Wang.)  
NATURAL SIZE.



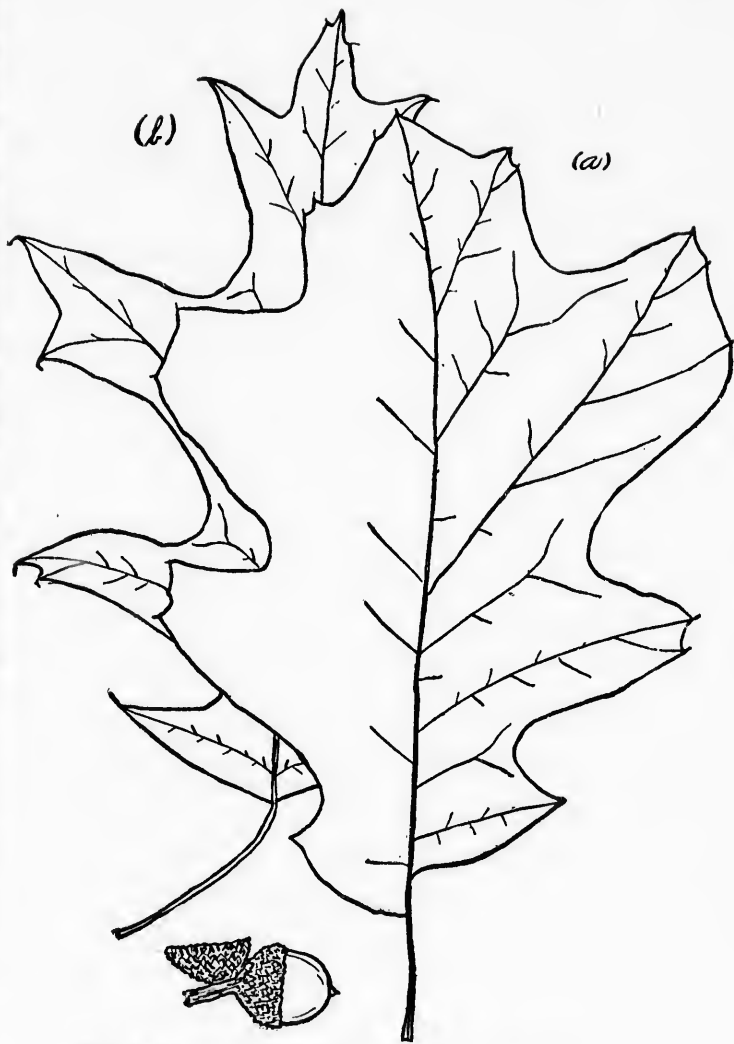
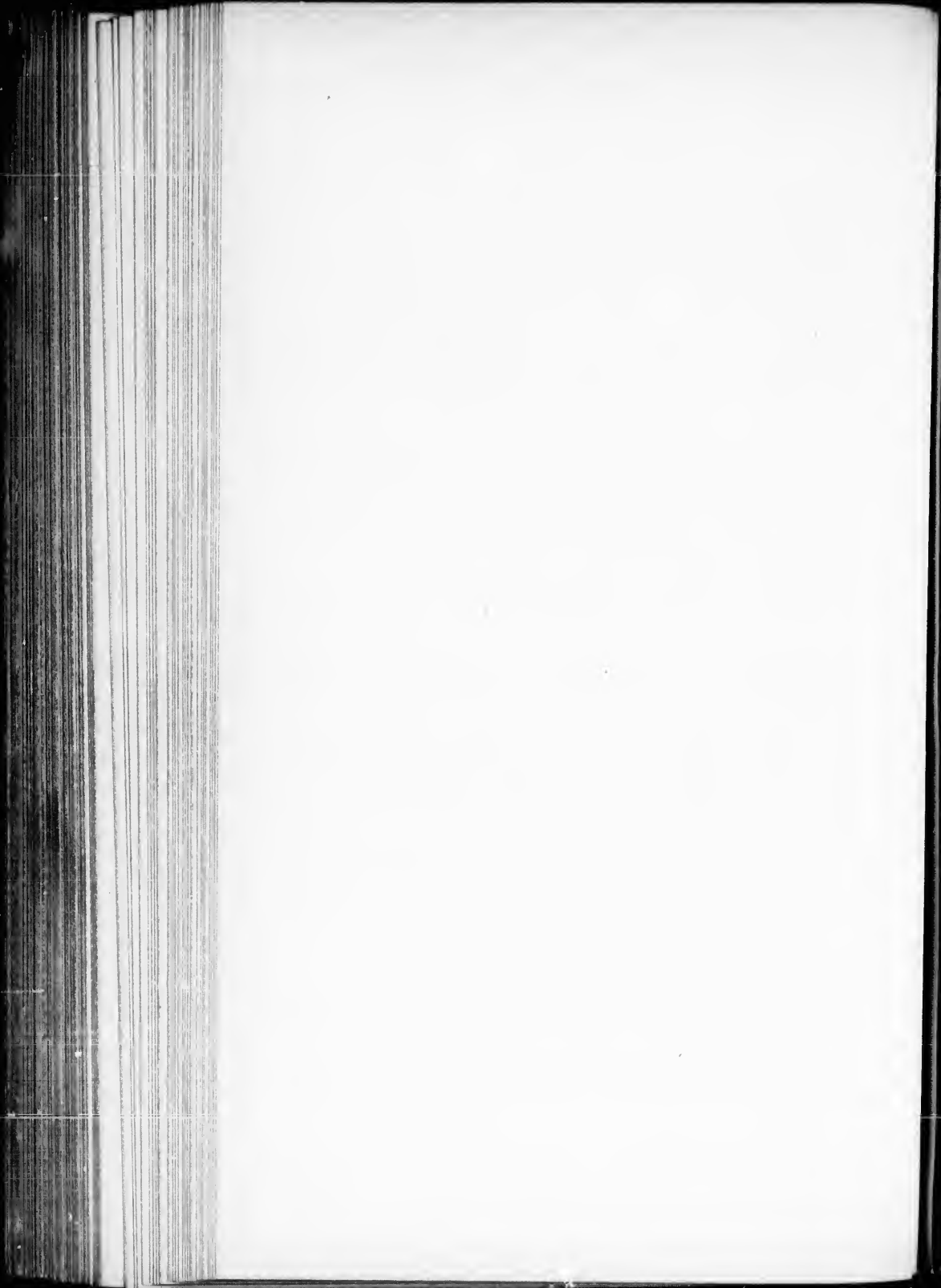


Fig. 62, *a* and *b*.—Black Oak. (*Q. c.*, *tinctoria*, Gray.)  
FRUIT AND LEAVES REDUCED ONE FOURTH.



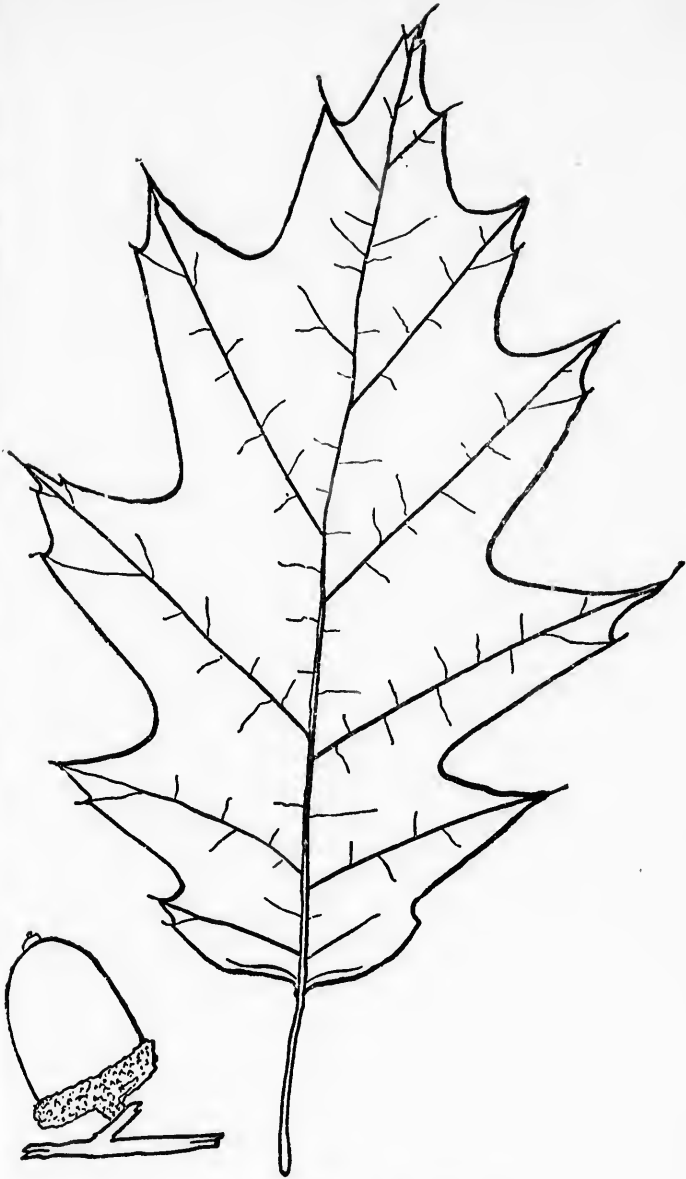
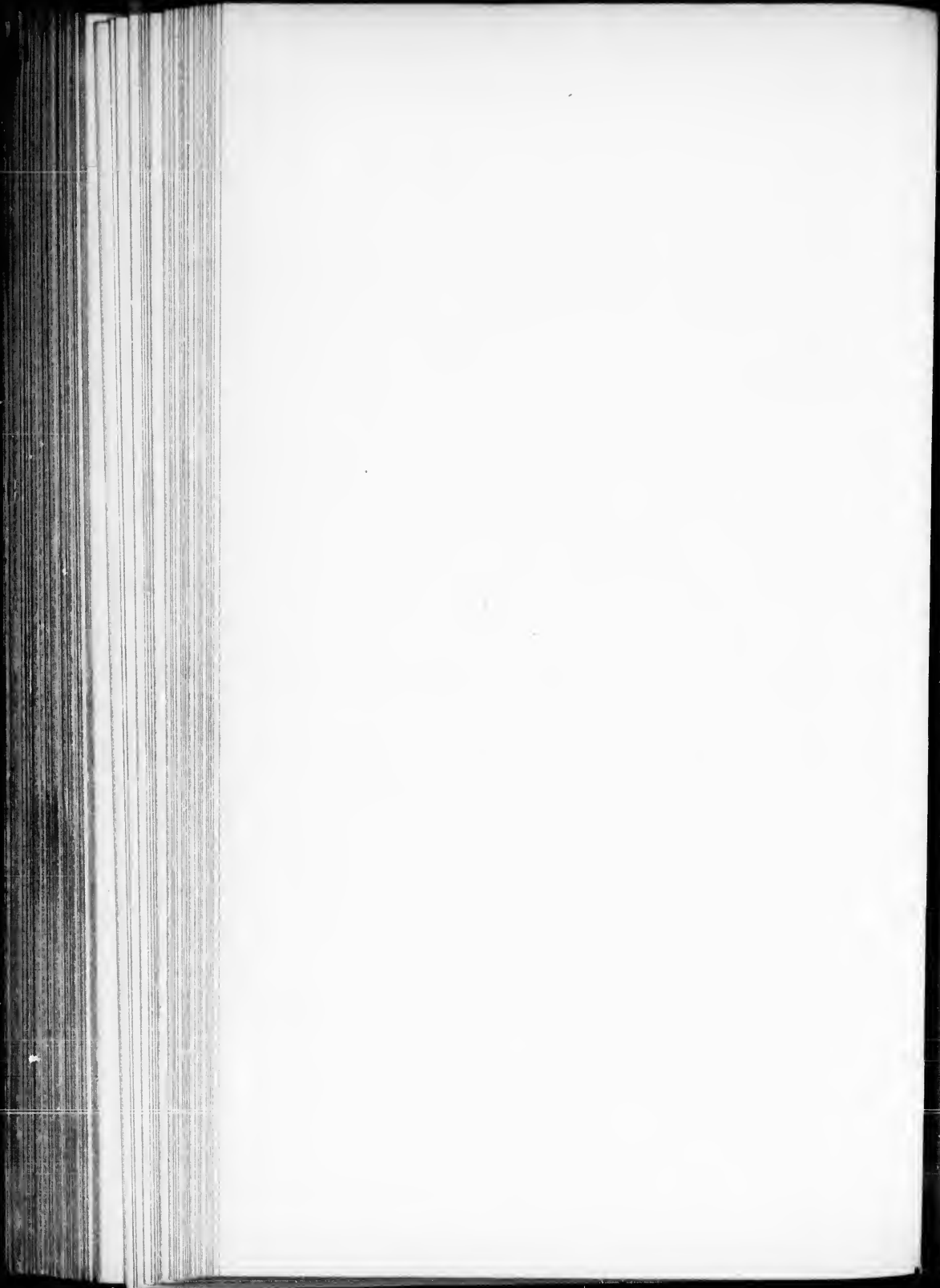


Fig. 63.—Red Oak. (*Q. rubra*, L.)  
NATURAL SIZE.



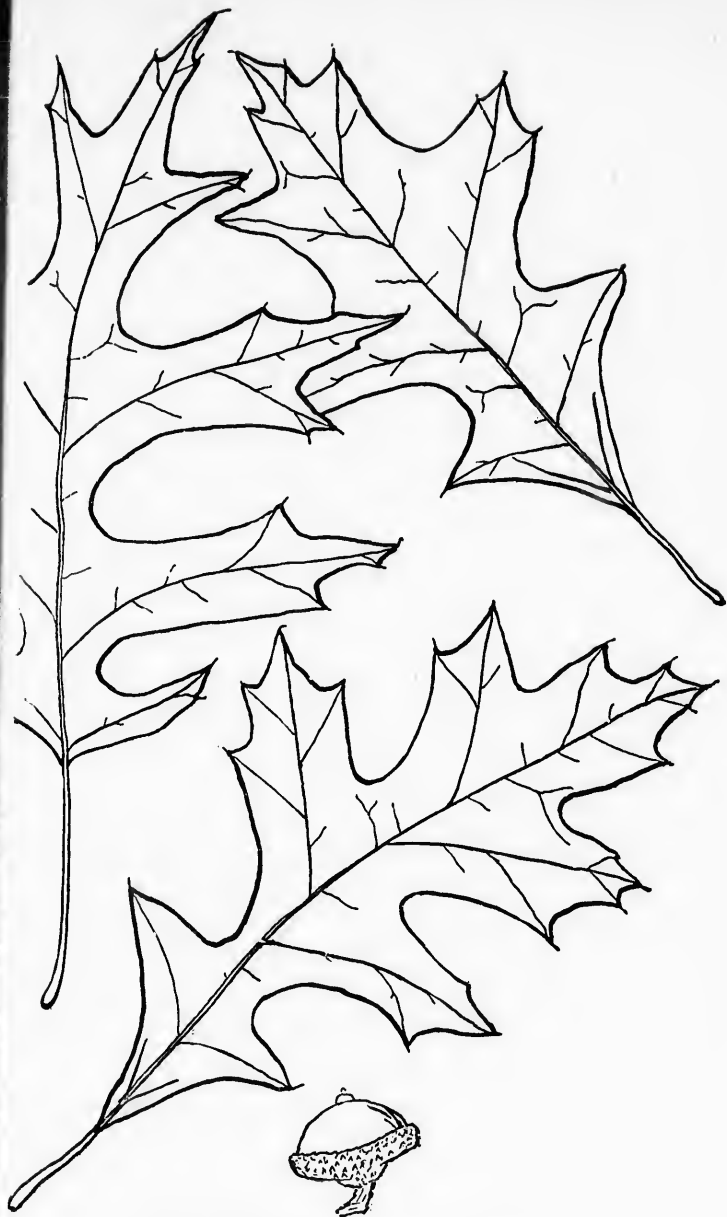


Fig. 64.—Pin Oak. (*Q. palustris*, D. Roi.)  
NATURAL SIZE.







Fig. 65.—Willow Oak. (*Q. Phellos*, L.)  
NATURAL SIZE.

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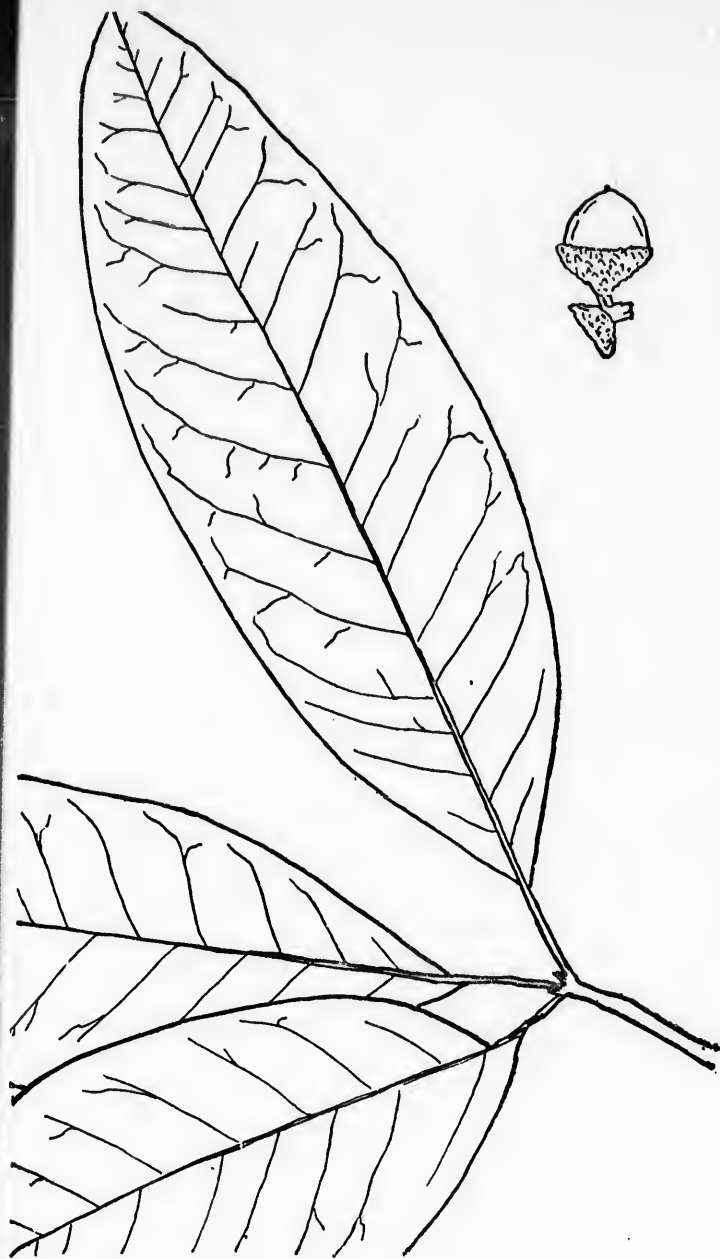


Fig. 66.—Shingle Oak. (*Q. imbricaria*, Michx.)  
NATURAL SIZE.

VI

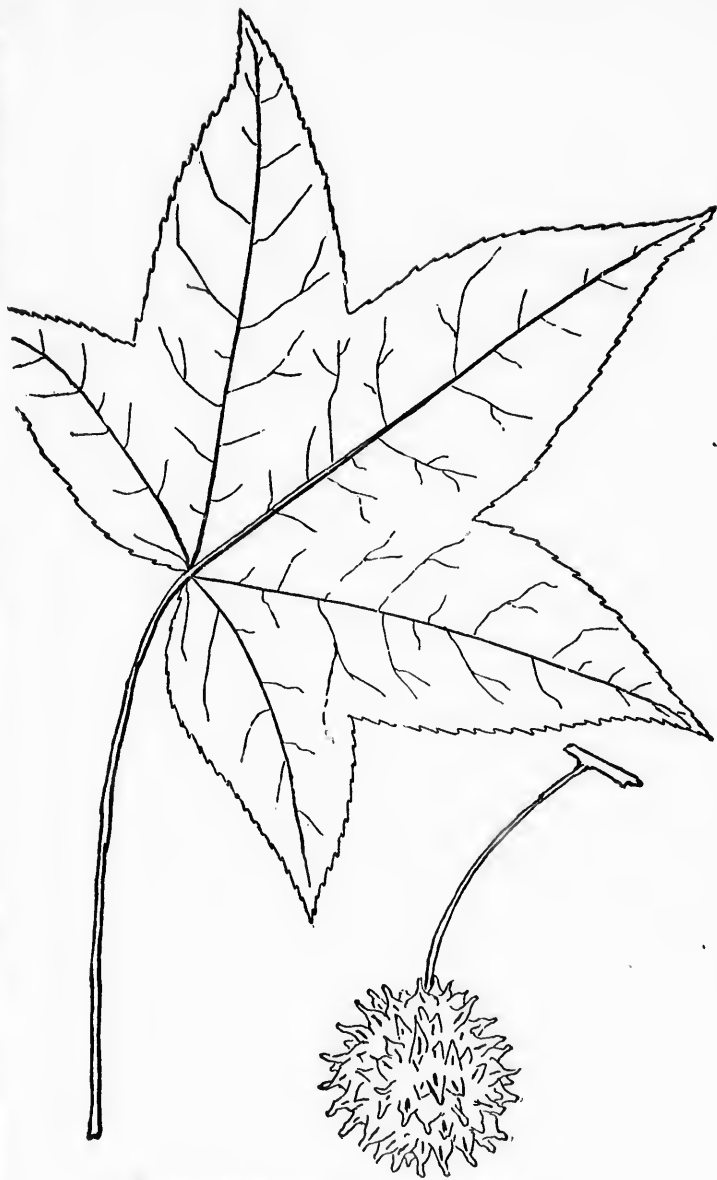
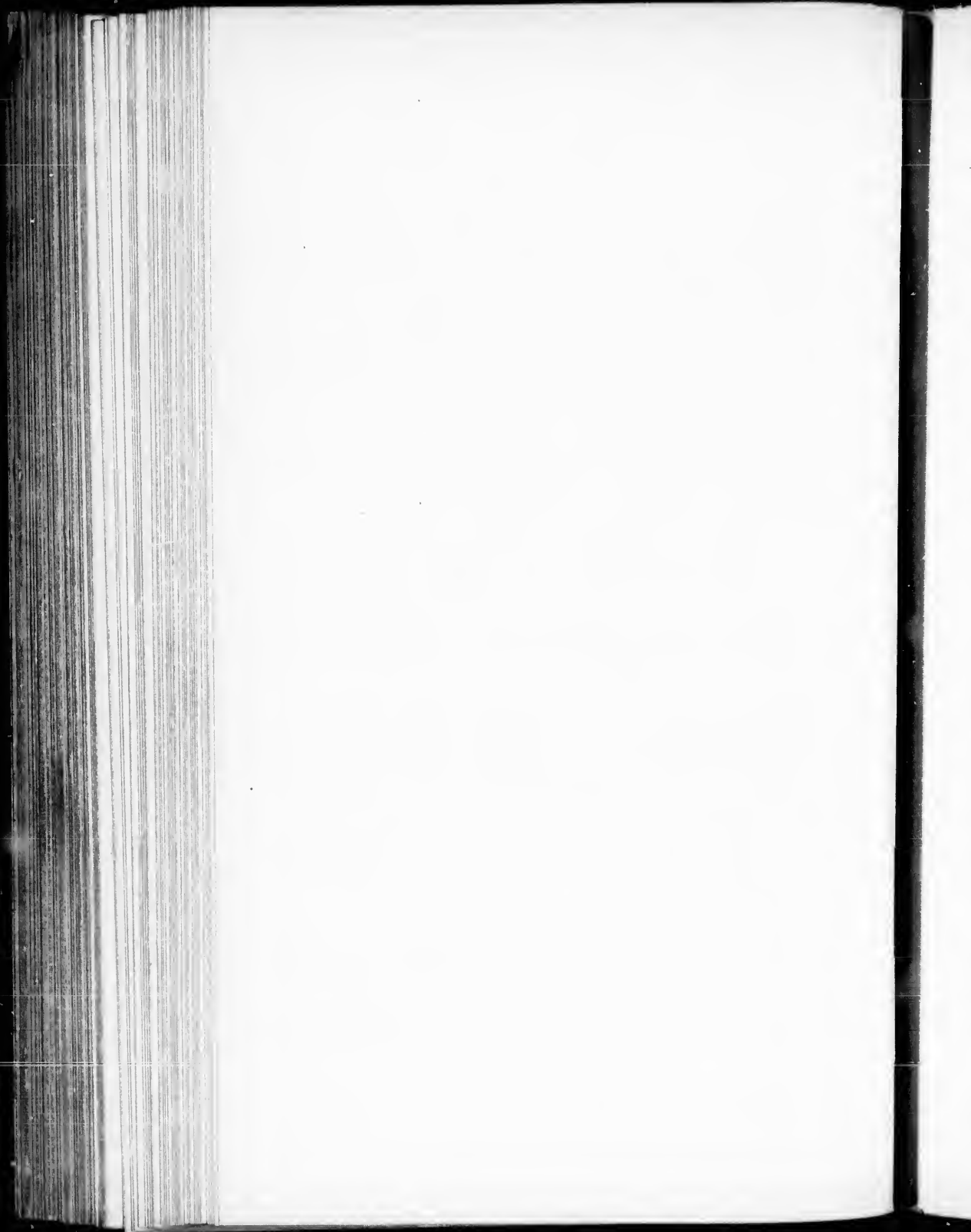


Fig. 67.—Sweet Gum. (*L. styraciflua*, L.)  
NATURAL SIZE.



