

tubes. Margin of case plainly crenulated, the incisions between wax tubes shallow and acute, but furrowed somewhat entad, giving a fluted marginal area. Abdominal segments distinct, thoracic segments moderately so. There is a slight, rounded medio-dorsal ridge along abdomen. Vasiform orifice triangular; operculum subcordate; lingula well developed, subcapitate distally, the stalk rather narrow. A pair of moderate, whitish setæ project caudad from caudal end of case. Size of larva, probably in second stage, .63 mm.  $\times$  .5 mm.

*Pupa Case.*—As seen on leaf, shiny jet black and considerably convex when fully developed. There is a short, uniform, rather squarely-trimmed, glassy waxen fringe all around from the marginal wax tubes. On dorsum of abdomen there is an interesting "top-shaped" outline, formed by a narrow, more or less continuous line of whitish waxy secretion. The cephalic end of the figure originates along first abdominal segment, the sides curving outward and caudad, but some narrowing, the lines passing on either side of the vasiform orifice, caudad of which they coalesce more or less, the figure terminating in an acute point at caudal end of case. Lines of wax along the sutures of the abdominal segments extend out laterally from the more central, top-shaped figure, the whole forming an interesting and characteristic pattern. On cephalic end of case there is an irregular ellipse of wax, marking approximately the head region of the pupa. This dorsal secretion is most evident in the more mature individuals, and may be more or less absent in the younger forms. There is a very distinct suture all around, which separates from the body proper the pronounced fluted marginal rim. This latter is inclined to the surface of the leaf at an angle of about 45 degrees. Size variable, but about 1.35 mm.  $\times$  1.1 mm., roundly elliptical in form. Abdominal segments distinct, and thoracic moderately so. On cephalic end of case the transparent, subreniform "eye spots" very distinct. Vasiform orifice triangular, subacute caudad. Operculum subcordate; lingula difficult to make out, but probably as in larva. From caudal end of orifice a distinct furrow extends back to caudal end of case. Margin crenulated all around, the incisions between wax tubes shallow and acute; on latero-cephalic margin of case, on each side, a single tubular pore, noticeably distinct from adjacent wax tubes. Pupa case of general type of *A. quercus-aquaticæ*, Quaint., from Florida.

*Adult.*—♀. Body yellowish, with sutures mostly blackish. Length about .83 mm.; fore wing, 1.2 mm.  $\times$  .56 mm.; antennæ and legs usual.