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NOTES ON CRABRONINE WASP NESTS[1]

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North America.—On July 7 and 12, 1968, Dr. Dorothy G. K. May and I noted numerous nests of two crabronine wasps, *Crossocerus ambiguus* (Dahlbom) and *Ectemnius lapidarius* (Panzer) (det. K. V. Krombein), in rotting stumps and logs (oak, sycamore, and elm) in

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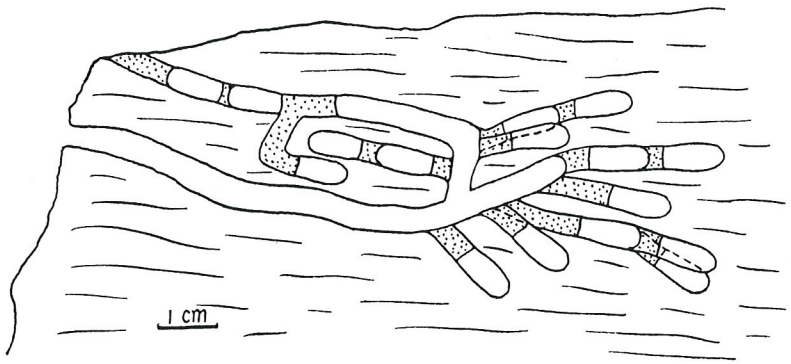

FIG. 1. Diagram of nest of *Ectemnius lapidarius* in rotting log.

deciduous forest on the Breidenthal research reserve of The University of Kansas near Baldwin, Douglas Co., Kansas. Both are Holarctic species with various prey and nest records (Krombein, 1951, Hymen. Amer. North of Mexico, Synoptic Catalog, p. 1022, 1024; Krombein, 1958, Proc. Biol. Soc. Washington, 71:21–26; Leclercq, 1954, Monogr. syst. phyl. zoogéogr. hymen. crabroniens, Liège, p. 309, 320–321) which agree in general with the observations below as to nest location and host groups, but additional genera and species of hosts and some nest details are provided here.

Both species often nested in wood also inhabited by the halictid bee *Augochlora pura* (Say) but were usually in drier wood than that used by the bee. Wasp burrows were made or extended by the wasps themselves, although a wasp may start with a beetle burrow. Burrows entered either phloem or xylem.

Figure 1 illustrates the pattern of an *Ectemnius* nest that contained 16 cells. The cells were slightly larger in diameter than the burrows leading to them, as in most crabronines (see Tsuneki, 1960, Mem. Fac. Liberal Arts, Fukui Univ., Ser. II, No. 10, Part 1:1–53). The burrows tend to parallel the grain of the wood. Burrows leading to cells were 3.5 to 4.0 mm in diameter, the main burrows 4.5 or sometimes 5.0 mm in diameter. Cell lengths ranged from 7 to 11 mm, diameters, 4 to 5 mm. Cells were provisioned with syrphid flies, 2 to 16 per cell; if there were only 2 or 4, the flies were large.

Syrphids from various cells were as follows (det. H. V. Weems): 45 *Syritta pipiens* (L.), 24 *Chrysogaster* sp., 1 *Toxomerus occidentalis* Curran, 1 *Sphaerophoria contigua* Macquart, 2 *Mesograpta marginata* (Say), 1 *Parapenium* sp., and 1 *Paragus tibialis* (Fallén).

The *Crossocerus* nests were similar to those of the *Ectemnius* except for smaller size; the burrows were similarly branched, often only 3 to 5 cm deep, and the cells perhaps less regular in shape. In no case were

two or more cells found in series in a single lateral, as sometimes occurs in *Ectemnius*. The prey were typhlocybine leafhoppers. Six of 60 collected were nymphs. Of the 54 adults, 48 were *Alebra albostriella* (Fallén) (det. H. D. Blocker); the others represent several species, probably in the genera *Riboutiana*, *Empoa* (*casta* group), and *Typhlocyba* or *Ossiannilssonola* (tentatively determined from females only by P. Oman). The prey, of rather uniform size, nearly filled the cells; there were 15 to 18 per cell, in the few cells counted.

Dr. Paul Oman of Oregon State University writes that in the collection of that institution are records of the same wasp, also nesting in rotting wood, storing leafhoppers as follows:

Salem, Oregon, May 26, 1958 (W. Grove): *Empoasca livingstoni* Gillette (as interpreted by DeLong in 1931, not by Ross in 1963) and *Edwardsiana rosae* (Linnaeus) in about equal numbers.

Eugene, Oregon, July 23, 1967 (D. Hatch): *Empoasca bipunctata* (Osh.).

Africa.—A nest of *Dasyproctus stevensoni* (Arnold) (det. A. S. Menke and J. Leclercq) was taken in an erect dead stem of *Conyza bonarensis* at Bambui, near Bamenda, West Cameroon. The habitat, fallow and abandoned native gardens, is described by Michener (1968, Ins. Sociaux, 15:423–434). The stem diameter was 7 mm, the diameter of the burrow 3.5 to 4.0 mm. As usual in this genus, which regularly nests in pithy stems, the cells are in a linear series made by dividing the burrow with pith partitions. Bowden (1964, J. Entomol. Soc. S. Afr. 26:425–437), in an interesting account of *Dasyproctus* biology, records much intraspecific variation in thickness of the partitions, but in the one nest of *D. stevensoni* they were all a mere fraction of a millimeter thick and strongly concave toward the nest entrance. The nest was damaged in collecting it, but apparently the entrance was at the broken end of the stem, as in nests of *Ceratina*, rather than in the side of the stem, as usual in *Dasyproctus*.

Many crabronines use Diptera of various sizes and several families as prey, but the single nest of *D. stevensoni* suggests considerable specificity in prey. Of 35 identifiable flies obtained from three cells, all were minute, and members of the family Milichiidae. The species (det. C. W. Sabrosky) are as follows: 14 males, 18 females of *Pholeomyia politifacies* Sabrosky (a new record for Africa), two females of *Desmometopa interfrontalis* Sabrosky, and one female of *D.* sp. near *semiaurata* Sabrosky.