TREES WITH SIMPLE LEAVES

CONTINUED

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LEAVES OPPOSITE

(EDGE ENTIRE)

B I

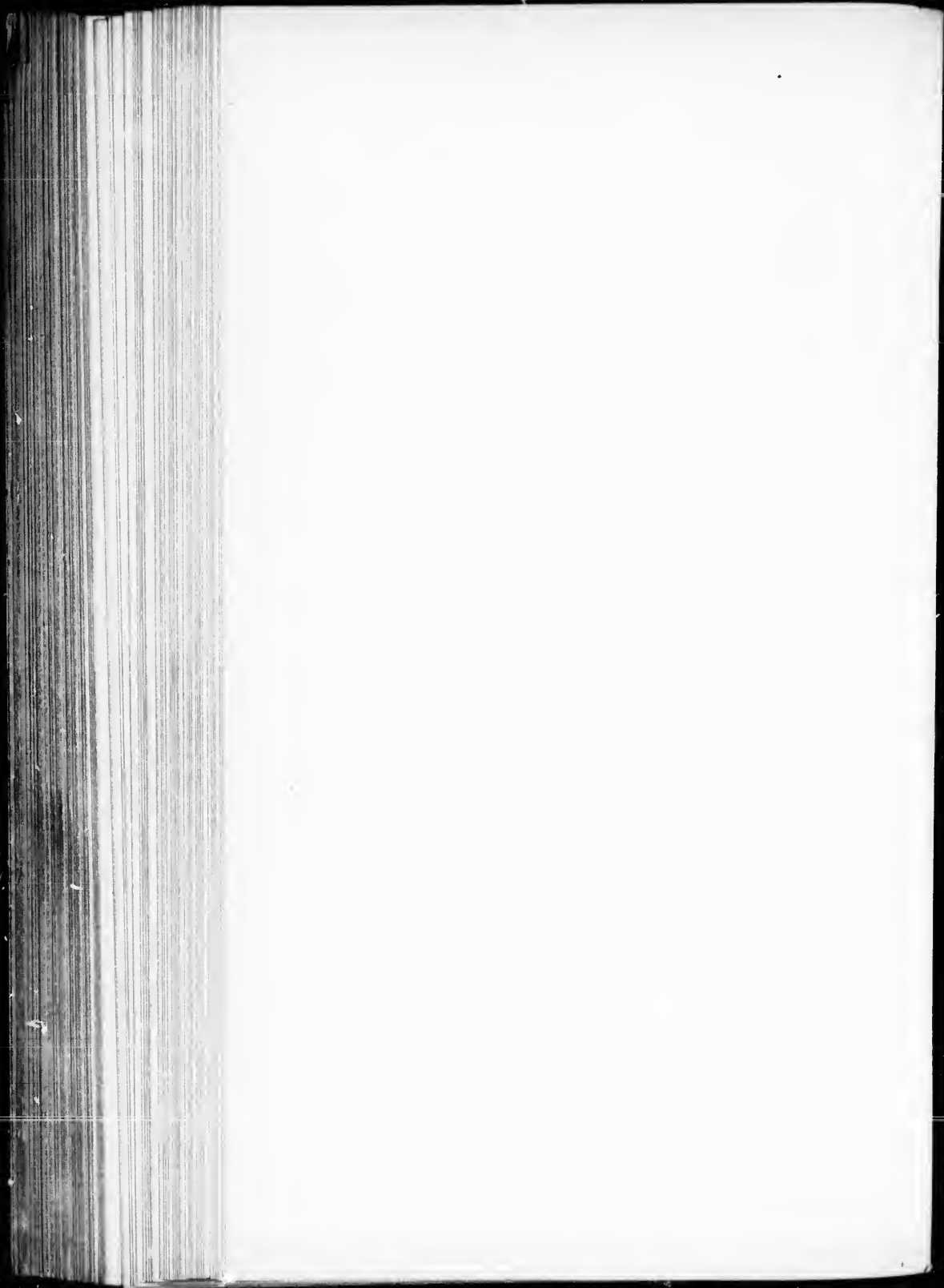






Fig. 68.—Flowering Dogwood. (*C. florida*, L.)  
NATURAL SIZE.



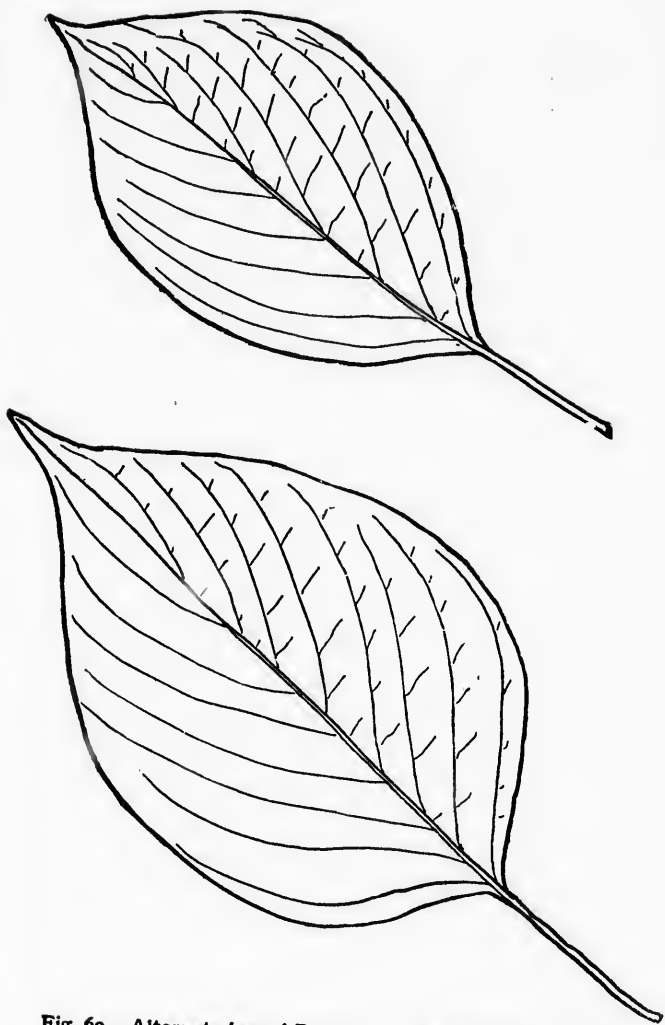


Fig. 69.—Alternate-leaved Dogwood. (*C. alternifolia*, L. f.)  
NATURAL SIZE.



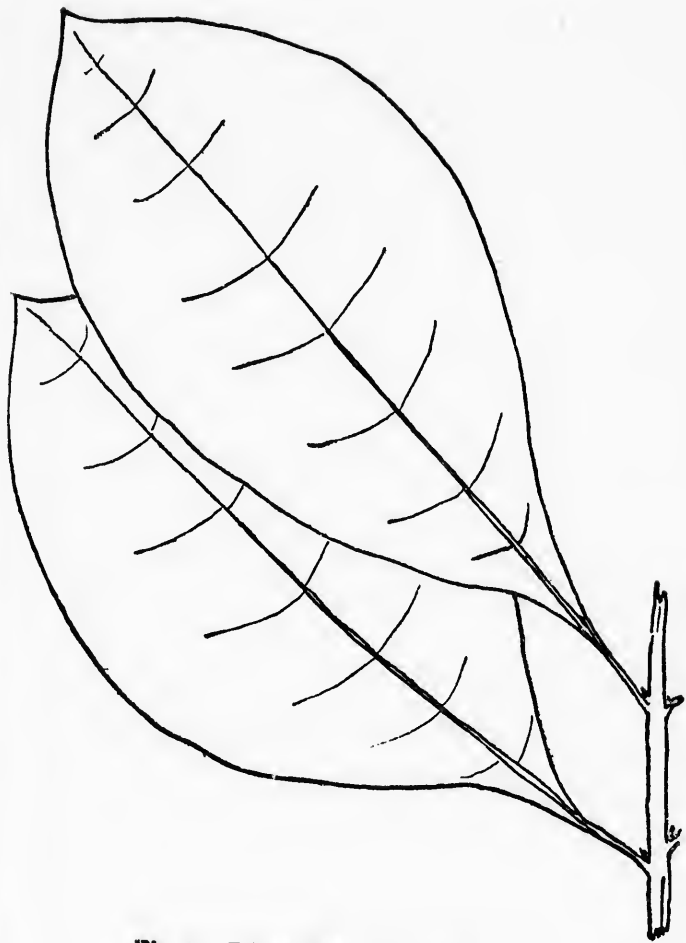


Fig. 70.—Fringe Tree. (*C. Virginica*, L.)  
NATURAL SIZE.



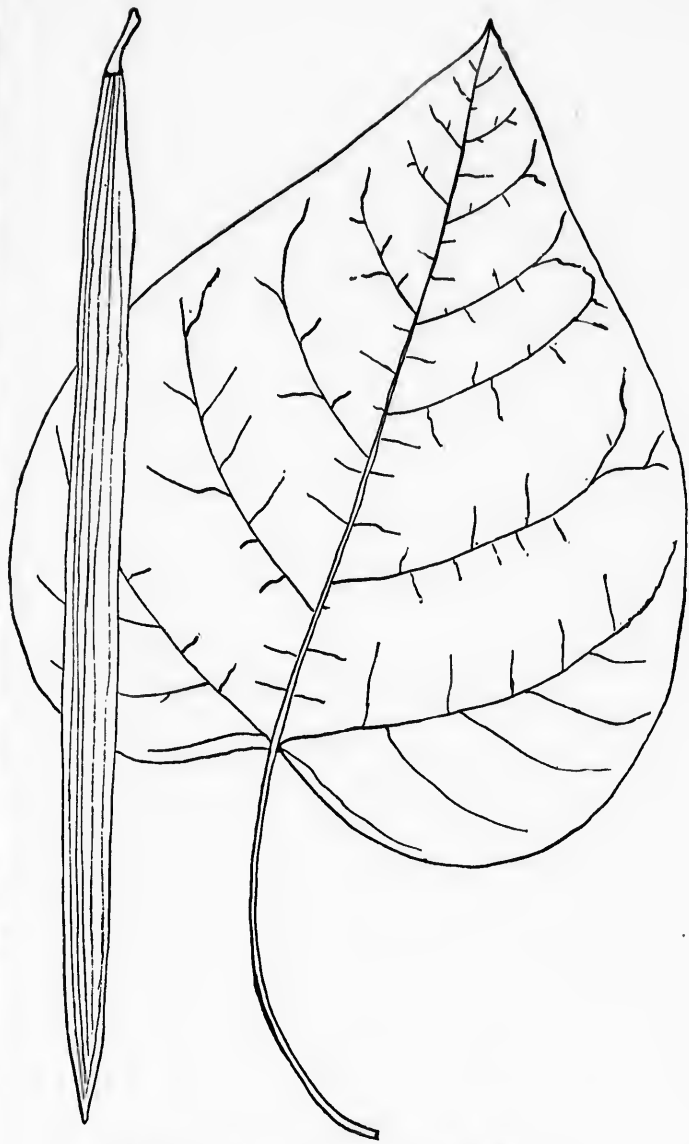


Fig. 71.—Catalpa. (*C. bignonioides*, Walt.)  
LEAF AND FRUIT REDUCED ONE THIRD.





TREES WITH SIMPLE LEAVES

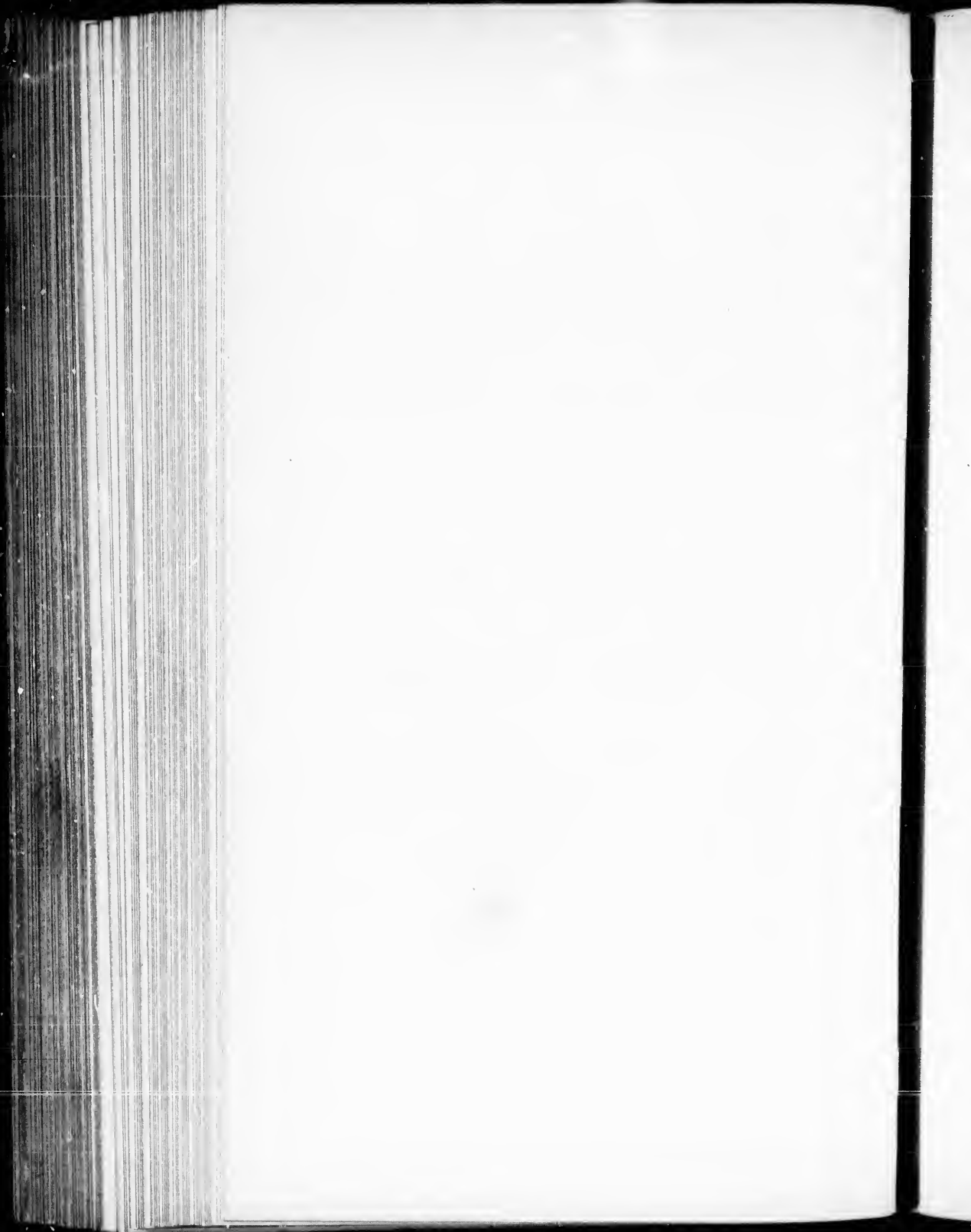
LEAVES OPPOSITE

CONTINUED

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(EDGE TOOTHED)

B II



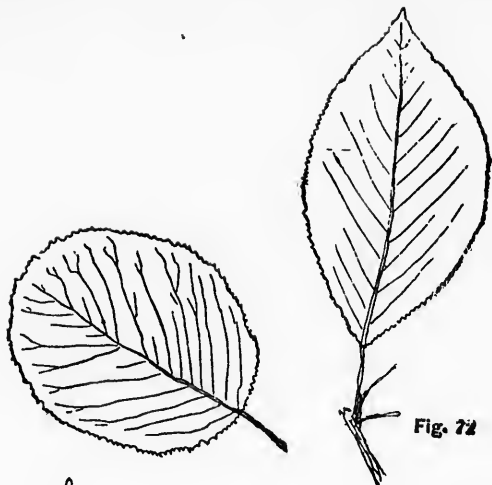


Fig. 72

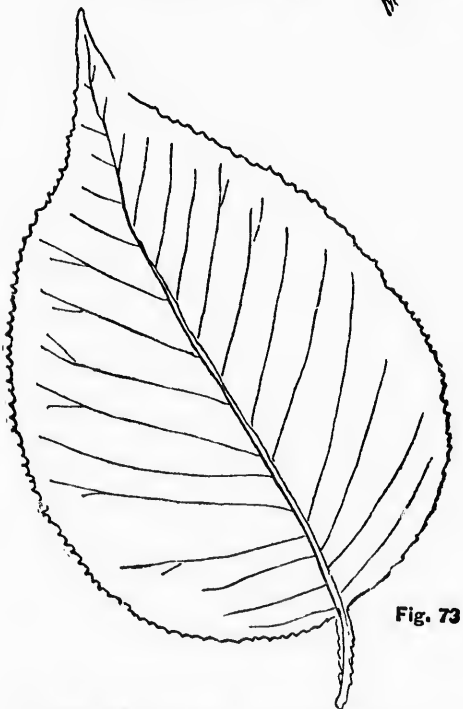
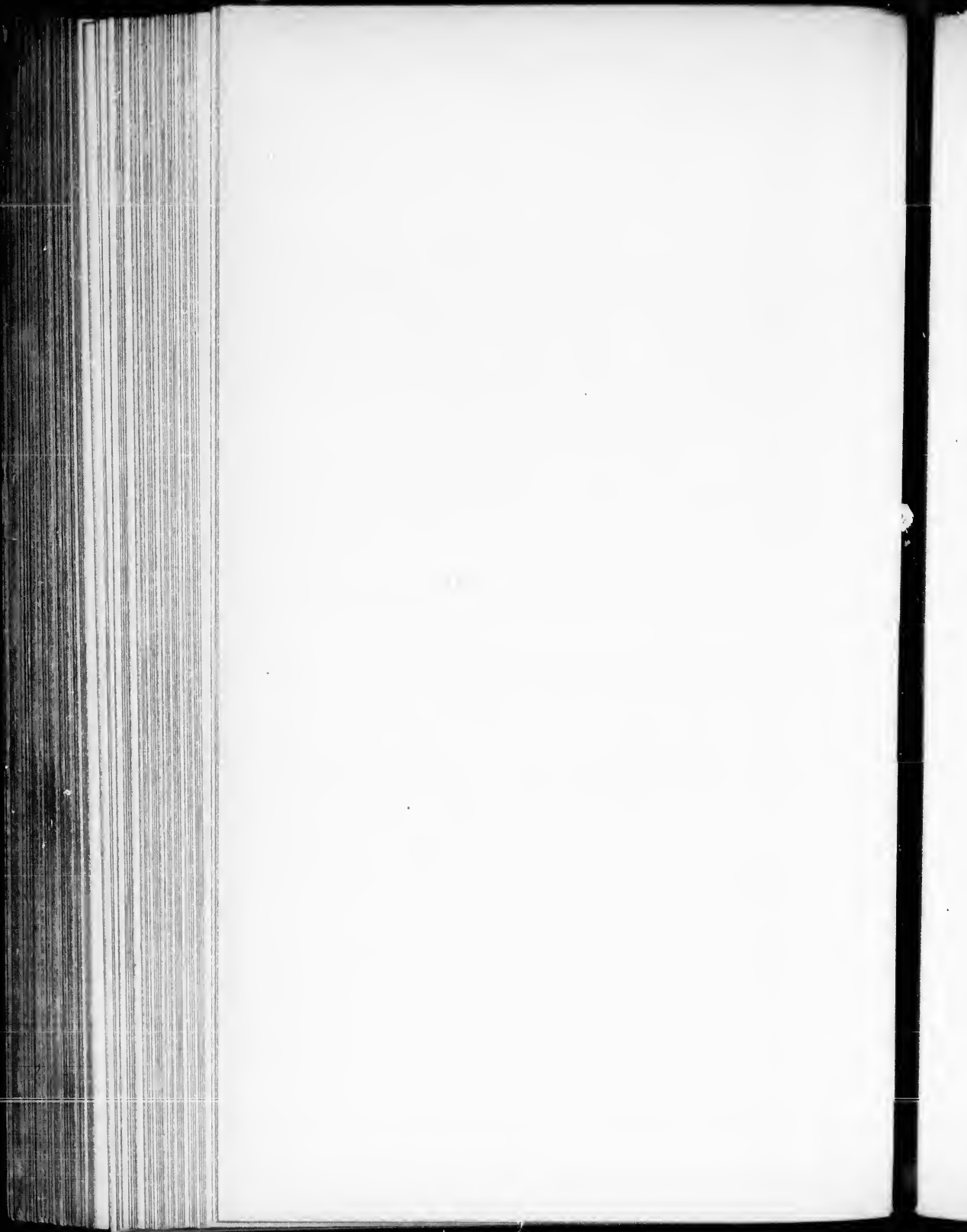


Fig. 73

Fig. 72.—Black Haw. (*V. prunifolium*, L.)  
Fig. 73.—Sweet Viburnum. (*V. lentago*, L.)  
NATURAL SIZE.



