EGG-NICHES.

The great majority of North American bark-beetles deposit their eggs singly in small niches, termed egg-niches, cut along the sides of the egg-tunnels. These are shown distinctly in the illustrations of the tunnels of *Leperisinus* aculeatus Say, *Pityogenes hopkinsi* Sw., *Pityopthorus cariniceps* Lec., and many others given in this paper. Usually the niche is cup-shaped, with a circular opening, and is somewhat deeper than the thickness of the eggs. The niche is cut with the mandibles, and usually at the extreme end of the egg-tunnel as thus far cut. The size of the niche in relation to the size of the egg varies with the species. The tunnel face of the wall of egg-packing is usually slightly convex, so that the cylindrical character of the tunnel is but little altered; but certain species cut relatively small niches, with the result that the eggs and their covering of dust project decidedly into the tunnel.

EGG-POCKETS.

These are large niches cut along the sides of the egg-tunnels by species of Dendroctonus, Ips concinnus Mannh., Orthotomicus caelatus Eichh., and others, in which several eggs are deposited and packed with boring-dust. O. caelatus deposits from two to eight eggs in a mass at the bottom of each pocket. Dendroctonus simplex Lec., places three or four eggs side by side in the bottom of an elongate shallow pocket or very short groove. The details vary considerably with the species and with the environment, and apparently to some extent with the individual. D. simplex often deposits a few eggs in the boring-dust which fills portions of the tunnels.

EGG-GROOVES.

Dendroctonus valens Lec., Hylurgops pinifex Fitch, Dryocætes americanus Hopk., and others, deposit their eggs in layers or rows along one or both sides of the egg-tunnels. The tunnel is widened or grooved for the reception of the layer or layers of eggs and their invariable protective covering of boring-dust. Hylurgops pinifex Fitch, often deposits three layers of eggs in one groove. The continuous wall of egg-packing covering the egg layers is in line with the tunnel wall so that the cavity of the tunnel is cylindrical, and but little larger than the circumference of the beetles. Here again, the details vary greatly with the species and often markedly in the same genus. Dryocætes americanus Hopk., frequently deposits a few eggs in the roof of the tunnel.

TURNING-NICHES.

These are cut by *Dendroctonus simplex* Lec., and others, at intervals along the sides of the egg-tunnels; they are rather wide and deep excavations, and are used by the beetles for reversing their position, exactly as a street car or railway train uses a "Y" in the track. I have only rarely found a few eggs deposited in them. Certain species cut a short tunnel or a niche at the base of the entrance-tunnel at an angle with the egg-tunnel; these serve in the same manner for turning. The constructors of forked tunnels use the two branches of the egg-tunnel and the entrance-tunnel for the same purpose. The ventilationtunnels, previously referred to, and the nuptial chamber are also used for this purpose as well as for copulation.

THE NUPTIAL CHAMBER.

Many polygamous and a smaller number of monogamous species have a distinct chamber in the inner bark at the base of the entrance hole, called the