

## KEY TO OHIO ASHES IN THE WINTER CONDITION

E. C. COTTON.

*Fraxinus* L. Trees with stout twigs and opposite leaf-scars not meeting but sometimes with connecting ridges; terminal bud present; bud scales 1 to 3 pairs, the outer ones usually not spreading, rough, pubescent and rather dry; lateral buds evident; leaf-scars semi-circular to shield or heart-shaped; bundle scars numerous, contiguous, in a curved line or nearly forming a complete ring; pith cylindrical, solid, rather large and white; twigs gray or greenish- or brownish-gray; lenticels usually numerous but not large or wart-like; bark of trunk corrugated or flaky, ashy gray or brownish; wood of medium weight, hard, tough and elastic; fruit a samara usually one seeded.

1. Twigs pubescent not with four ridges or wings; bark of trunk corrugated; leaf scars usually shield-shaped. 2.
1. Twigs somewhat pubescent, with four or more ridges or wings, sometimes persisting until the third or fourth year; connecting ridges between leaf-scars usually present; leaf scars usually crescent shaped; buds pubescent, gray or brownish-gray; bark of trunk ashy gray, thin flaky; fruit linear-oblong or cuneate, winged all around, the body extending more than half way to the apex.  
*F. quadrangulata* Mx., Blue Ash.
1. Twigs glabrous or nearly so. 3.
2. Lateral buds large, prominent, projecting, tumid, somewhat spherical, usually exposing four bud scales; twigs usually dark-gray; connecting ridges between leaf-scars usually present; fruit with linear somewhat broadened wing, two or three times as long as the narrowly elliptic, nearly terete body.  
*F. Billmoreana* Bead. Biltmore Ash.
2. Lateral bud small, usually pyramidal or rather truncate, not projecting, usually showing but two bud scales; twigs usually showing but two bud scales; twigs usually light greenish gray; connecting ridges between leaf-scars sometimes present; fruit linear, margined above by the decurrent, linear, spatulate wing, and nearly equaling it.  
*F. pennsylvanica* Marsh. Red Ash.
3. Buds brownish-black or black; fruit winged all around, body flat. 4.
3. Buds reddish-brown, brownish-gray or gray; fruit spatulate with wing terminal or partly decurrent; bark of trunk corrugated. 5.
4. Lateral buds usually spherical; twigs light-gray, stout, stiff and brittle; lenticels prominent and usually numerous; bark of trunk ashy gray, flaky; fruit narrow-oblong. *F. nigra* Marsh. Black Ash.
4. Lateral buds more or less four angled, commonly pyramidal; twigs greenish-gray, somewhat slender; lenticels not prominent and usually few; fruit oblong, cultivated. *F. excelsior* L. European Ash.
5. Ridges connecting leaf-scars usually present; leaf-scars crescent shaped; twigs generally greenish-gray; wing of fruit not decurrent.  
*F. americana* L. White Ash.
5. Ridges connecting leaf-scars usually absent; twigs gray; leaf-scars usually shield shaped; wing of fruit decurrent on the sides of the body to below the middle. *F. lanceolata* Borck. Green Ash.