TREES WITH SIMPLE LEAVES

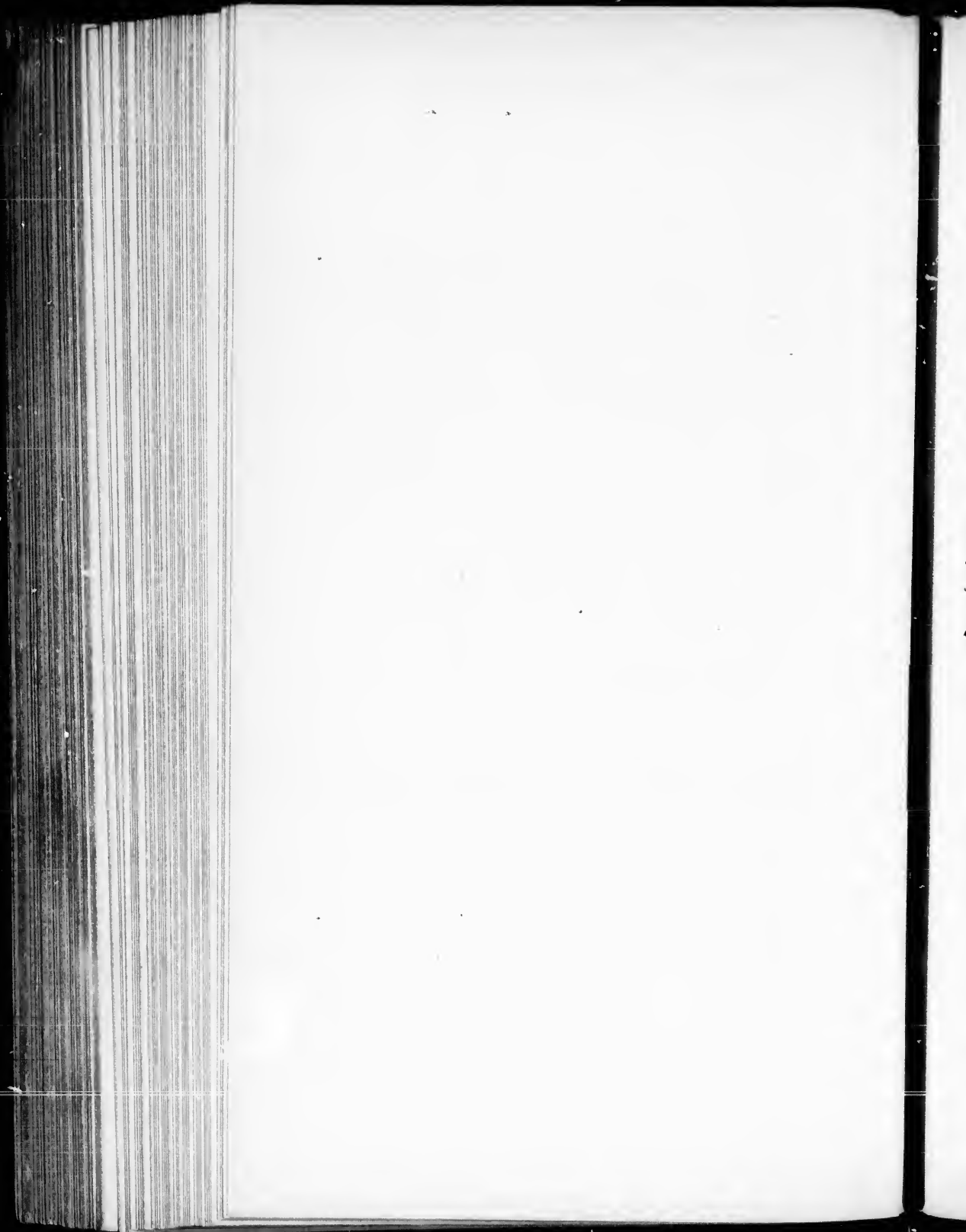
LEAVES OPPOSITE

CONTINUED

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(EDGE LOBED)

B III



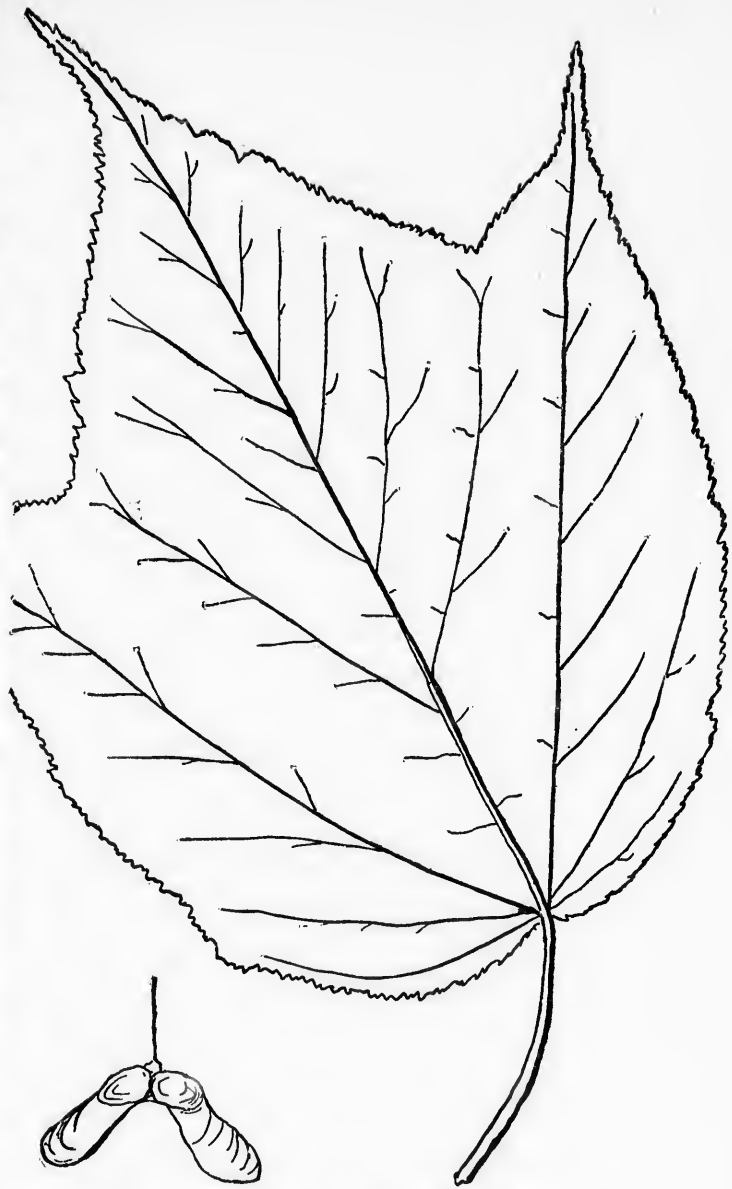


Fig. 74.—Striped Maple. (*A. Pennsylvanicum*, L.)  
NATURAL SIZE.







Fig. 75.—Sugar Maple. (*A. saccharum*, Marsh.)  
NATURAL SIZE.





Fig. 76.—Black Maple. (*A. s.*, var. *nigrum*.)  
NATURAL SIZE.



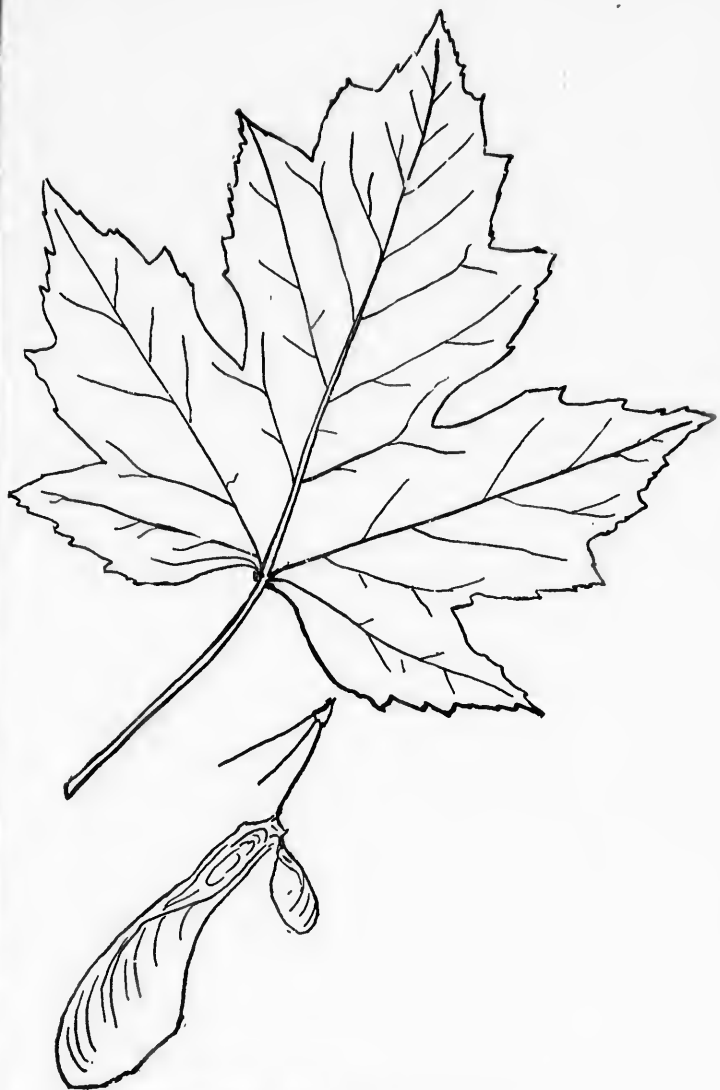


Fig. 77.—Silver-Leaf Maple. (*A. saccharinum*, L.)  
NATURAL SIZE.



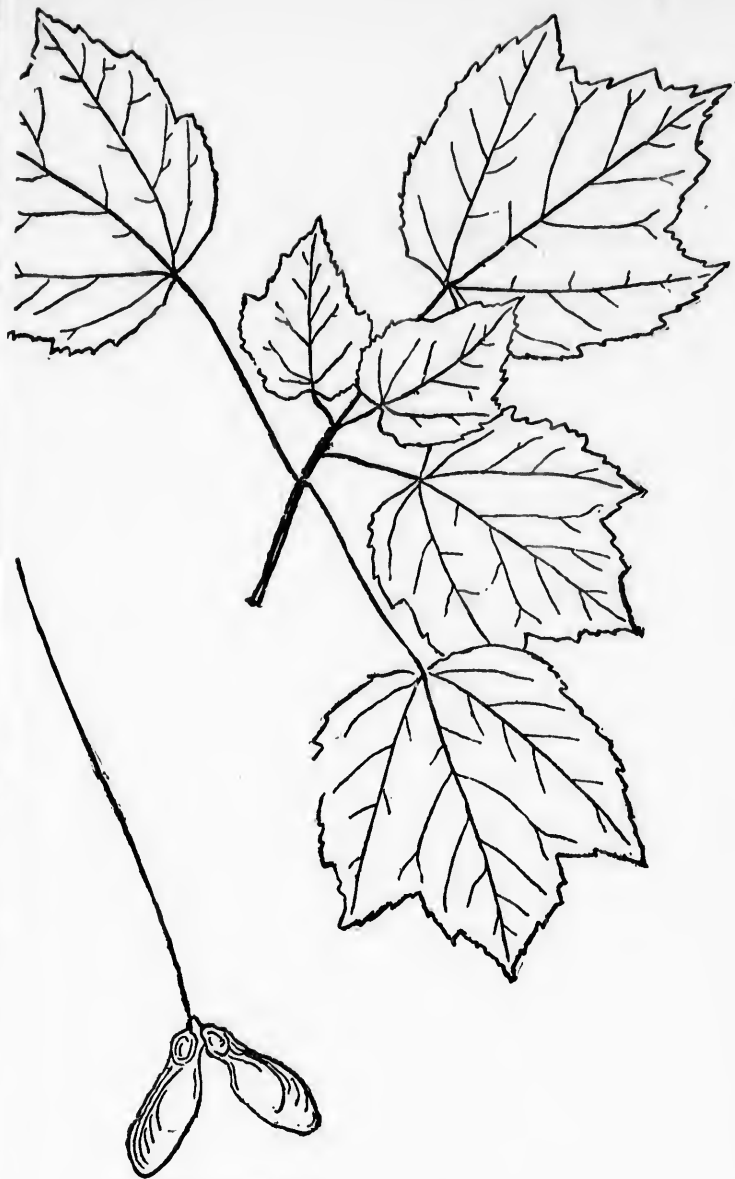
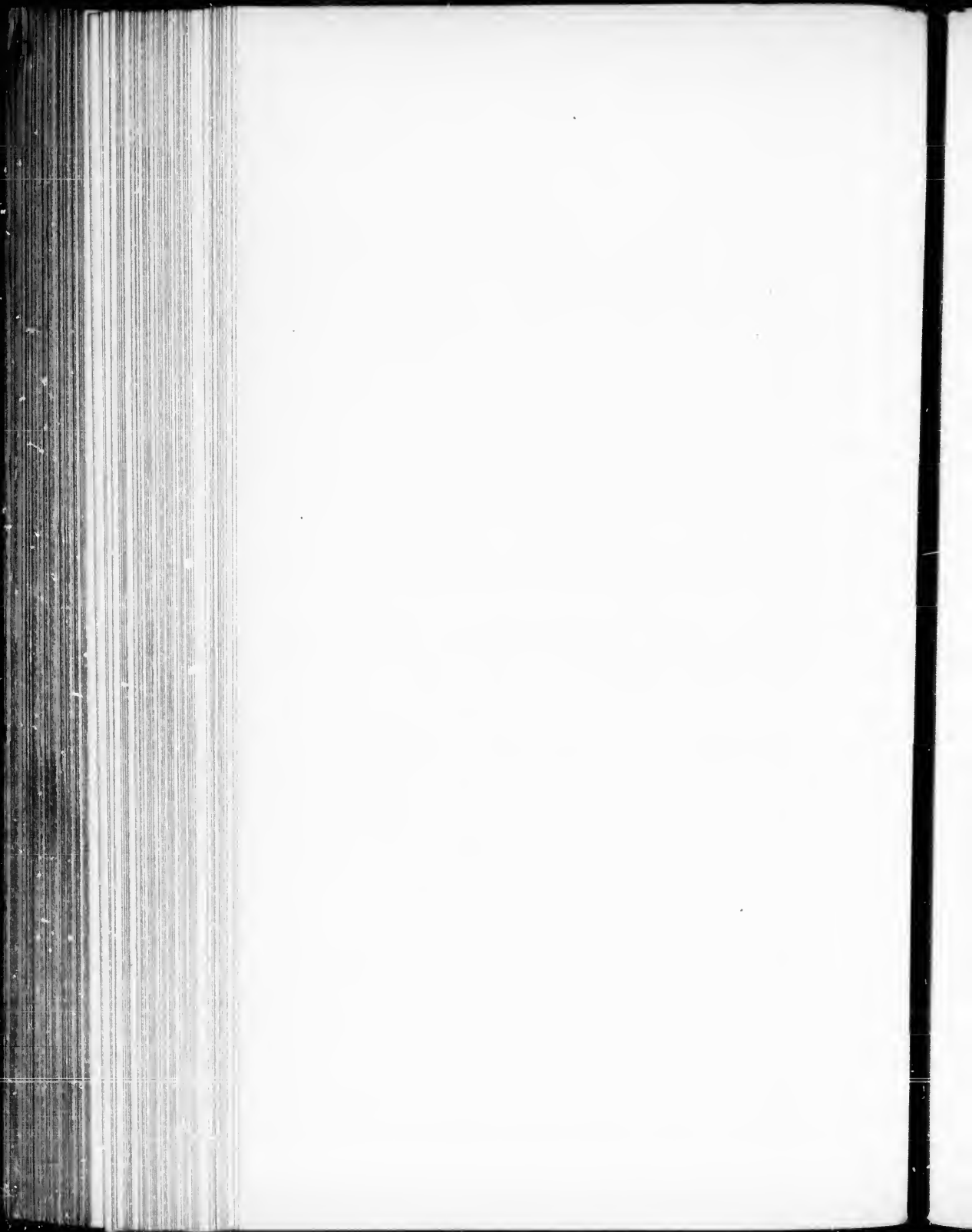


Fig. 78.—Red Maple. (*A. rubrum*, L.)  
NATURAL SIZE.





TREES WITH SIMPLE LEAVES

CONTINUED

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LEAVES INDETERMINATE

C 1





Fig. 79

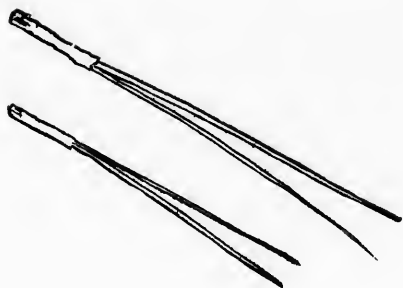


Fig. 80

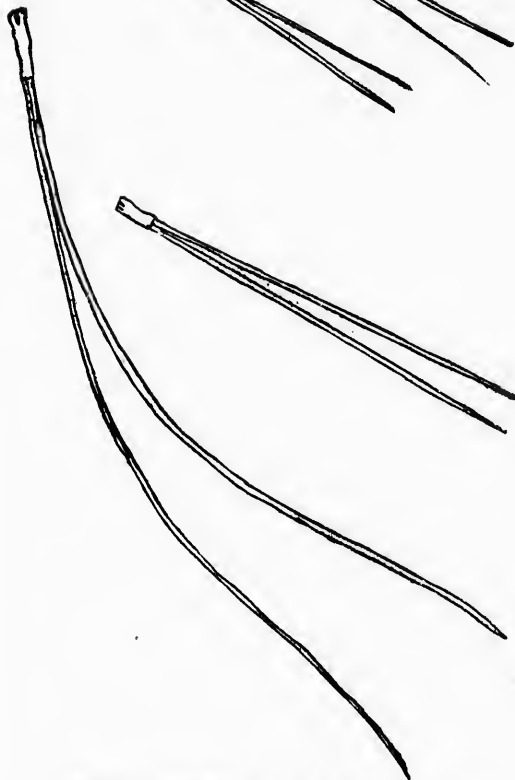


Fig. 81

Fig. 82

Fig. 79.—Gray Pine. (*P. Banksiana*, Lam.)

Fig. 80.—Scrub Pine. (*P. Virginiana*, Mill.)

Fig. 81.—Table Mountain Pine. (*P. pungens*, Michx.)

Fig. 82.—Red Pine. (*P. resinosa*, Ait.)

NATURAL SIZE.



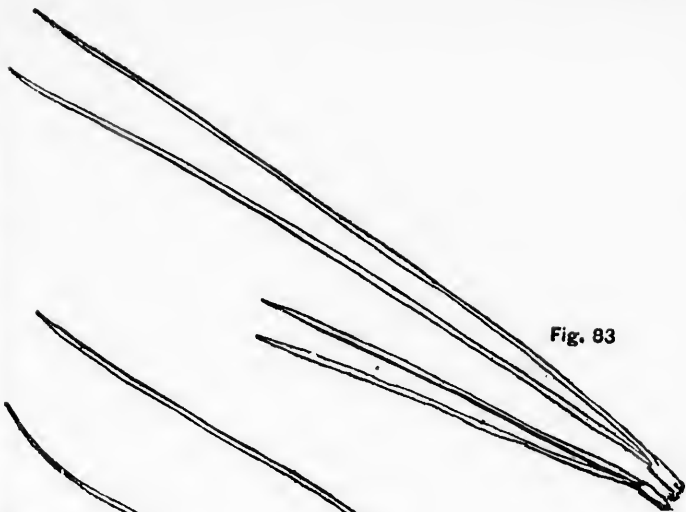


Fig. 83

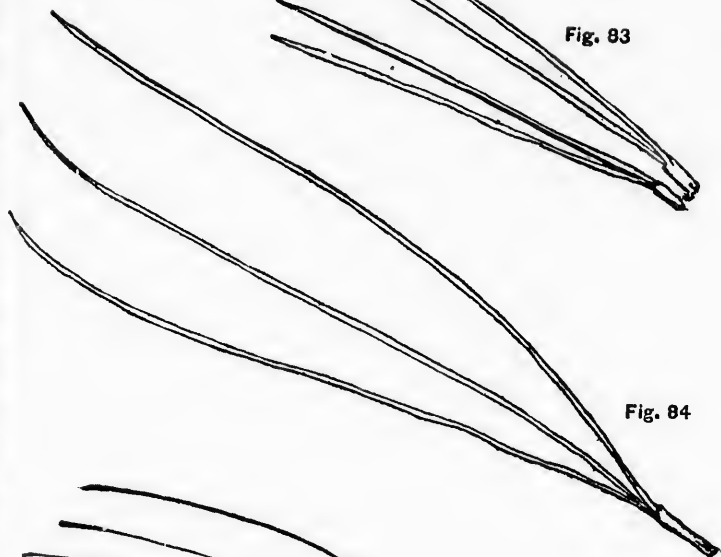


Fig. 84

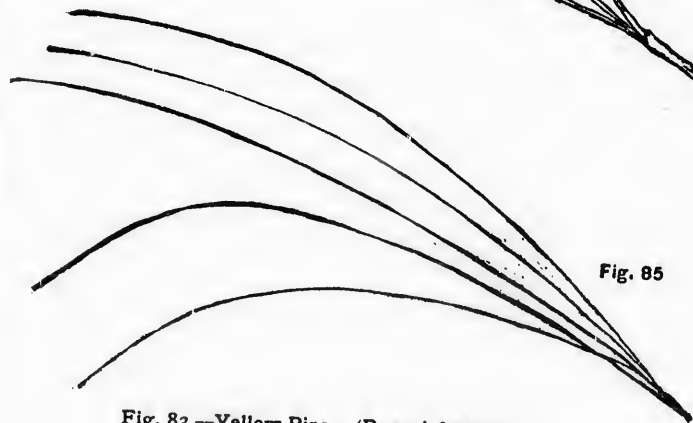


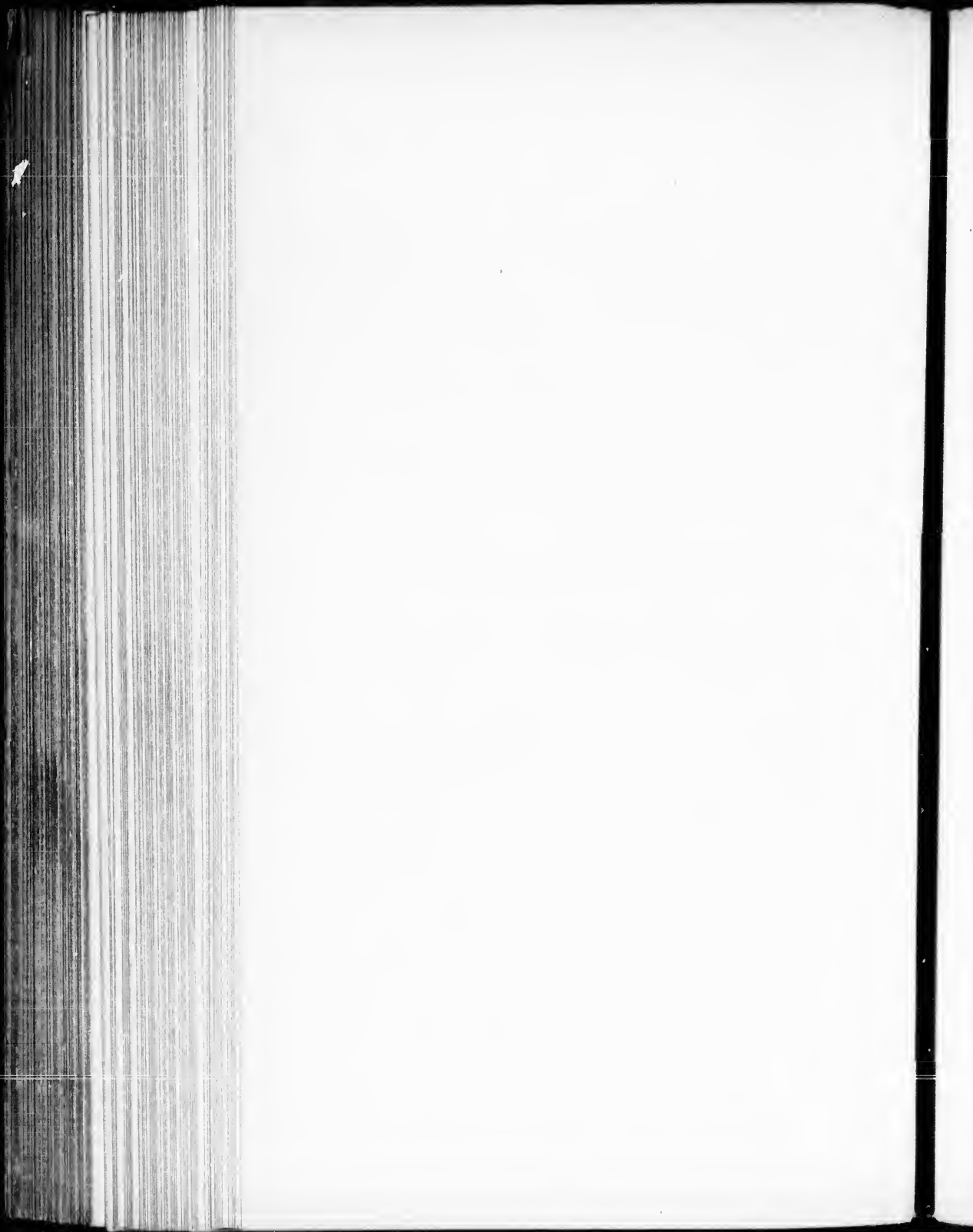
Fig. 85

Fig. 83.—Yellow Pine. (*P. ecpinata*, Mill.)

Fig. 84.—Pitch Pine. (*P. rigida*, Mill.)

Fig. 85.—White Pine. (*P. Strobus*, L.)

NATURAL SIZE



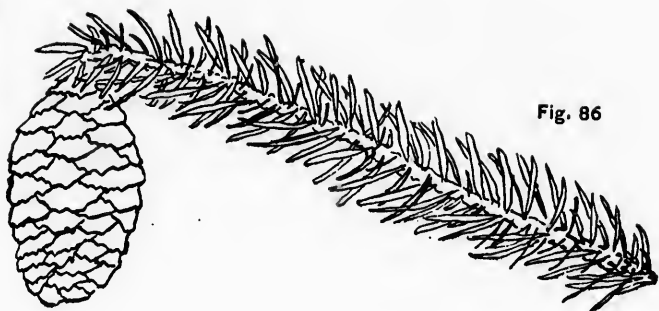


Fig. 86

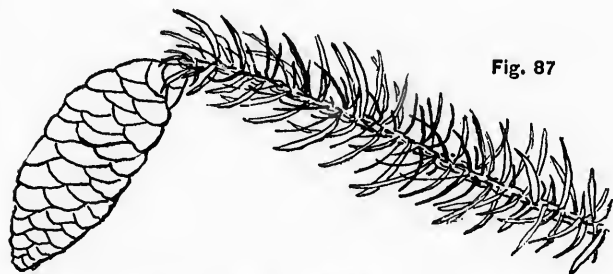
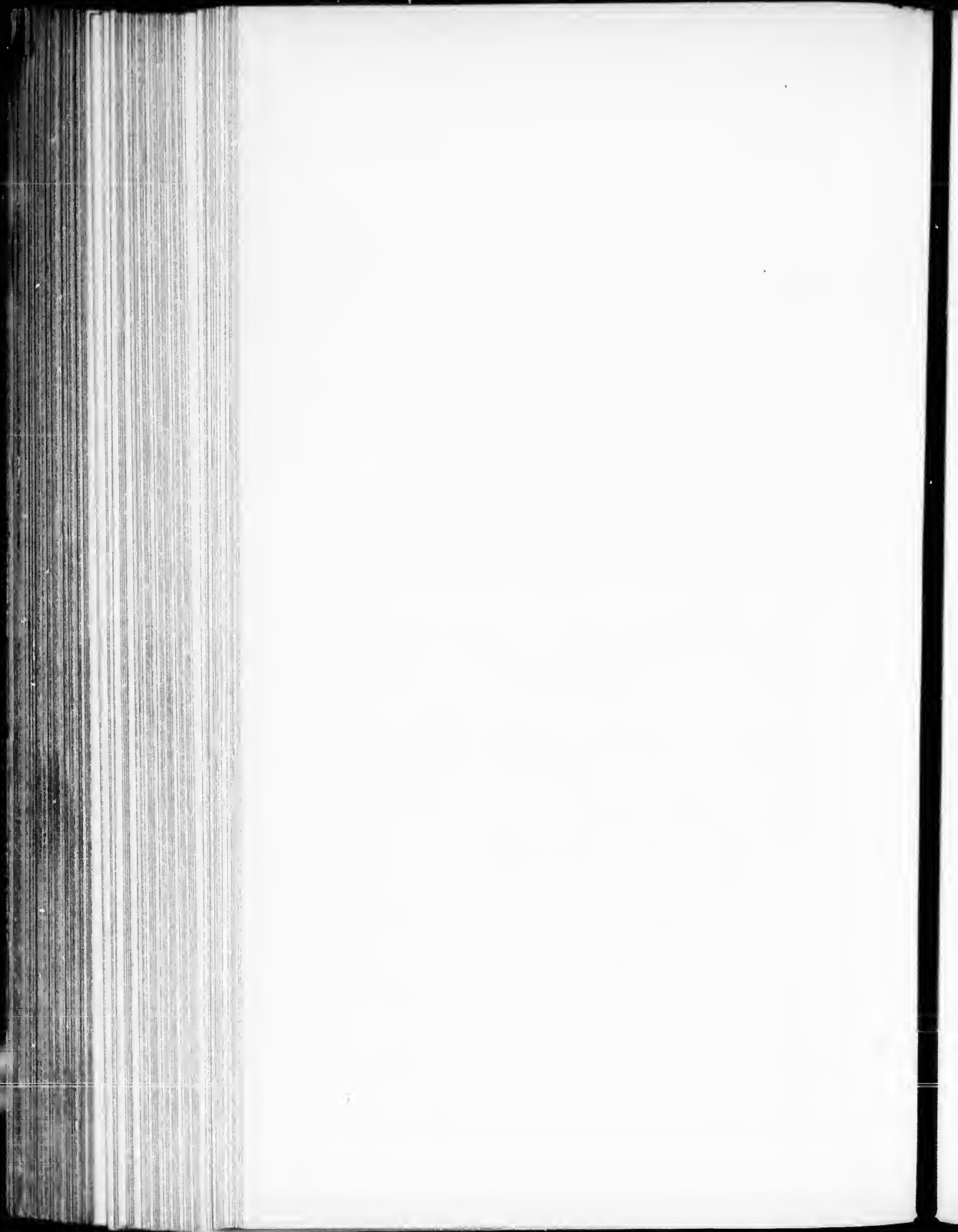


Fig. 87

Fig. 86.—Black Spruce. *P. Mariana* (Mill), B. S. P.  
Fig. 87.—White Spruce. *P. Canadensis* (Mill), B. S. P.  
NATURAL SIZE.





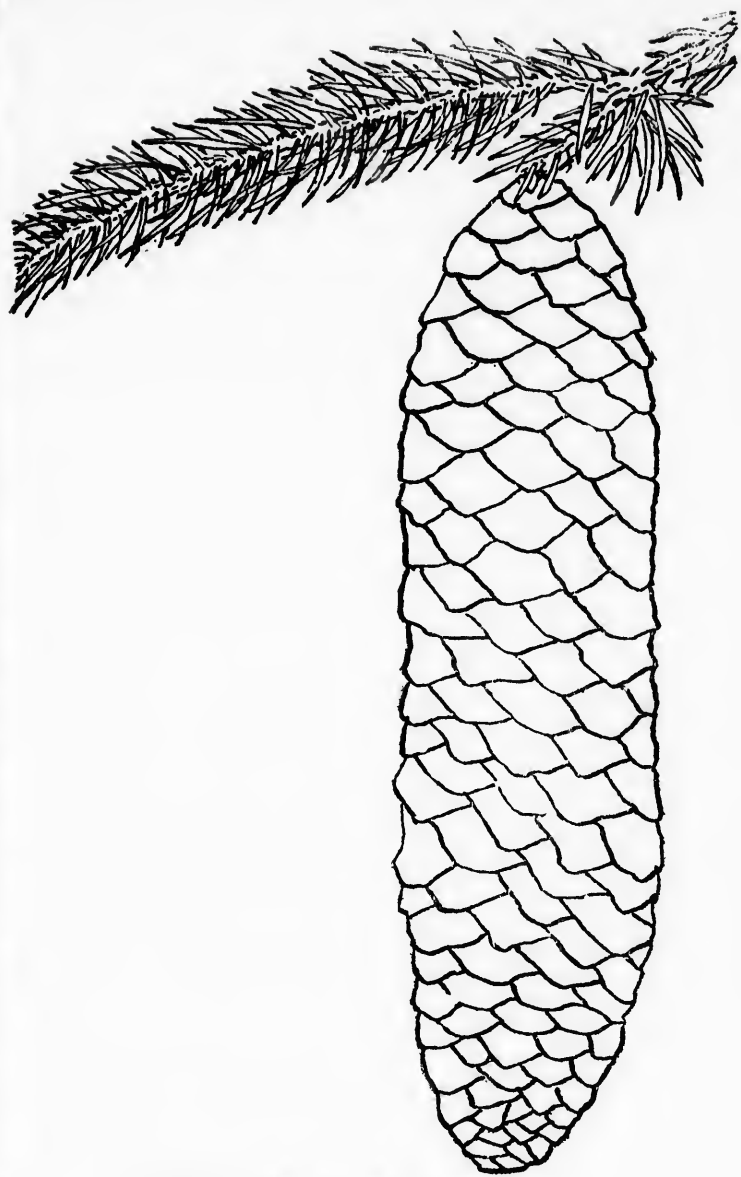


Fig. 88.—Norway Spruce. [*P. excelsa*.]  
NATURAL SIZE.



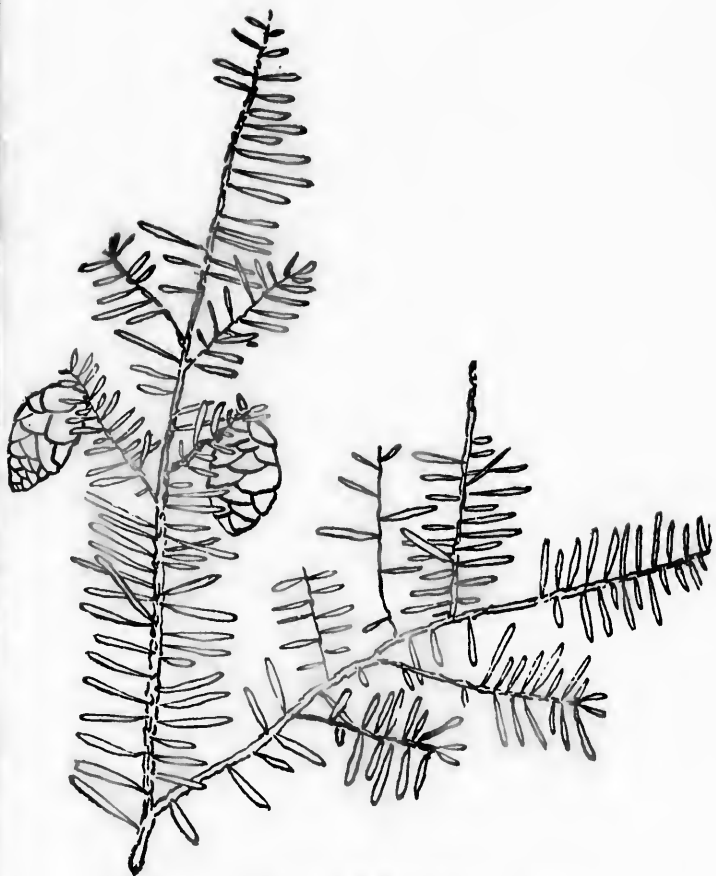
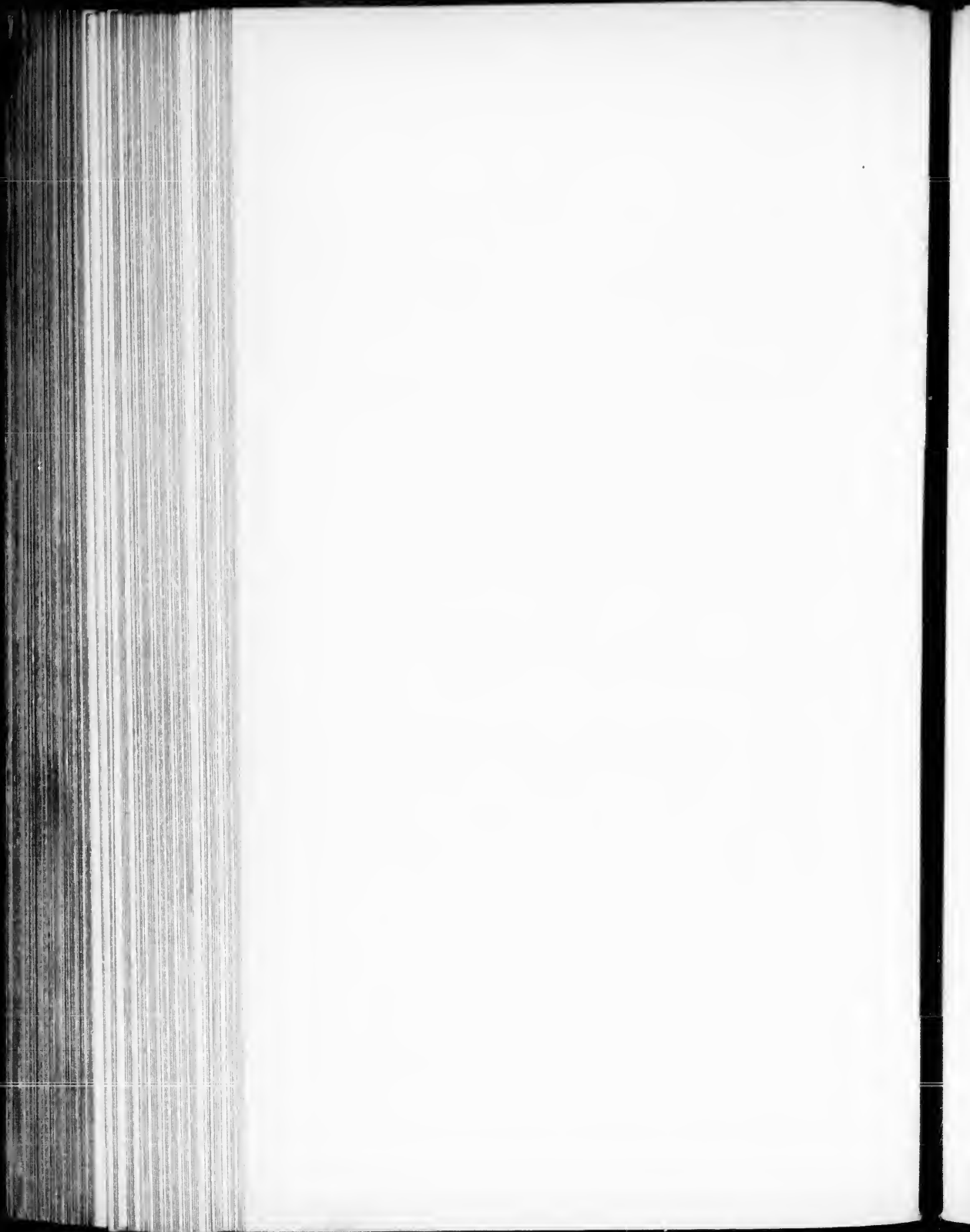


Fig. 89.—Hemlock. *T. Canadensis* (L.), Carr.  
NATURAL SIZE.



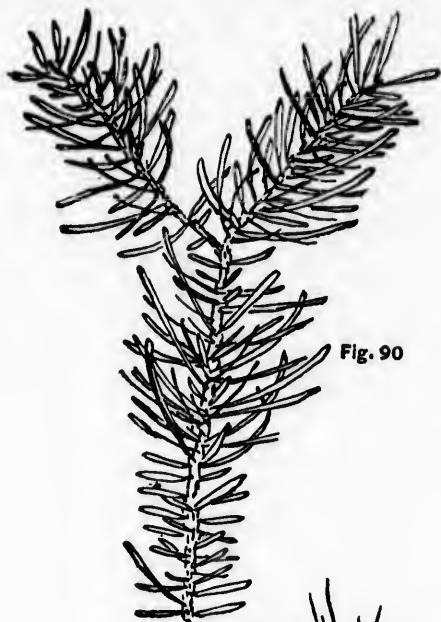


Fig. 90

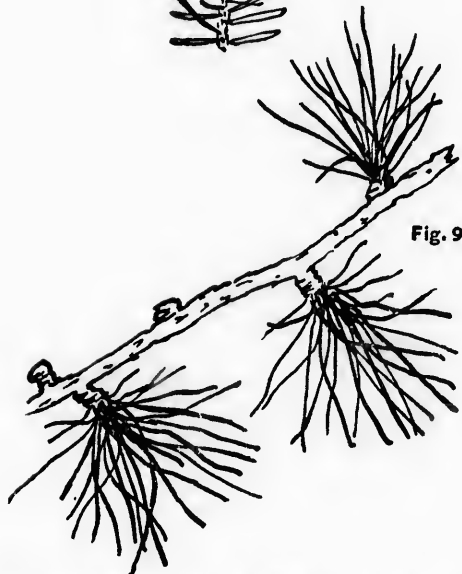
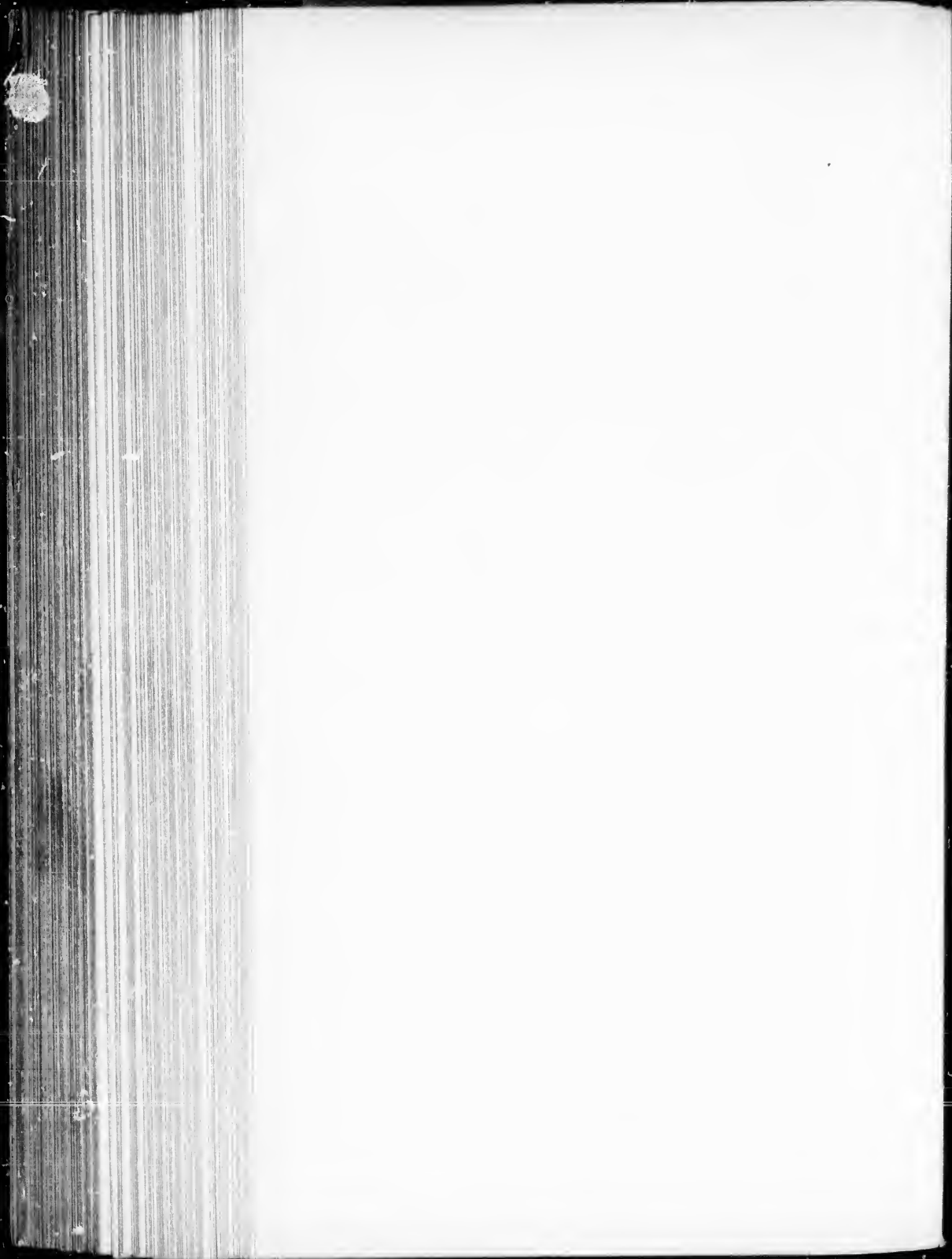


Fig. 91

Fig. 90.—Balsam Fir. *A. balsamea* (L.), Miller.  
Fig. 91.—Larch. *L. laricina* (Du Roi), Koch.

NATURAL SIZE.



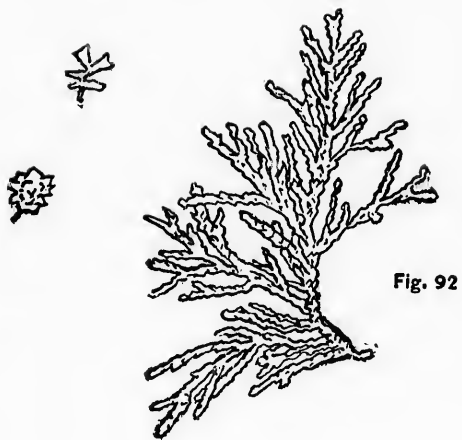


Fig. 92

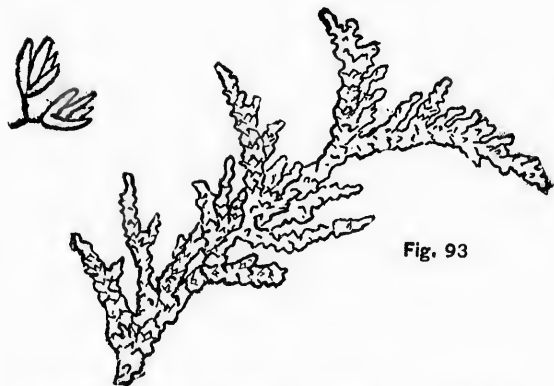


Fig. 93

Fig. 92.—White Cedar. *C. thyoides* (L.), B. S. P.

Fig. 93.—Arbor Vitæ. (*T. occidentalis*, L.)

NATURAL SIZE.

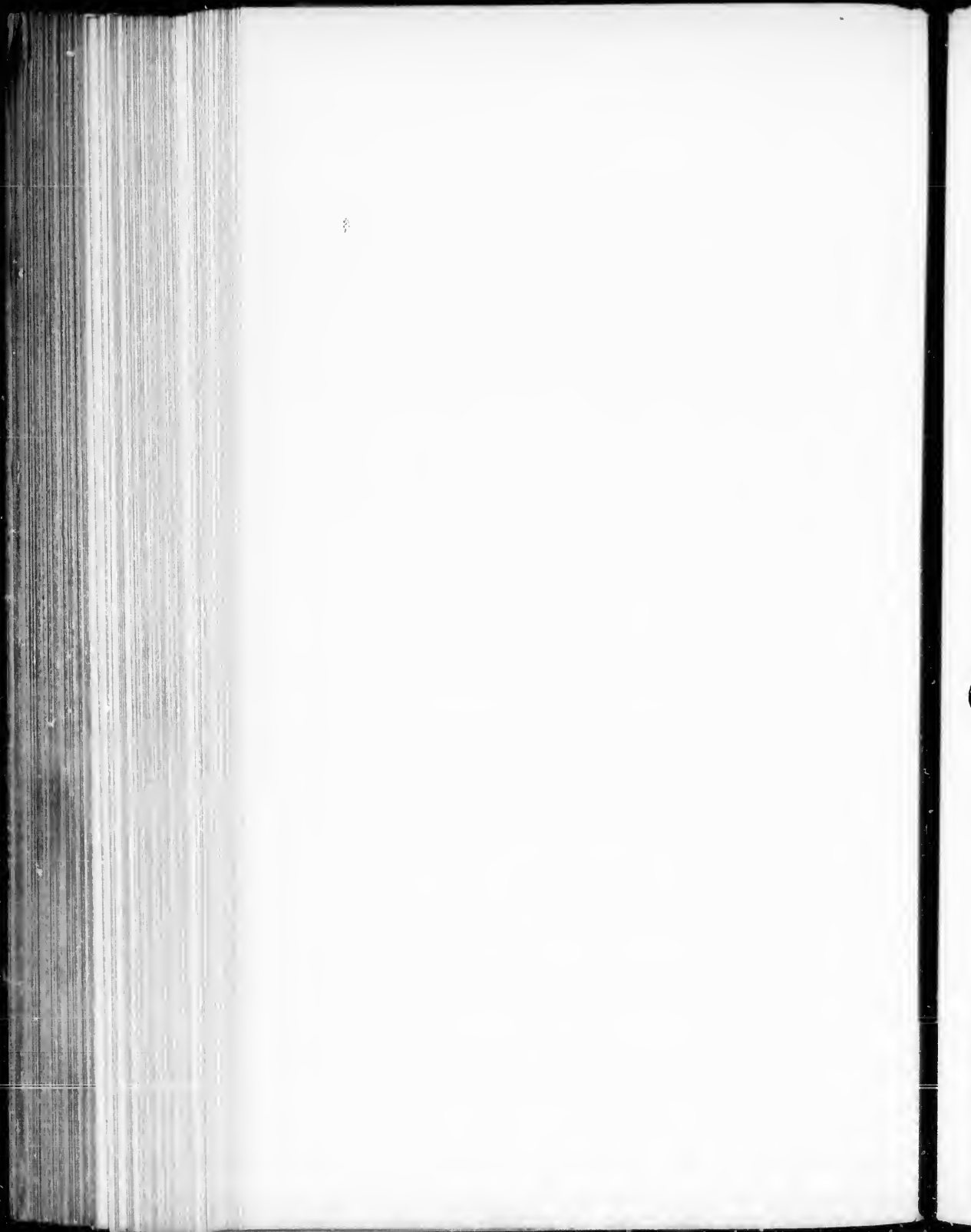






Fig. 94.—Red Cedar. (*J. Virginiana*, L.)  
a. Young. b. Old.  
NATURAL SIZE.



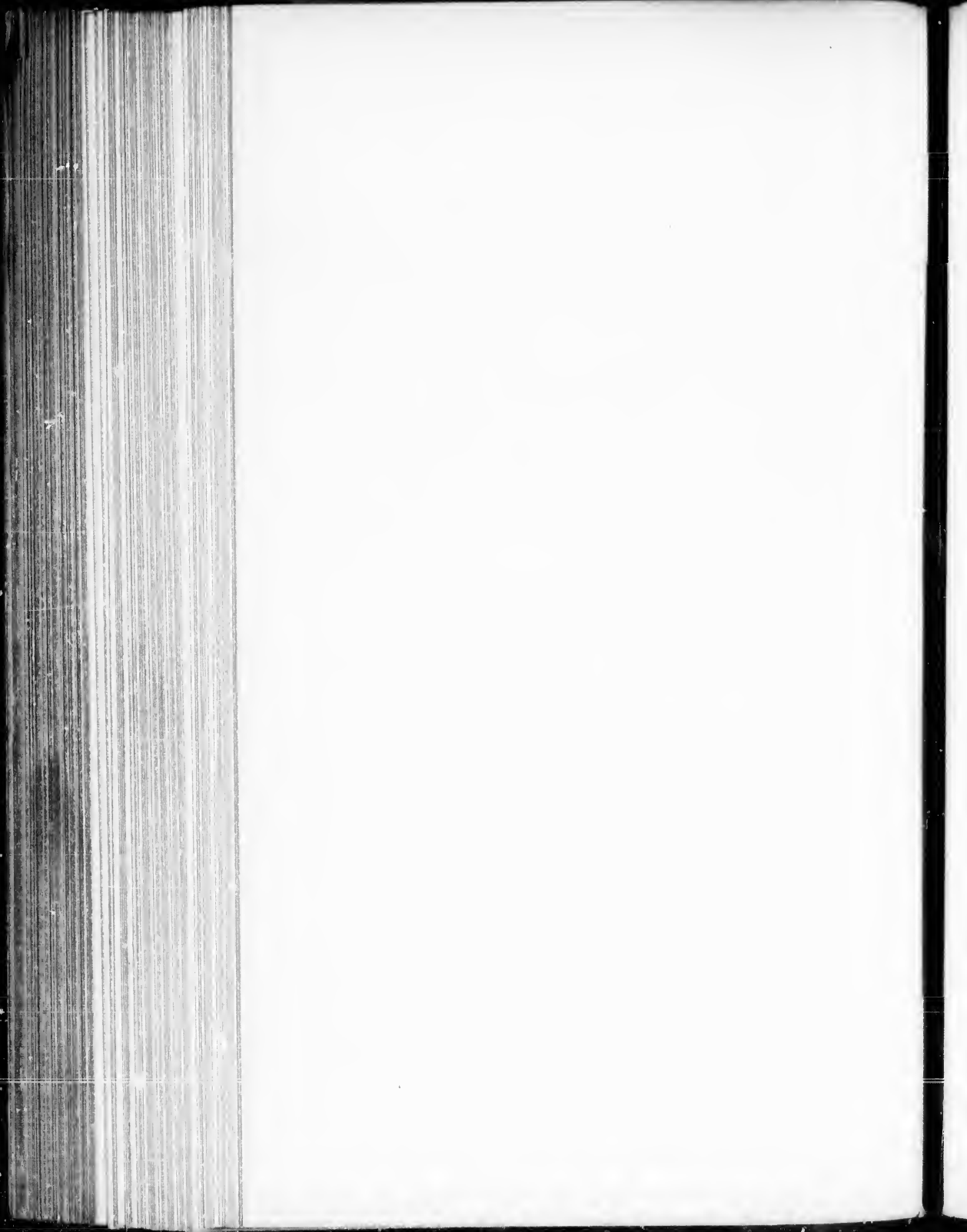
TREES WITH COMPOUND LEAVES  
(FEATHER-SHAPED)

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LEAVES ALTERNATE

(EDGE ENTIRE)

D I



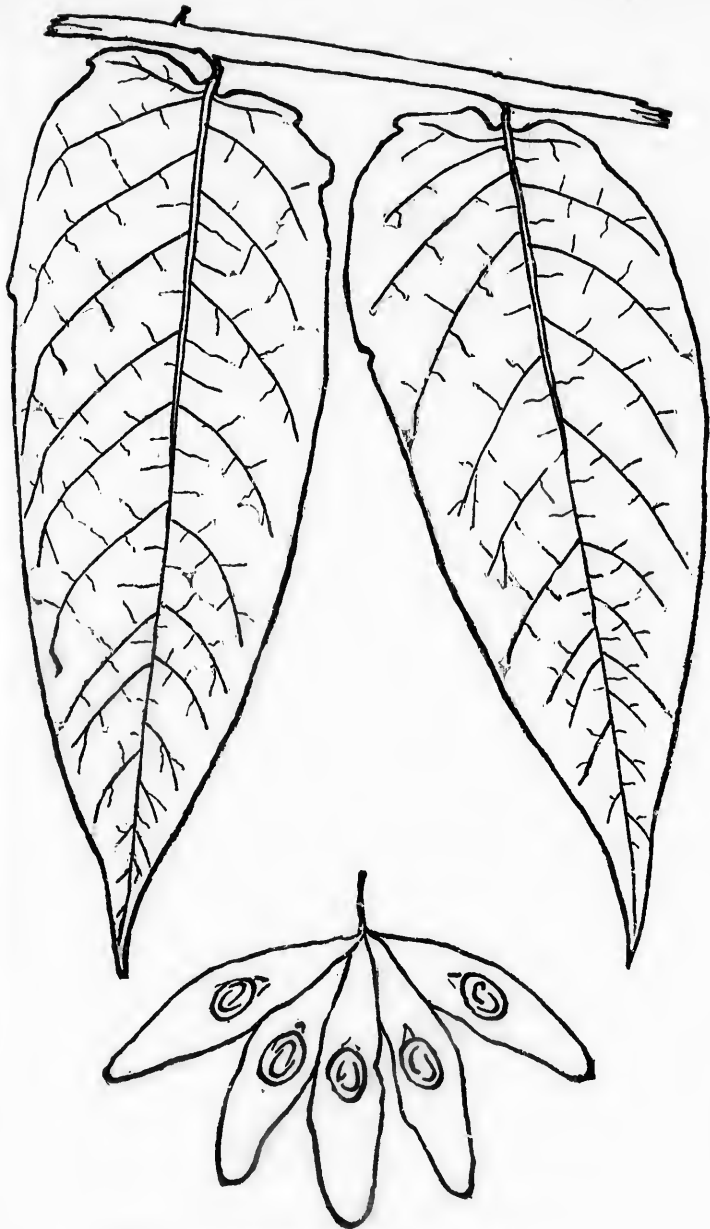
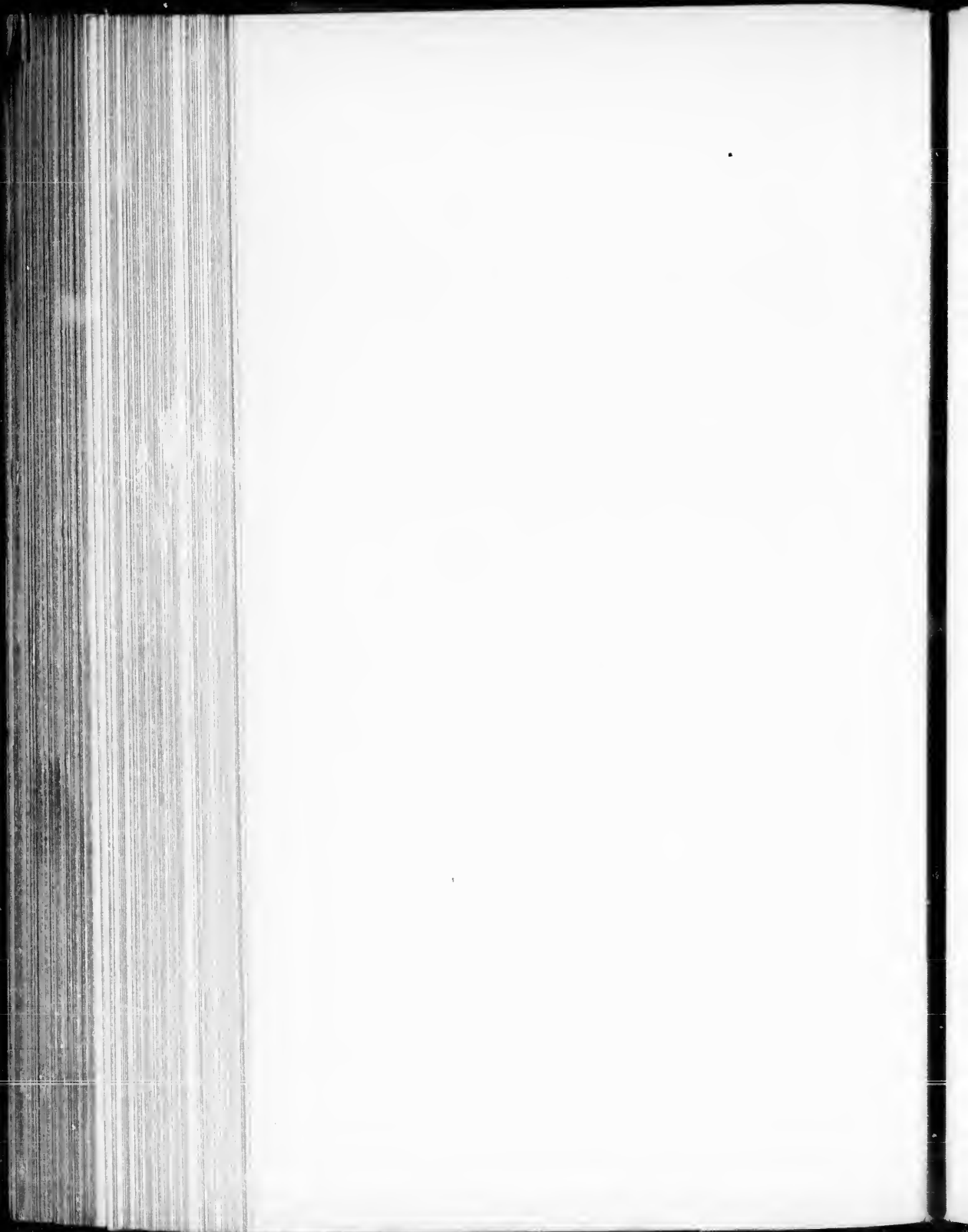


Fig. 95.—*Ailanthus*. [*A. glandulosa*, Desf.]  
NATURAL SIZE.



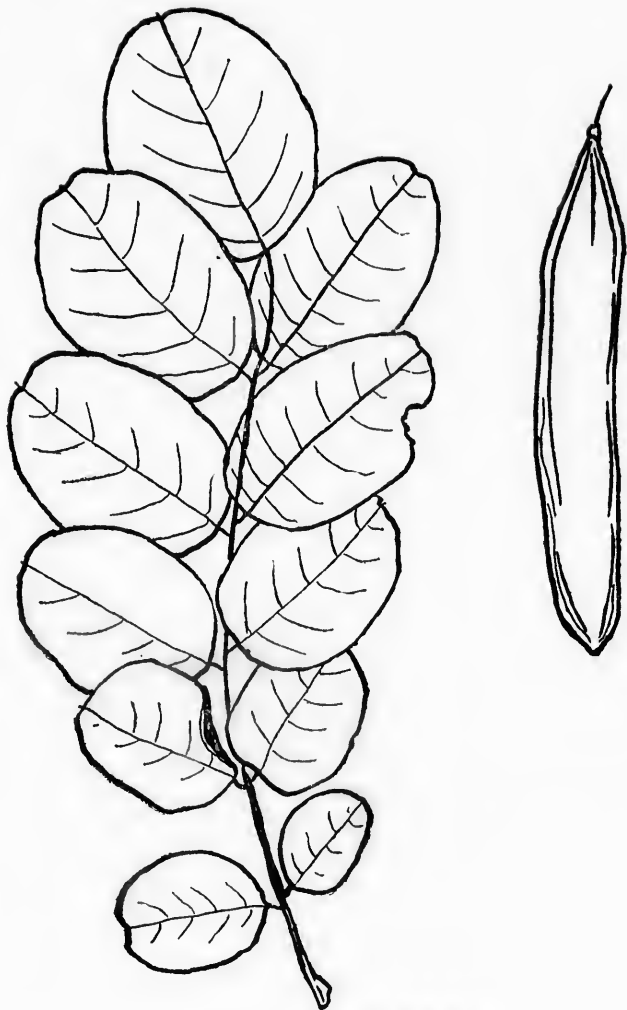


Fig. 96.—Locust. (*R. pseudacacia*, L.)  
NATURAL SIZE.

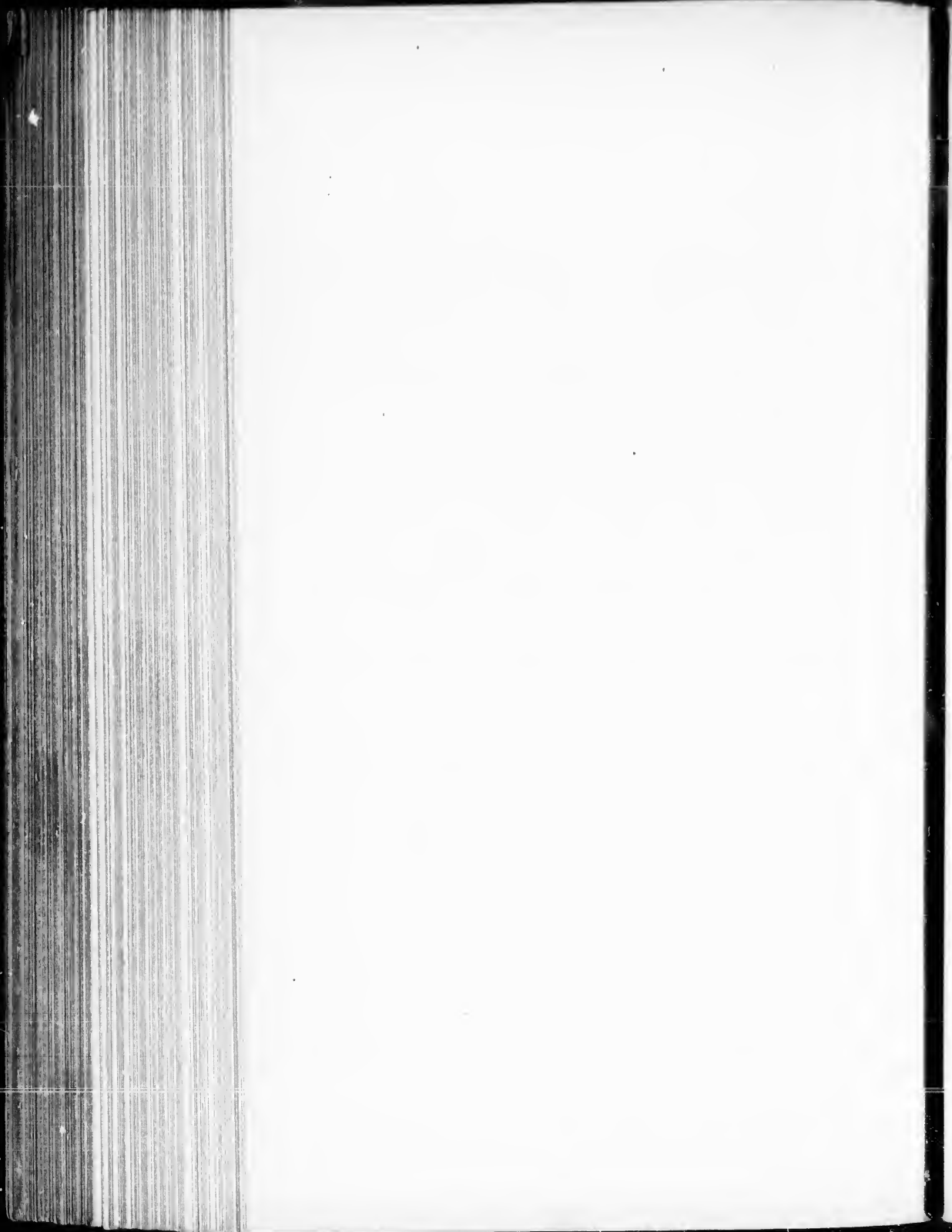
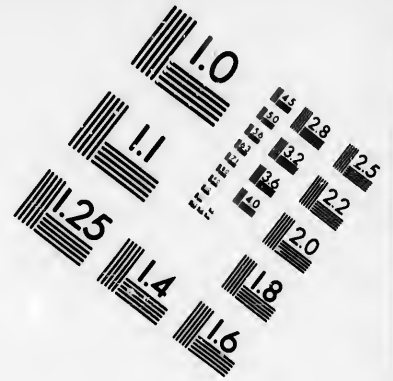
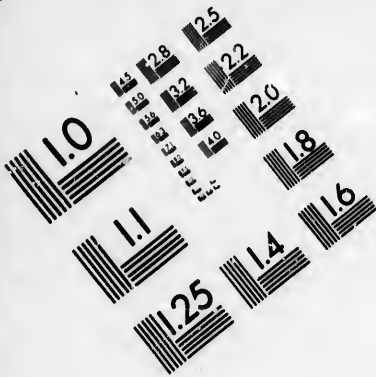




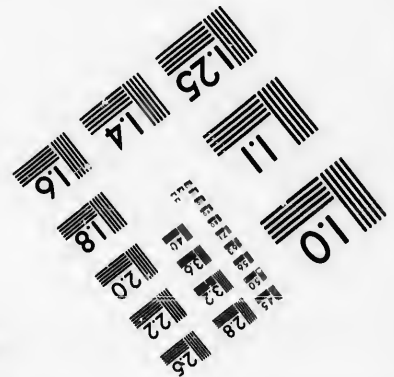
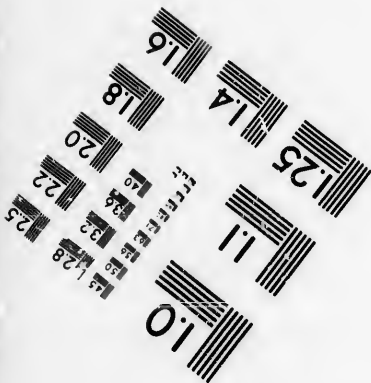
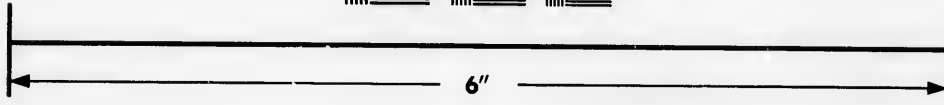
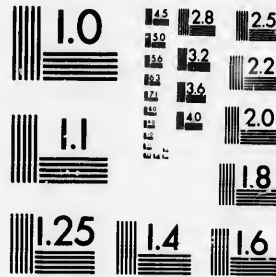


Fig. 97.—Kentucky Coffee Tree. *G. discus* (L.), Koch.  
NATURAL SIZE.





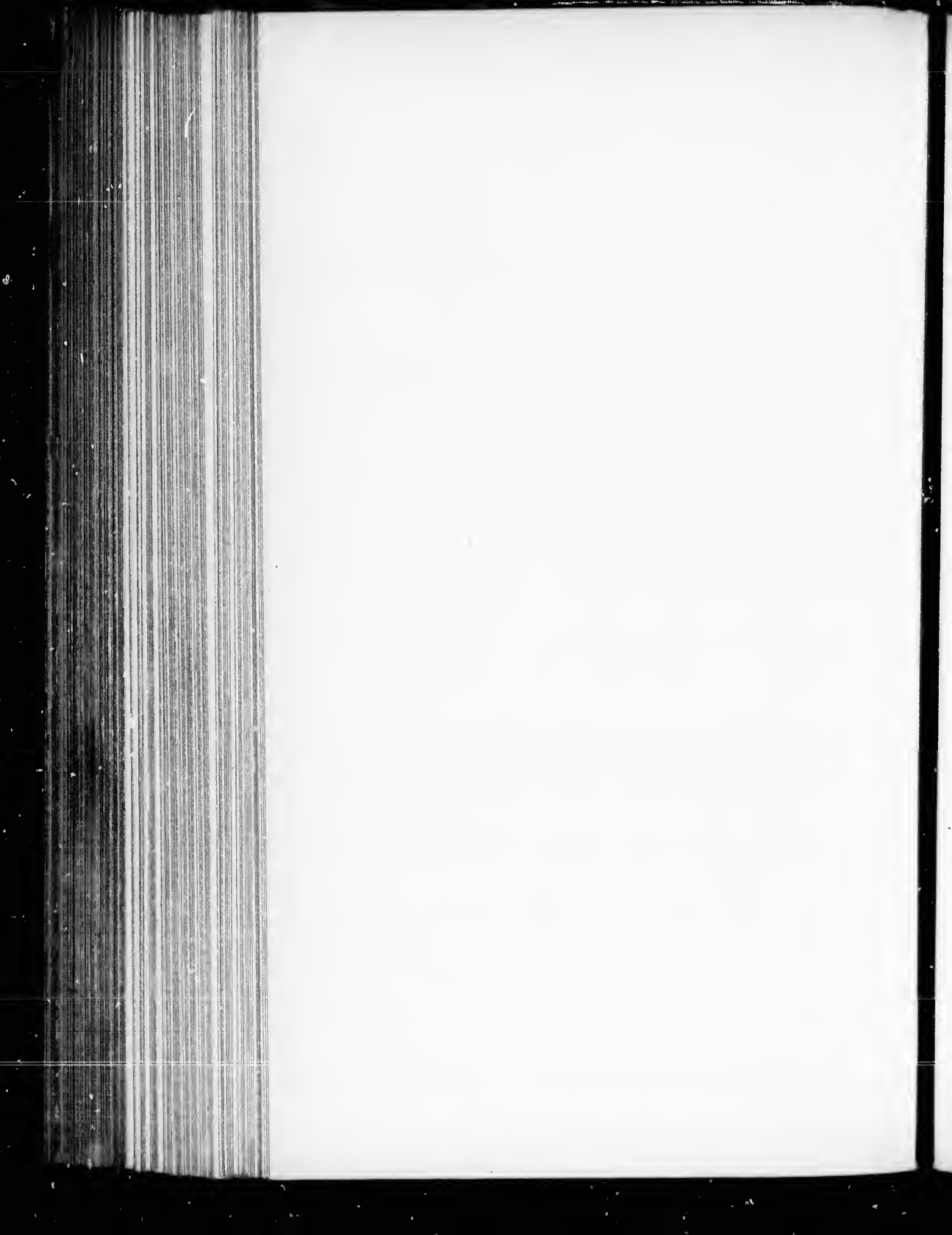
**IMAGE EVALUATION  
TEST TARGET (MT-3)**



**Photographic  
Sciences  
Corporation**

23 WEST MAIN STREET  
WEBSTER, N.Y. 14580  
(716) 872-4503





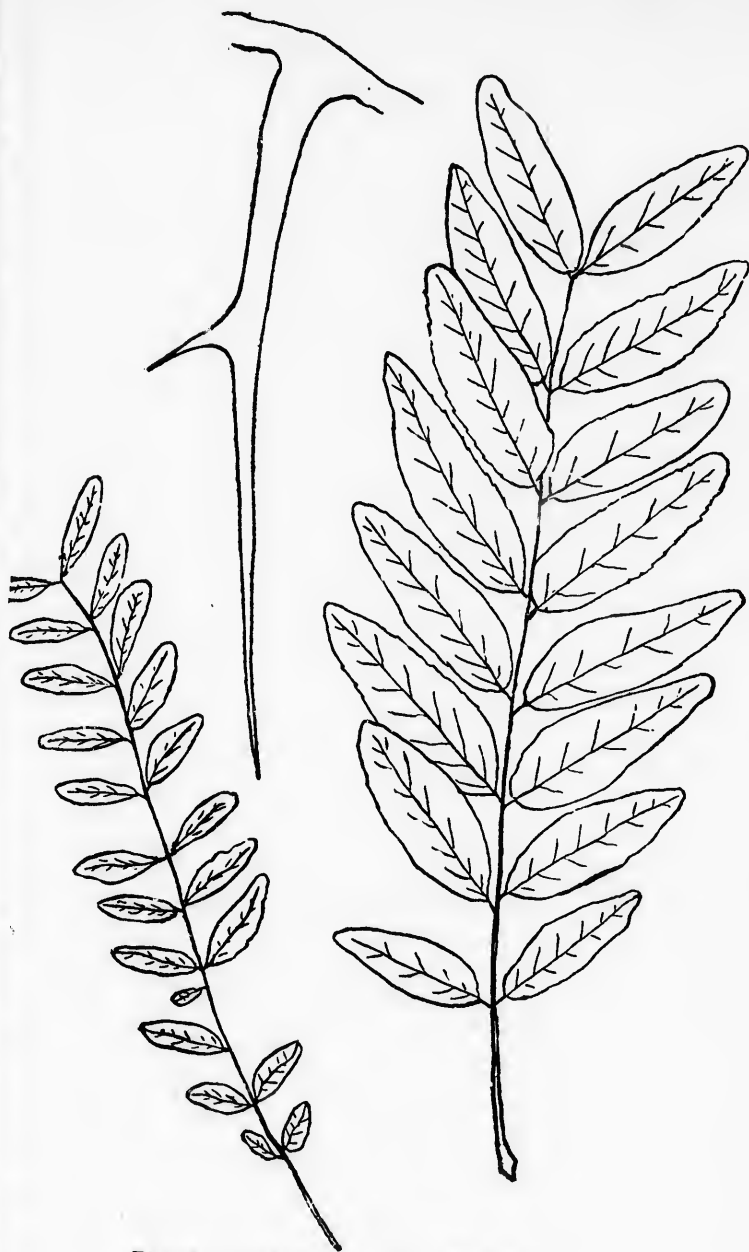


Fig. 98.—Honey Locust. (*G. triacanthos*, L.)  
NATURAL SIZE.



TREES WITH COMPOUND LEAVES  
(FEATHER-SHAPED)

LEAVES ALTERNATE

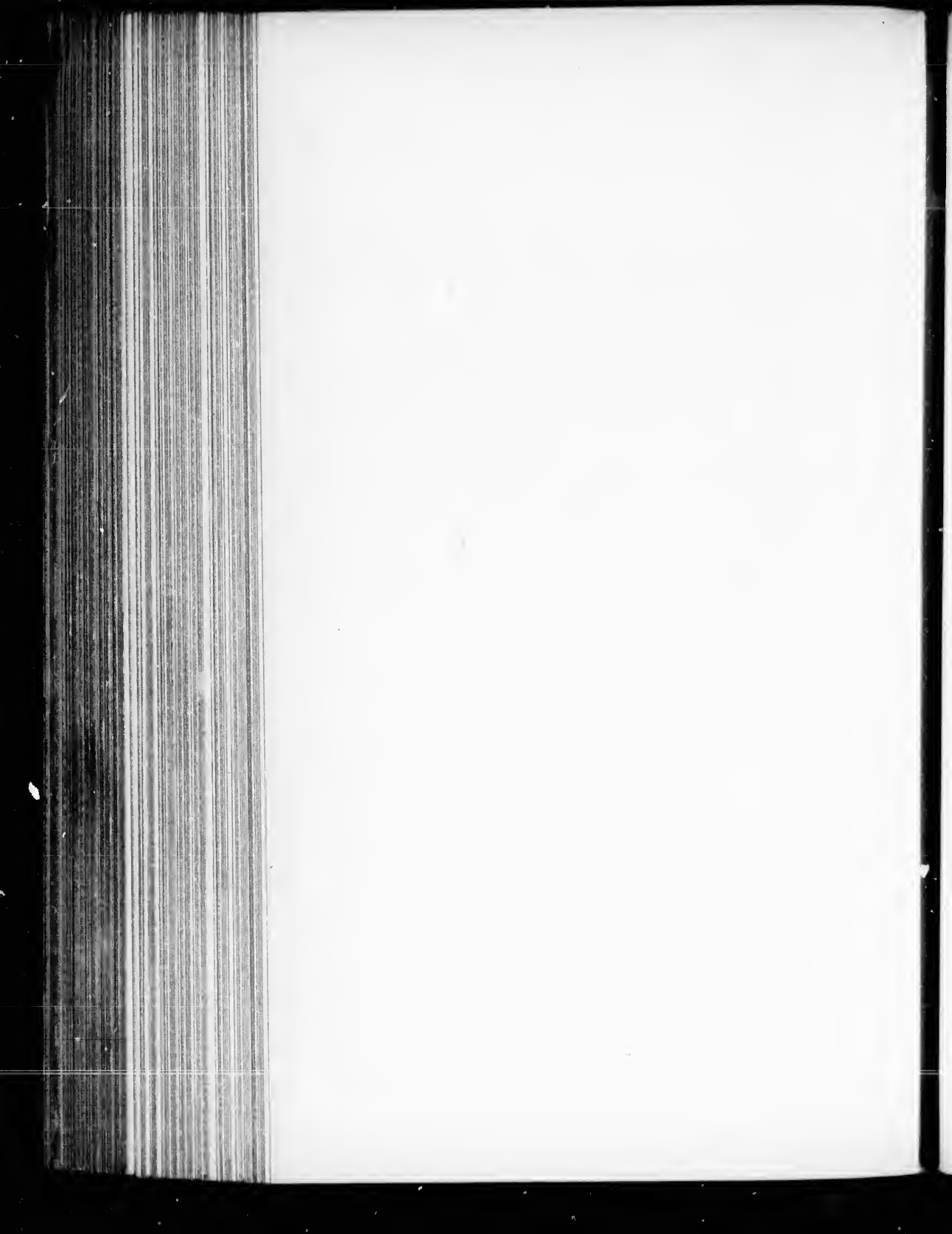
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(EDGE TOOTHED)

D II





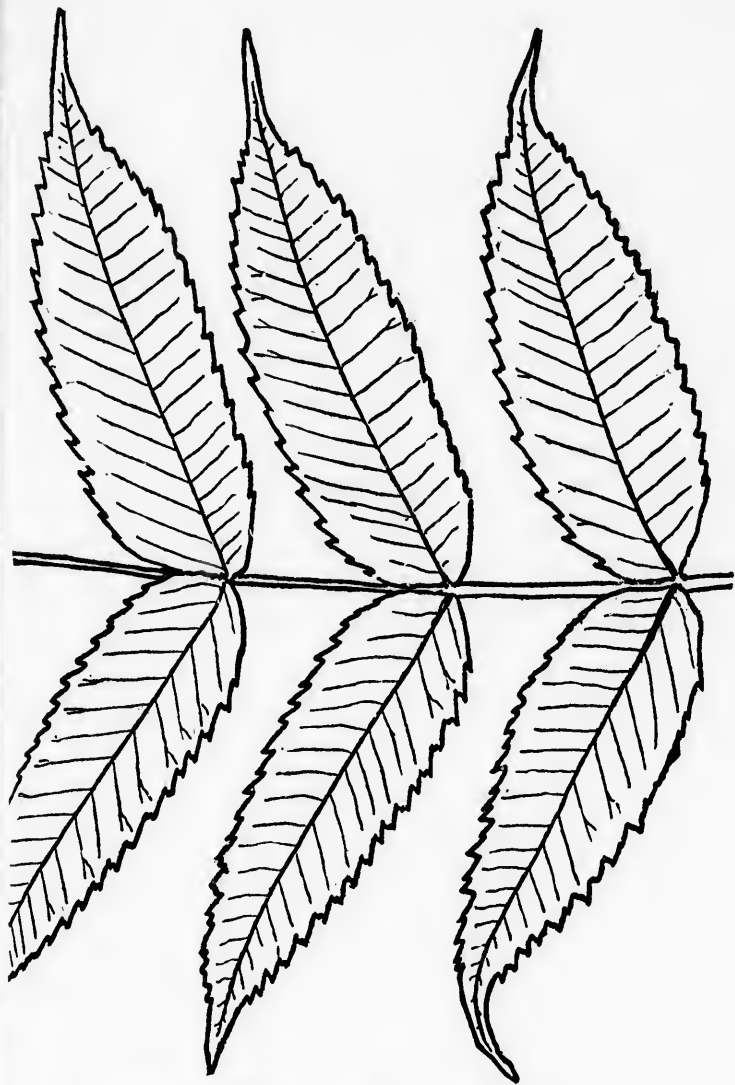
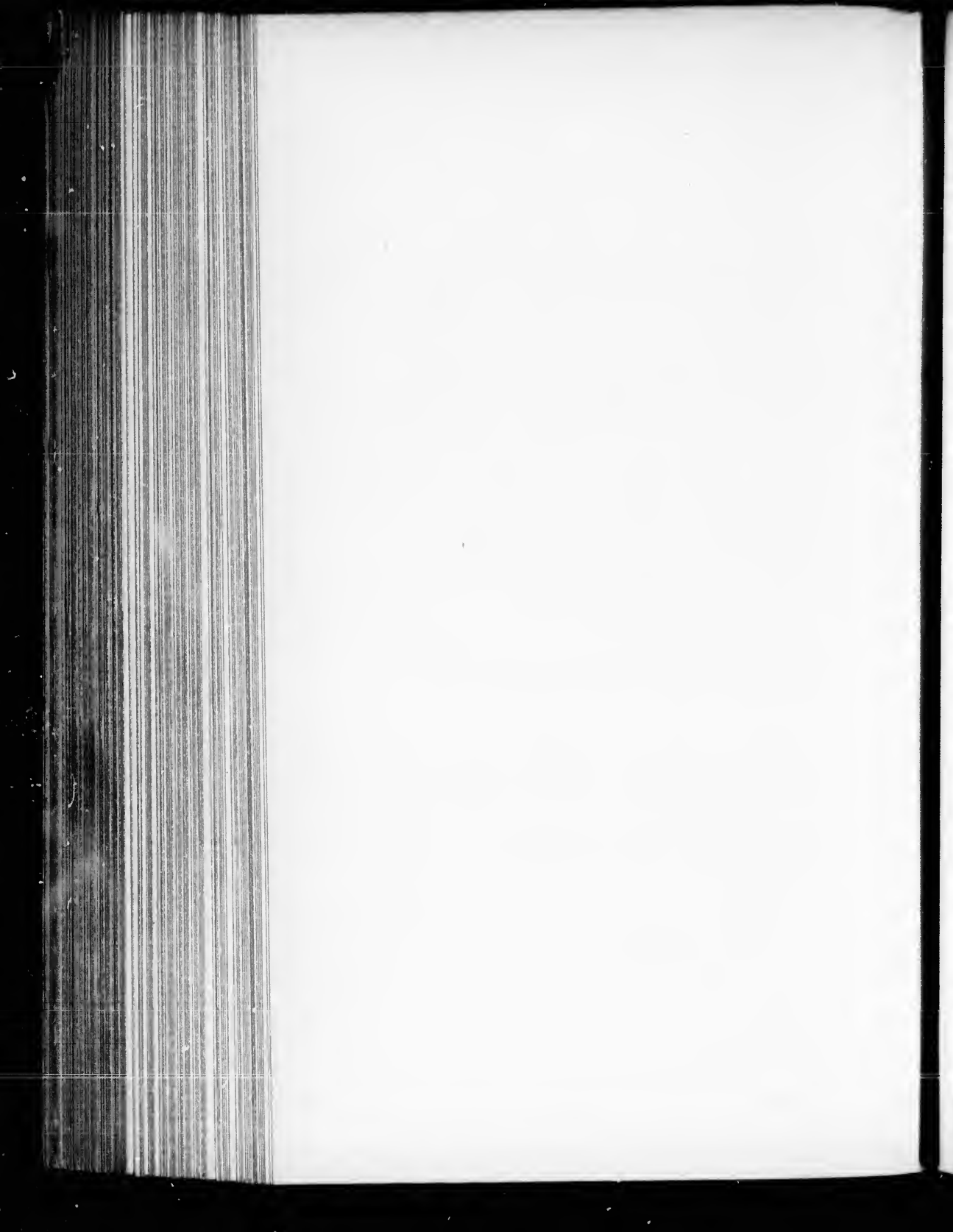


Fig. 99.—Stag-horn Sumach. (*R. typhina*, L.)  
NATURAL SIZE.



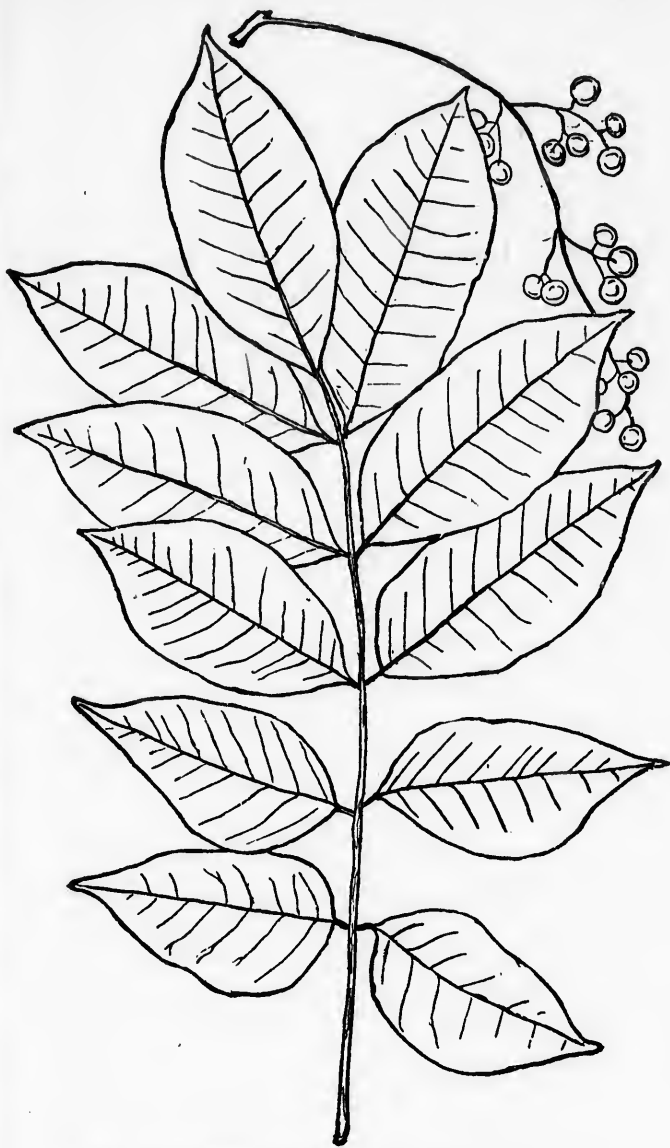
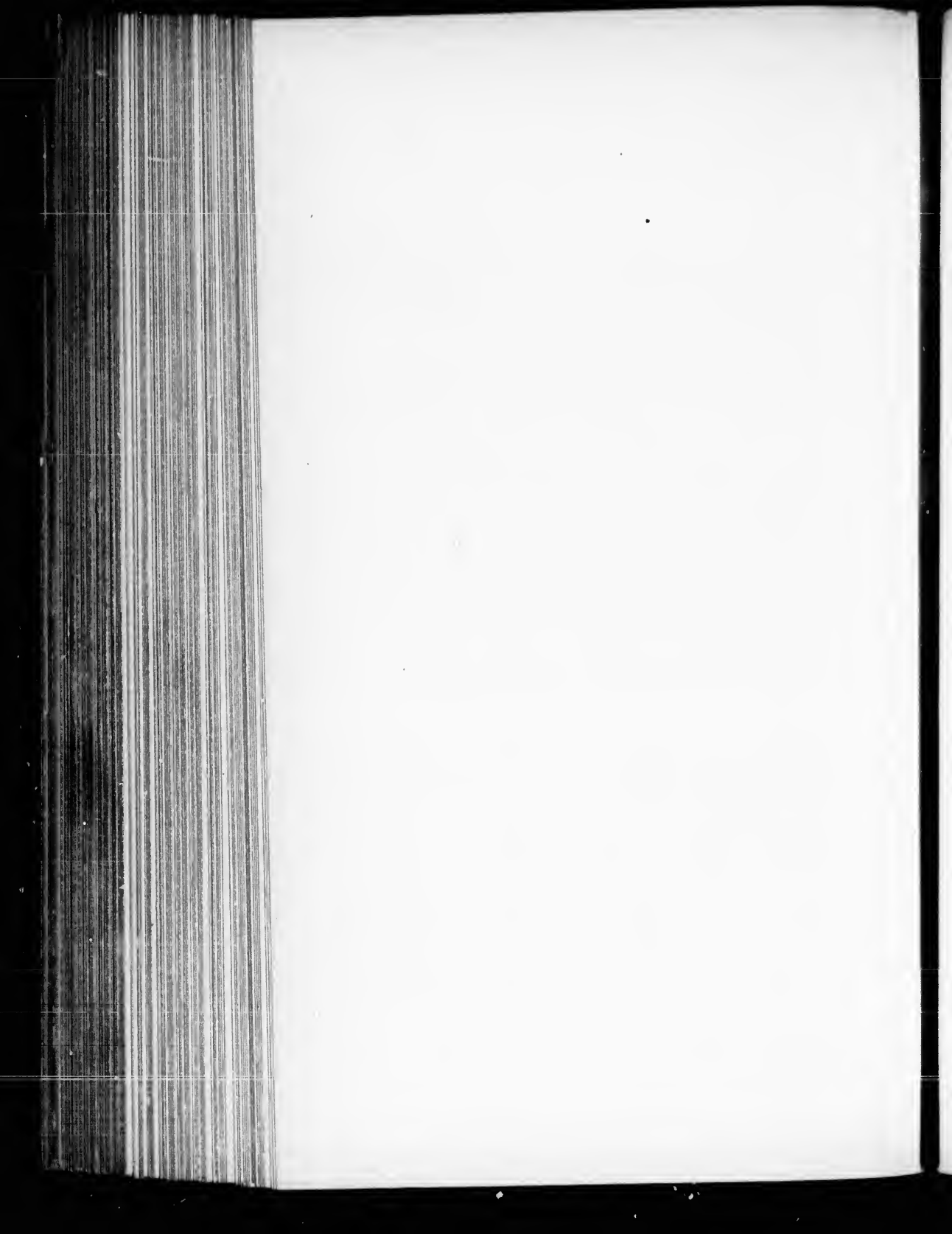


Fig. 100.—Poison Sumach. (*R. venenata*, D. C.)  
NATURAL SIZE.



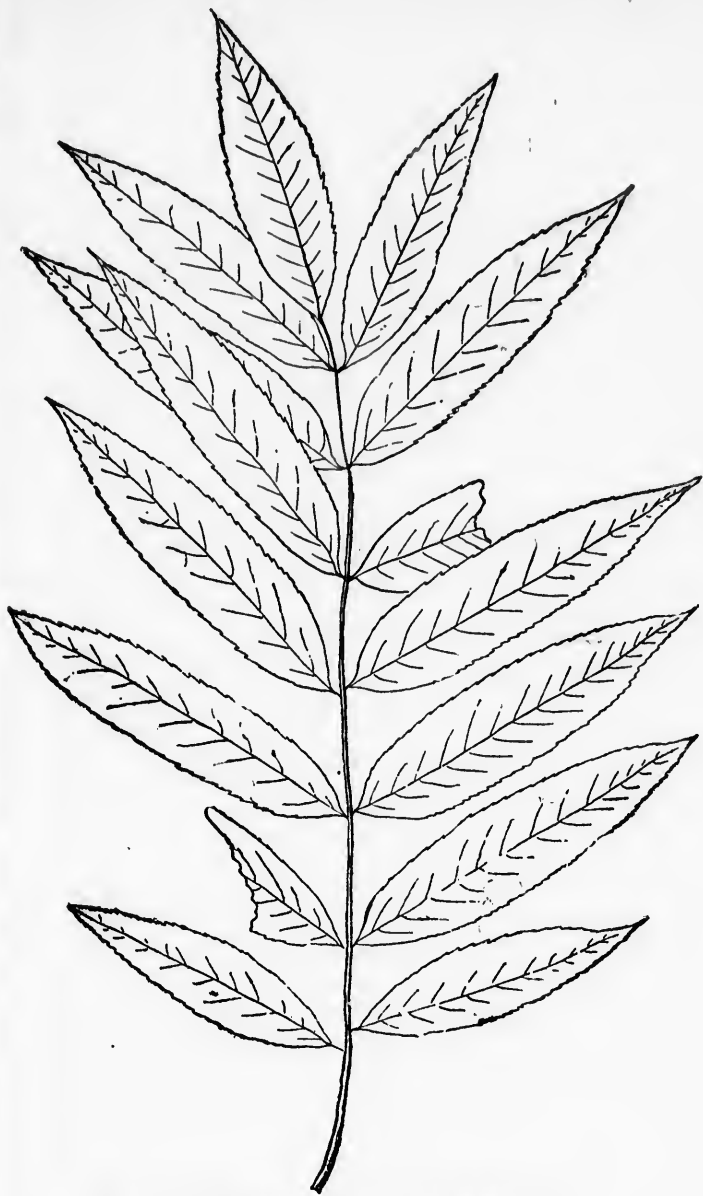
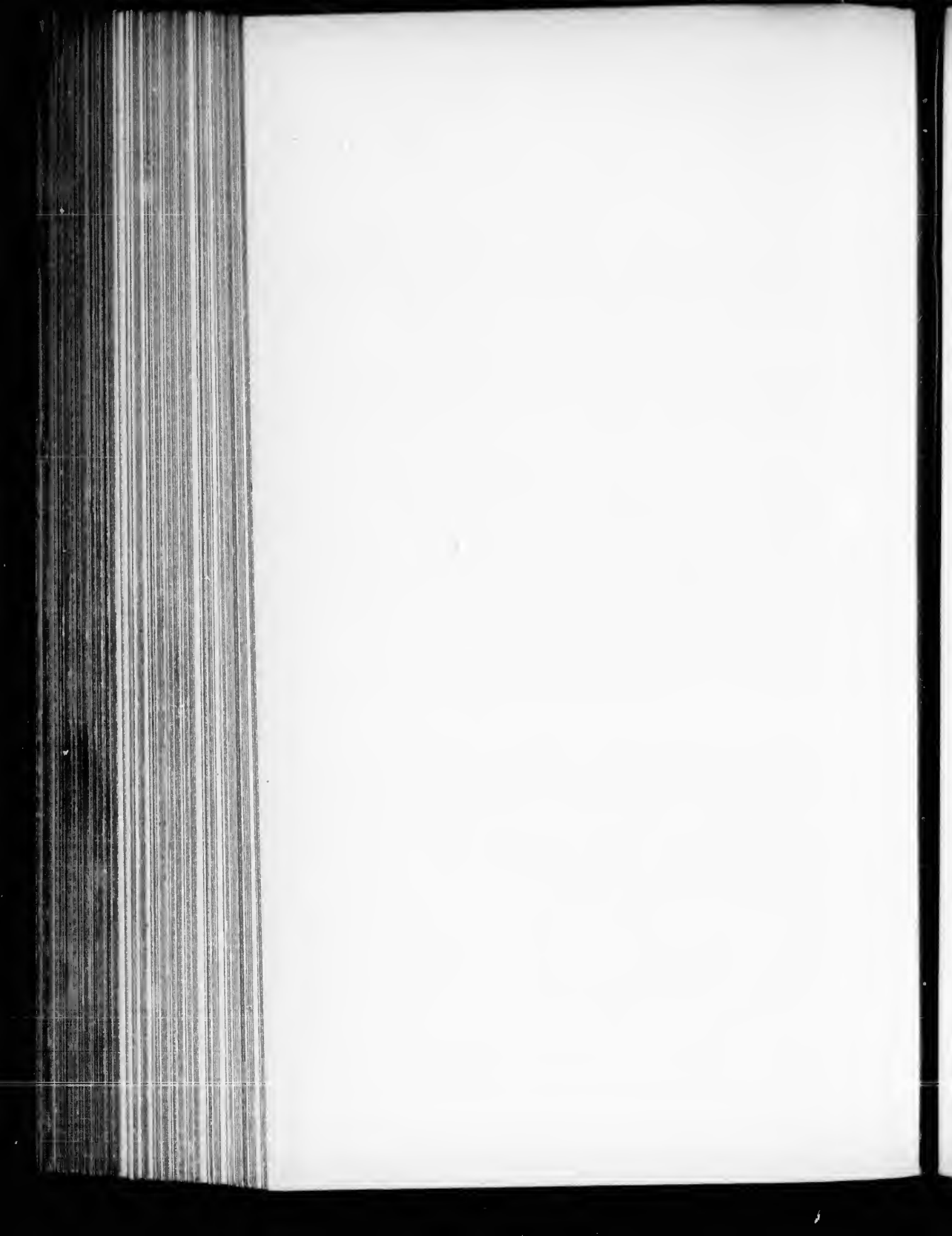


Fig. 101.—Mountain Ash. (*P. Americana*, D. C.)  
REDUCED ONE FOURTH.



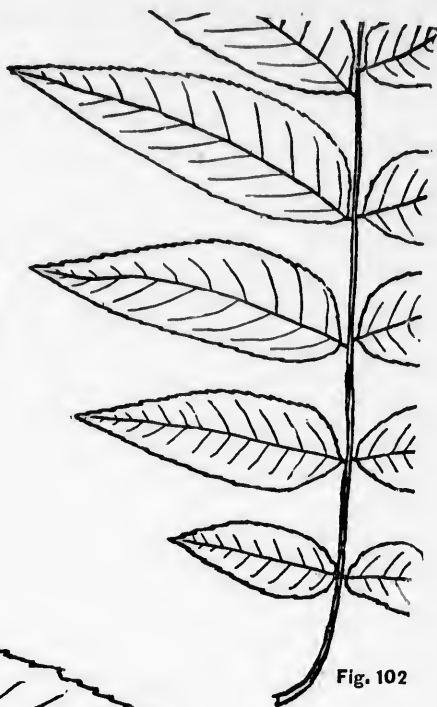
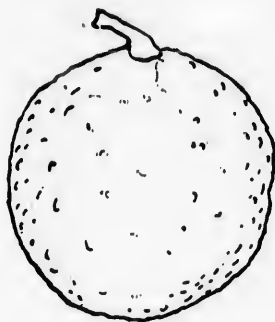


Fig. 102

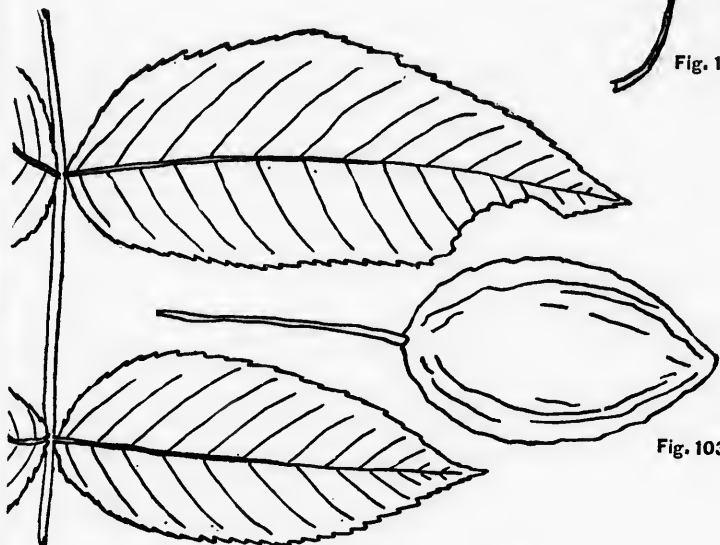


Fig. 103

Fig. 102.—Black Walnut. (*J. nigra*, L.)

Fig. 103.—Butternut. (*J. cinèrea*, L.)

LEAFLETS AND FRUIT REDUCED ONE THIRD.





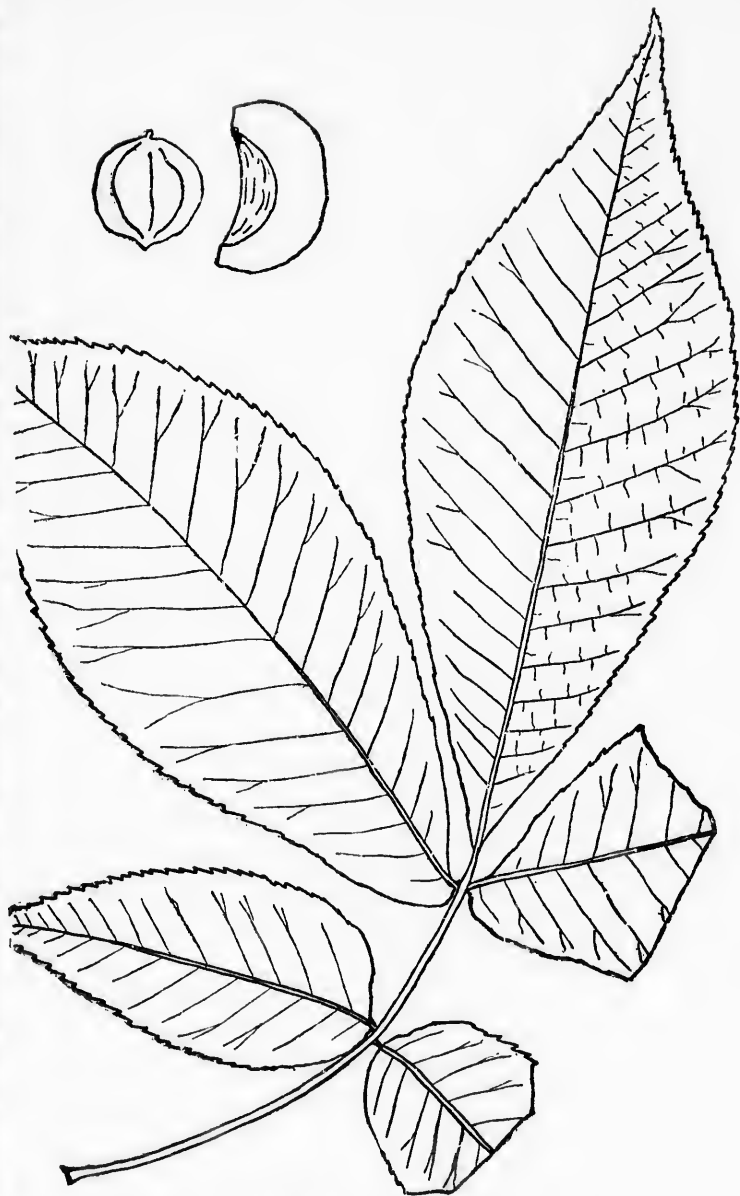
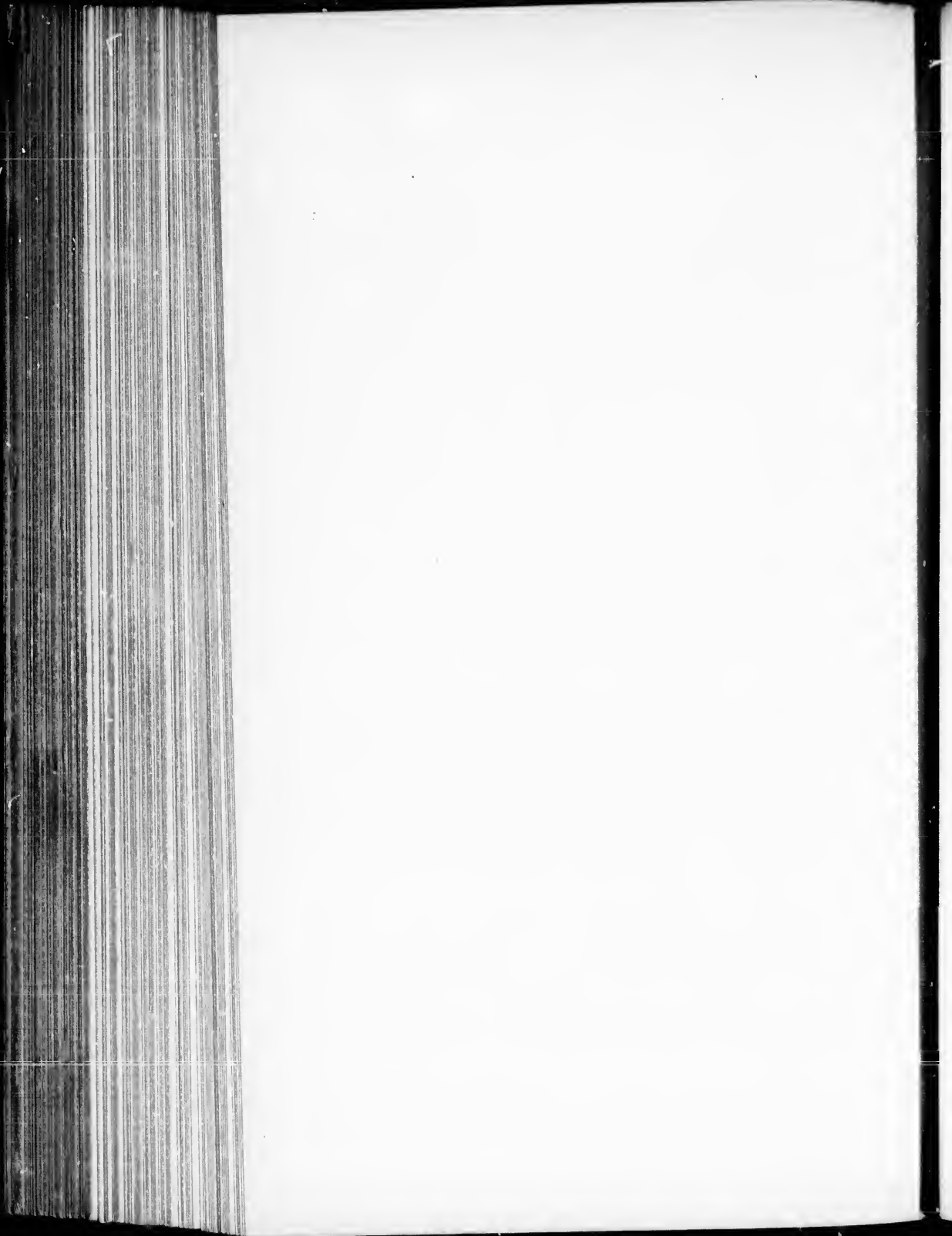


Fig. 104.—Shag-bark. *H. ovata* (Mill), Britton.  
LEAF AND FRUIT REDUCED ONE THIRD.



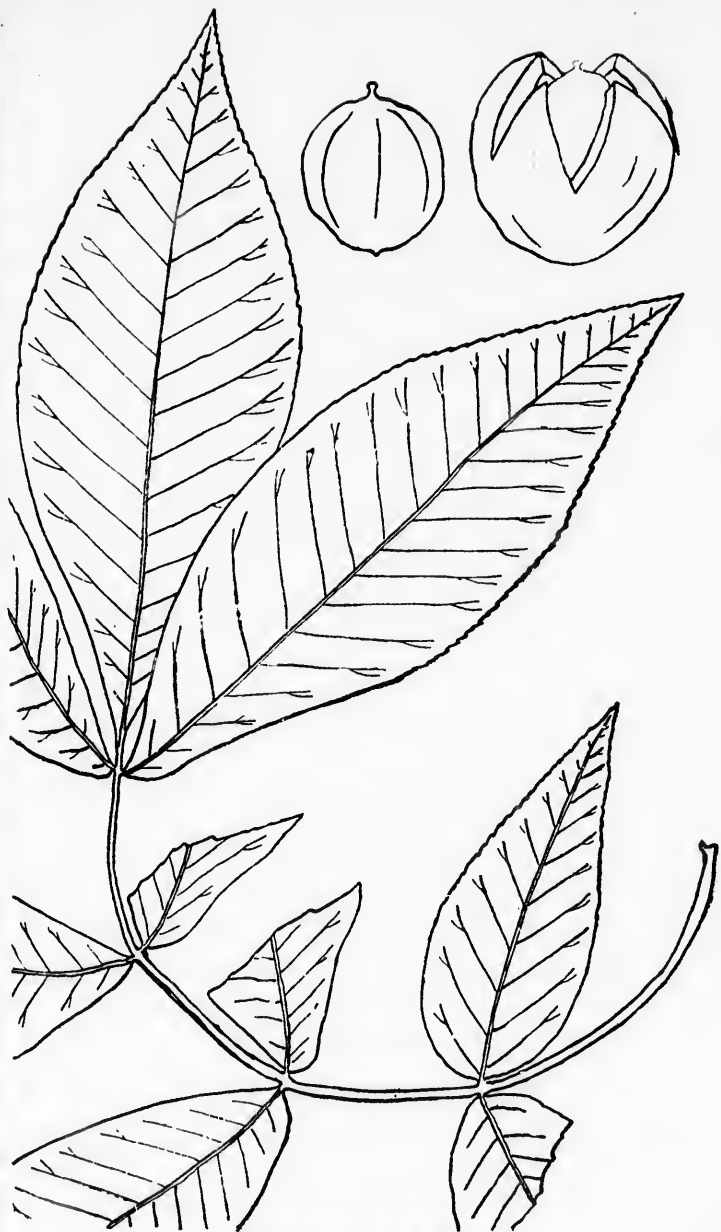


Fig. 105.—Mocker-nut. *H. alba* (L.), Britton.  
LEAF AND FRUIT REDUCED ONE THIRD.



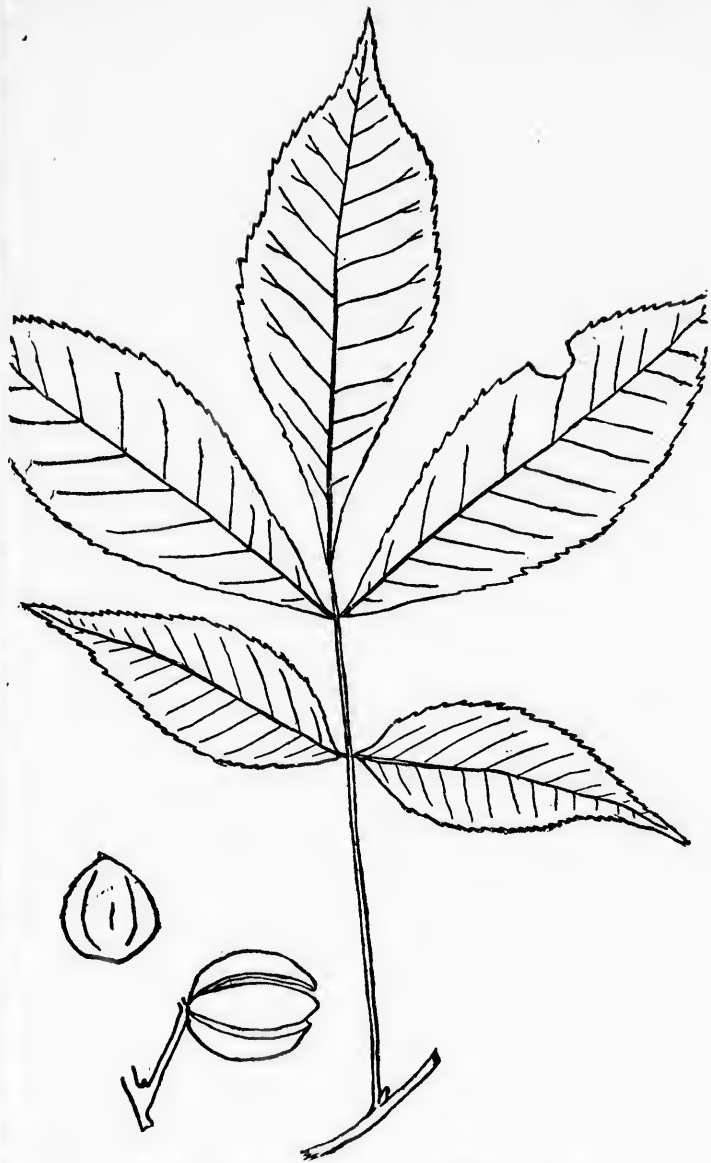


Fig. 106.—Small-fruited Hickory. *H. microcarpa* (Nutt), Britton.  
LEAF AND FRUIT REDUCED ONE THIRD.



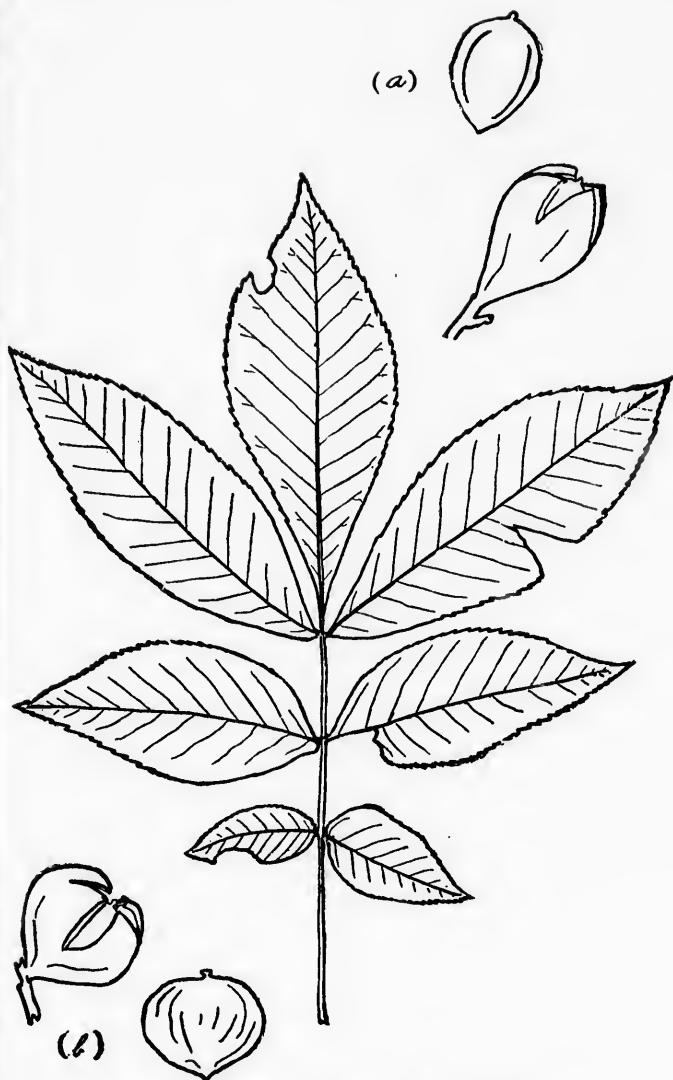


Fig. 107, *a* and *b*.—Pig-nut. *H. glabra* (Mill), Britton.  
LEAF AND FRUIT REDUCED ONE THIRD.





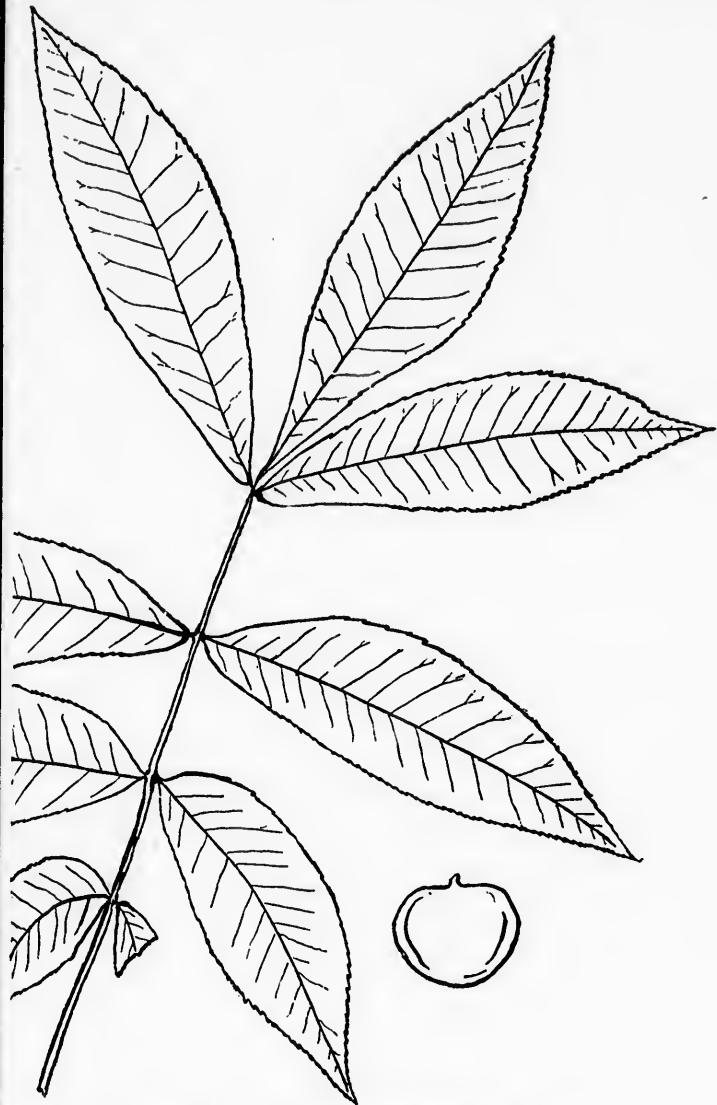


Fig. 108.—Bitter-nut. *H. minima* (Marsh), Britton.  
LEAF AND FRUIT REDUCED ONE THIRD.



TREES WITH COMPOUND LEAVES

(FEATHER-SHAPED)

CONTINUED

---

LEAVES OPPOSITE

(EDGE ENTIRE OR TOOTHED)

E I, II



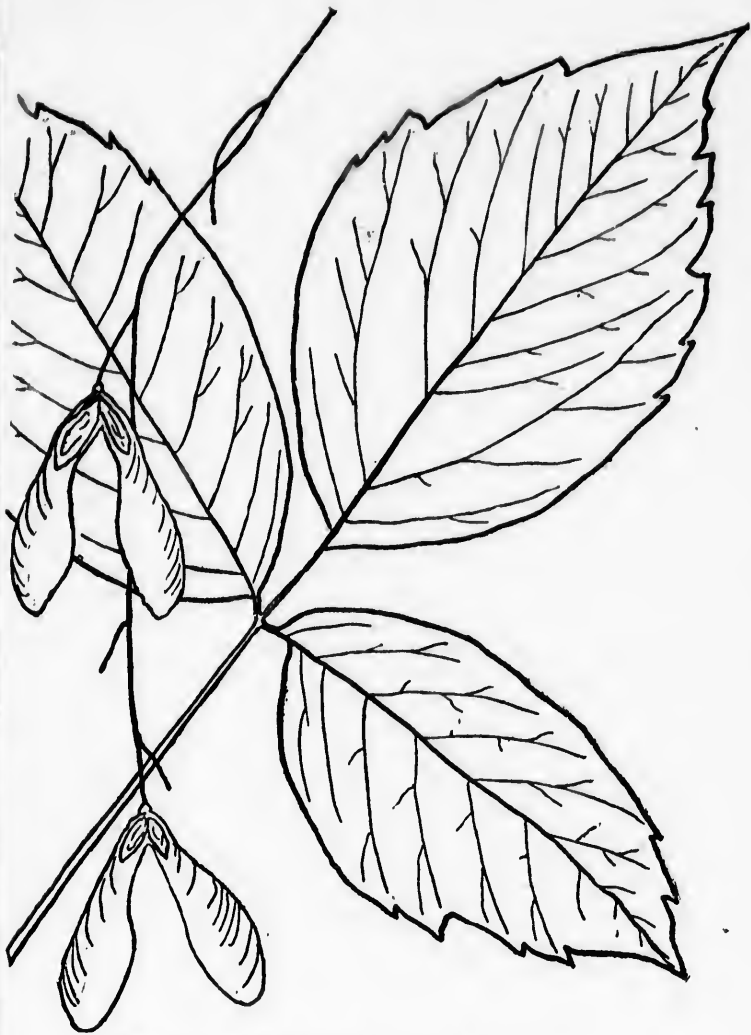


Fig. 109.—Ash-leaved Maple. (*N. aceroides*, M.)  
NATURAL SIZE.



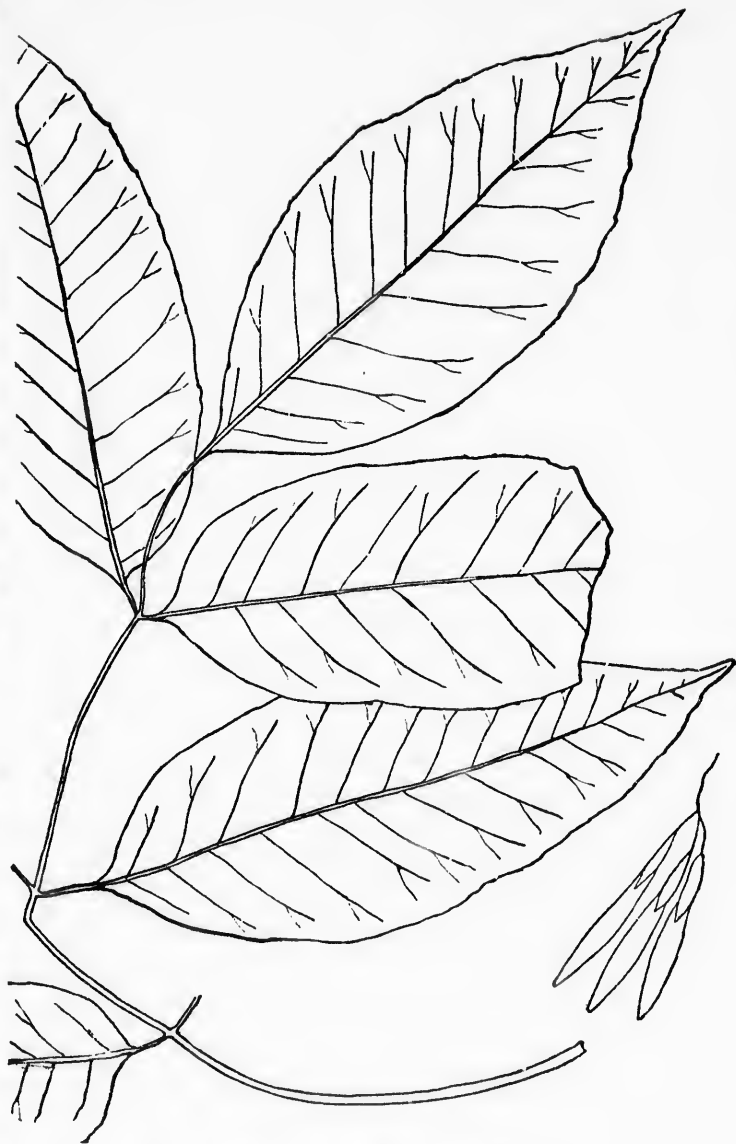


Fig. 110.—White Ash. (*F. Americana*, L.)  
LEAF AND FRUIT REDUCED ONE THIRD.





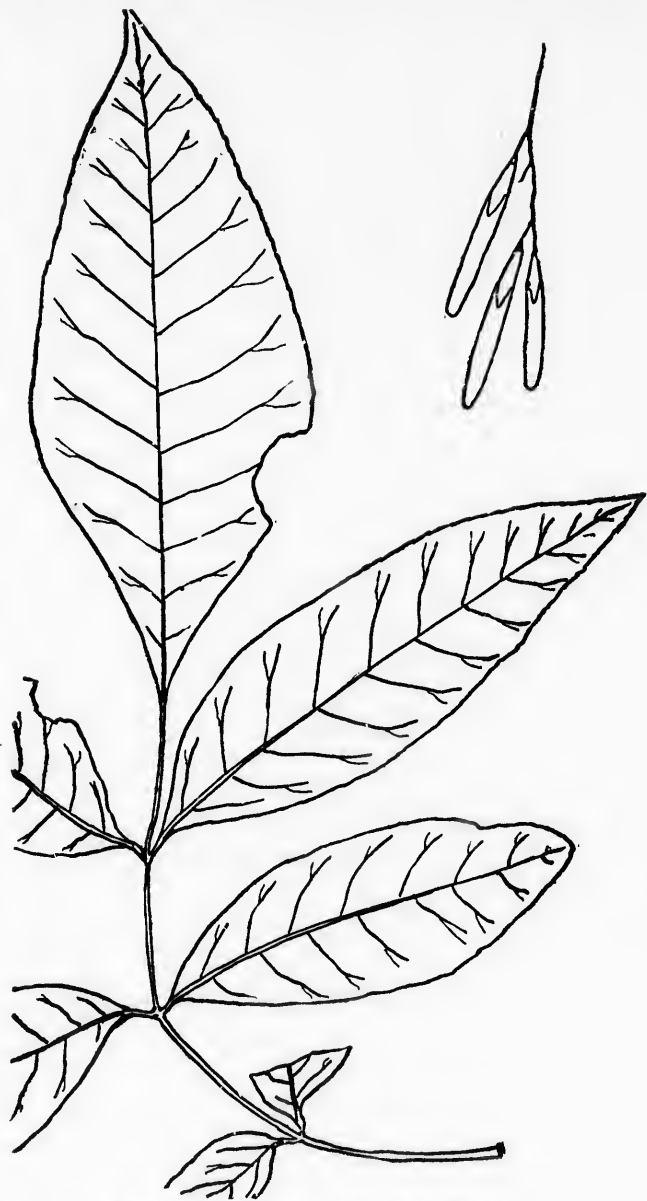
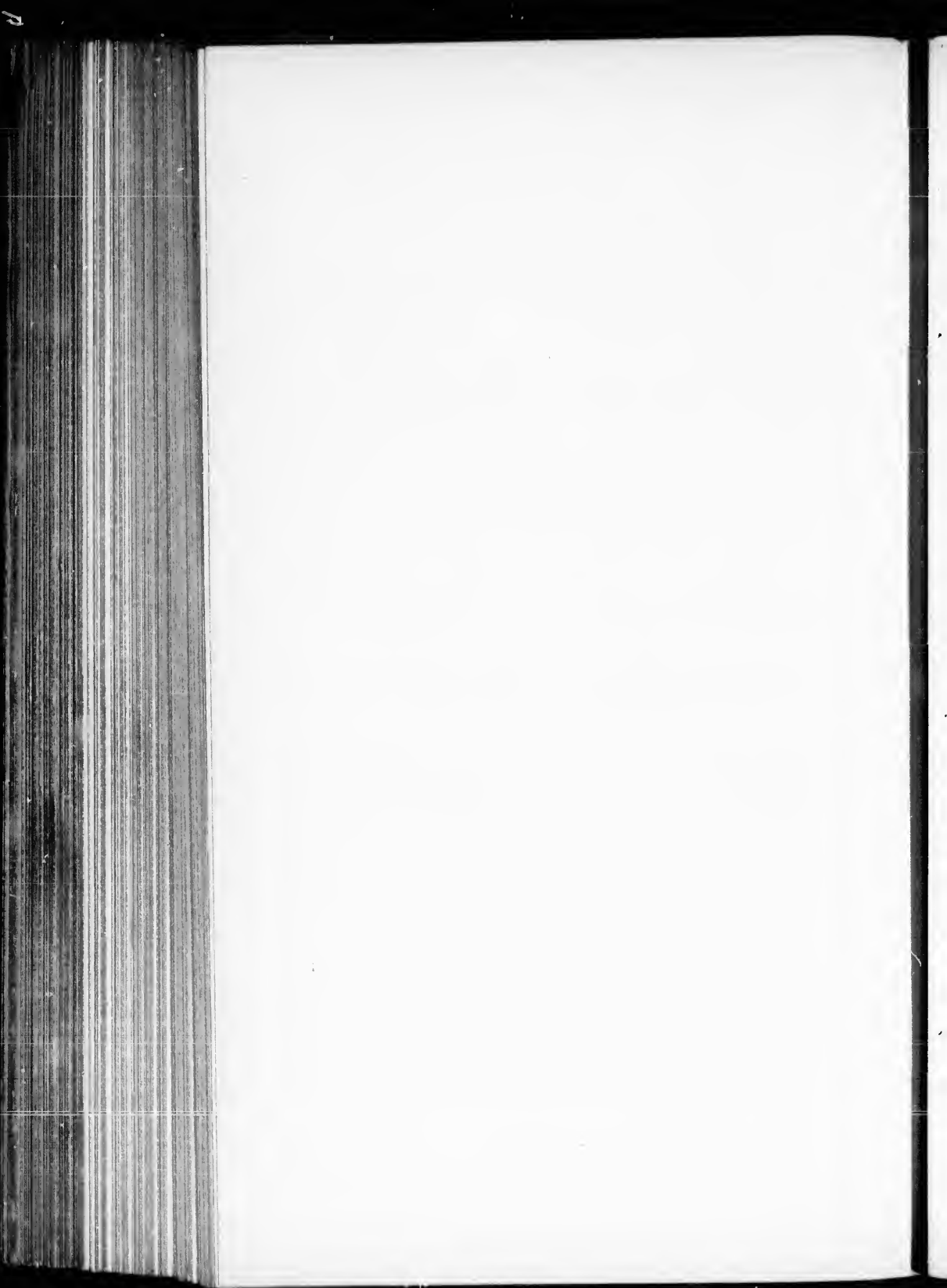


Fig. III.—Red Ash. (*F. pubescens*, Lam.)  
LEAF AND FRUIT REDUCED ONE THIRD.





Fig. 112.—Green Ash. (*F. viridis*, Michx., f.)  
LEAF AND FRUIT REDUCED ONE THIRD.



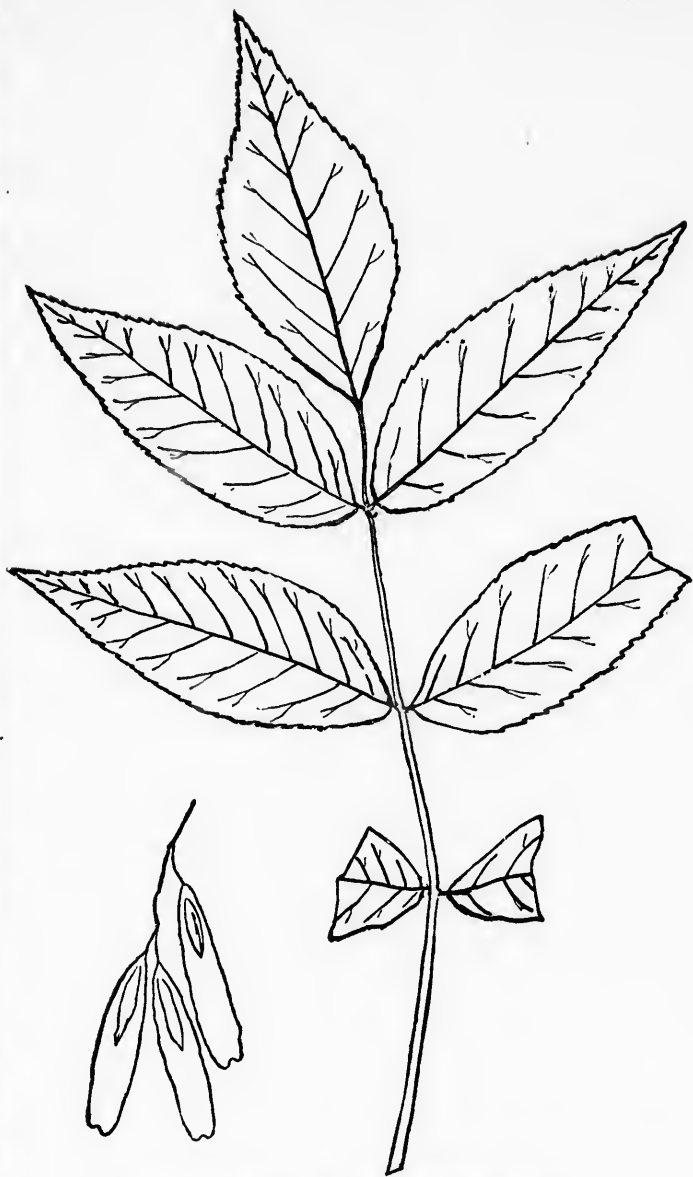


Fig. 113.—Blue Ash. (*F. quadrangulata*, Michx.)  
LEAF AND FRUIT REDUCED ONE THIRD.



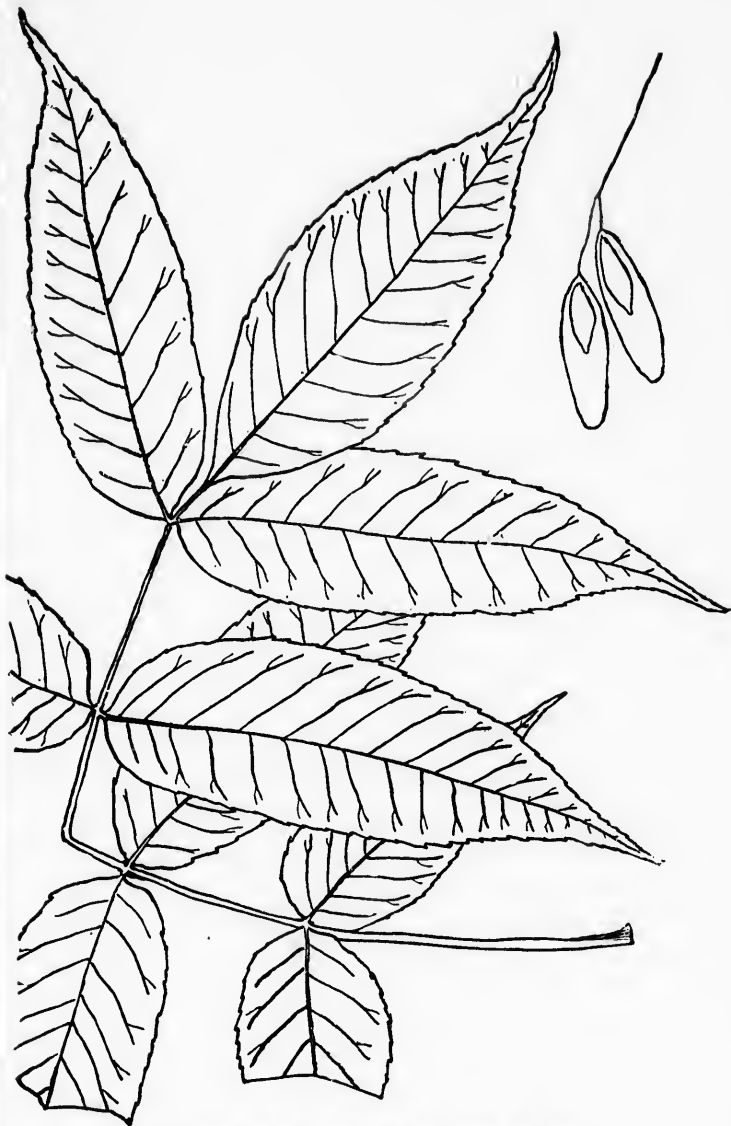


Fig. 114.—Black Ash. (*F. sambucifolia*, Lam.)  
LEAF AND FRUIT REDUCED ONE THIRD.





TREES WITH COMPOUND LEAVES  
(HAND-SHAPED)

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LEAVES OPPOSITE  
(EDGE TOOTHED)

F i



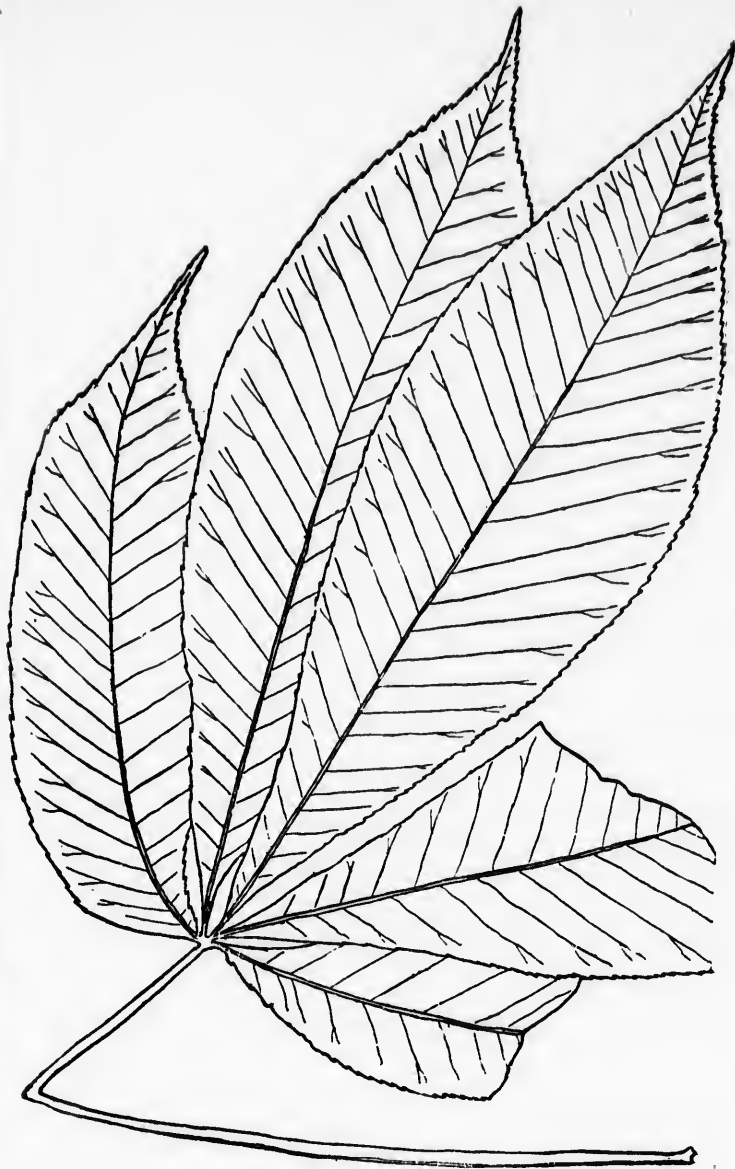


Fig. 115.—Sweet Buckeye. (*Æ. flava*, Ait.)  
REDUCED ONE THIRD.



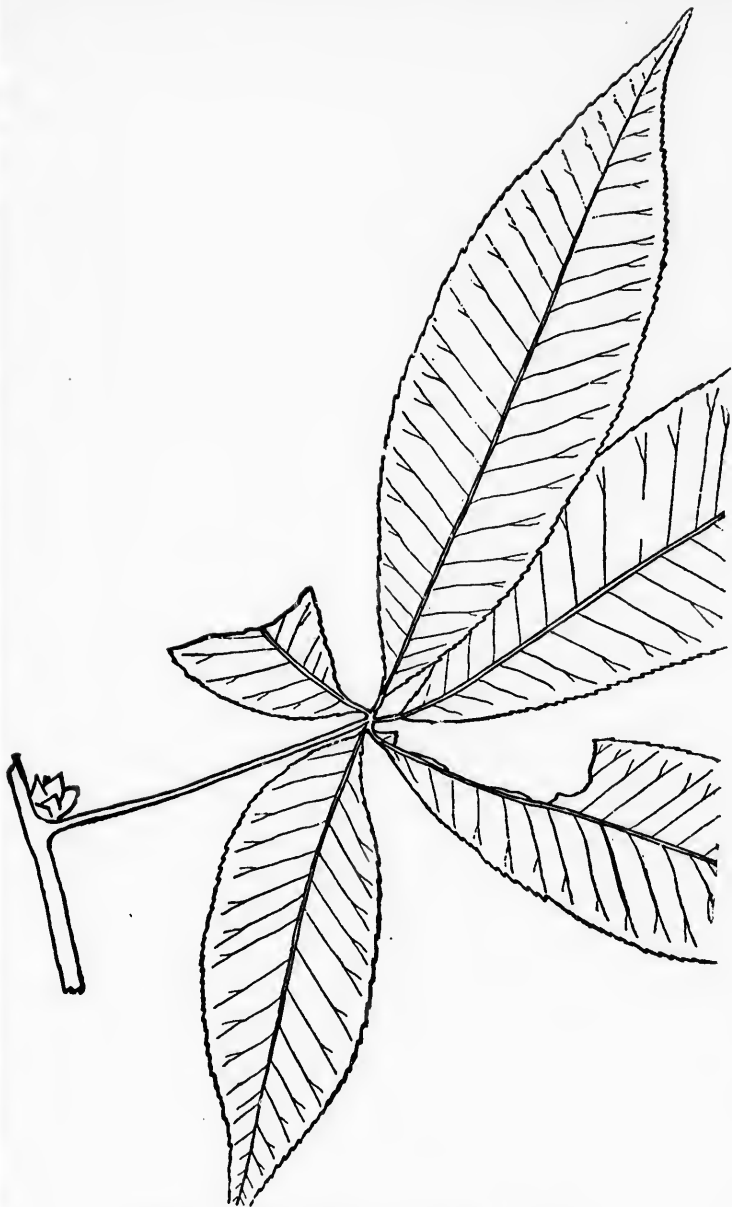


Fig. 116.—Ohio Buckeye. (*Æ. glabra*, Willd.)  
REDUCED ONE THIRD.

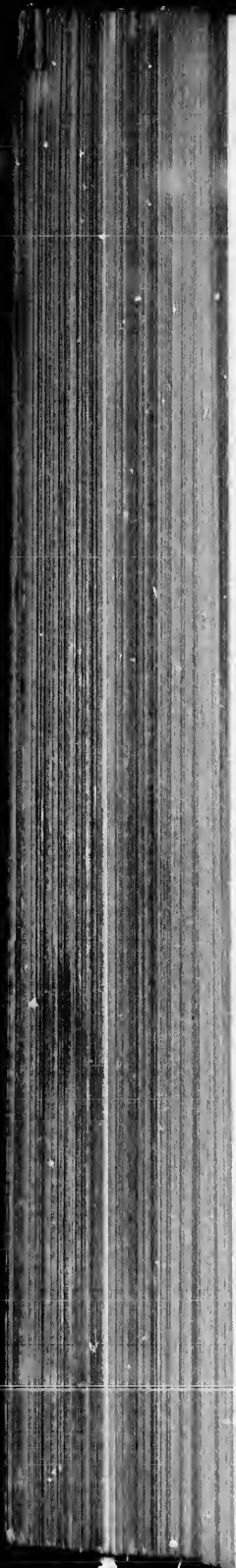


NAMES OF OMITTED AND COMPARATIVELY UNIM-  
PORTANT TREES.

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- |  |   |
|--|---|
| <i>Tilia heterophylla</i> . Vent.  | <i>Quercus coccinea</i> , Wang. var. <i>ambigua</i> ,<br>Gray.                              |
| <i>pubescens</i> . Ait.  | (Of nine hybrid oaks, most are outside our<br>limits or entirely local.)                    |
| <i>Pyrus angustifolia</i> . Ait.   | <i>Catalpa speciosa</i> . Ward.   |
| <i>Crataegus coccinea</i> , L. var. <i>mollis</i> .                      | <i>Robinia viscosa</i> . Vent.  |
| <i>crus-galli</i> , L. <i>pyracanthifolia</i> .                          | <i>Gleditschia triacanthos</i> , L. var. <i>inermis</i> ,<br>and var. <i>brachycarpus</i> . |
| <i>Amelanchier Canadensis</i> , L. var. T. and<br>G.                     | <i>Rhus typhina</i> , L. var. <i>laciniata</i> .  |
| <i>Ulmus racemosa</i> . Thomas.  | <i>Pyrus sambucifolia</i>   |
| <i>Celtis occidentalis</i> , L. var. <i>crassifolia</i> .                | <i>Hicoria sulcata</i> (Willd). Britton.  |
| <i>Salix amygdaloides</i> . Anders.                                      |   |
| <i>Quercus macrocarpa</i> , Michx. var. <i>olivæ-</i><br><i>förmis</i> . |   |







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