California Bees and Their Parasites

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Halicodoma californica, Ashmead, n. sp.

This bee is tolerably common around Los Angeles, and has probably been captured by other collectors in California, as I have observed it for a number of seasons. Though smaller than the typical Alsidamea producta, it also closely resembles it in general appearance that it is very apt to be confused with it. At my special request Mr. Ashmead examined it as I hint from the structure of its nest and the different time of hatching it was not identical with Alsidamea producta, which is likewise common here. As the result of Mr. Ashmead's investigations the first United States representative of this genus is here described:

The male and female, length 5 to 6 mm. In structure, colour, pubescence and form this bee is very similar to Alsidamea producta, Cr., but it is smaller, the median cell being twice as far from each other as from the front ocellus; the median cell is slightly shorter than the median, the transverse vein being not quite interstitial with the basal vein; while in the female antennae are simple as in Megachile, with the terminal abdominal sternum nearly bare, and with a more or less fulvous tinge. Heads are set outwardly with a whitish pubescence; claws simple. Abdomen above, closely punctate, each segment narrowly but densely fringed at apex with a short whitish pubescence; ventral scopa dense, ambuscous, tegulae, stigma and veins black, the first submarginal cell longer than the second. Antennae 12 jointed, the pedicel longer than the flagellar joint, the latter obtusely rounded, the second flagellar joint scarcely as long as the first transverse; the third and fourth also transverse, but longer than the second; the following joints very slightly and gradually increasing in length.

The male is very similar to the female except the pubescence on the mandibles and denser, as well as on the head beneath, especially along the vertex, the antennae cleft, the first and third flagellar joints about equal a little longer than wide, the second a little wider than the first.
long, while those beyond are all longer than the third. The terminal dorsal abdominal segment at apex has three deep rounded emarginations, the middle one forming two rather long blunt teeth, the lateral or outer angle of the other two being acute; hypopygium with a transverse carina at apex.

This is the first species of this genus to be described in our fauna, and I have examined several specimens besides those received from Dr. Davidson, all from California. The genus seems to be intermediate between Megachile, Latr., and Alitodesmea, Cress.

The cells as shown in the illustration closely resemble those of *Alitodesmea producta* (see Entomological News, Sept., 1896), differing only in length and in the nature of the material which caps the series of cells. The cells measure \( \frac{3}{4} \) cm. in length, they are truncate at each end with a very thin tough disc of clay between each cell, the whole capped over at the external end by a disc of clay \( \frac{1}{2} \) mm. in thickness.

When the hollow twig occupied by the nest is wider than usual the cells are adapted thereto and are frequently of greater breadth than length, closely packed and devoid of the usual disc between each cell.

In the only cell in which I had the opportunity of observing the egg development of this insect the egg was laid on a waxy mass of bee food on September 22. This egg hatched out on September 27. On October 13, the enveloping cocoon was completed. The adult bee hatched out from the middle of June to the middle of July.

The parasites affecting this bee are very few in number and are represented by three species *Spherothama antiphora*, Ashm.; *Chrysis parrisi*, Fabr., and *Stelis 6-maculata*, Ashm., all of which attacked the larva before pupation; those of the latter hatched out in March and April.

**ANTHOPHORA MONTANA**, Cress. and its Parasites.

This bee is common enough in this neighborhood though its nesting sites are not so frequently met with, but where found the cells are abundant. This species has the habit so common with this group of nesting in large colonies. The nesting site preferred is that of a bank or knoll where the soil is very fine and of putty-like consistency when moist. Tunneling in such soil this nature seems comparatively easy and its toughness keeps the opening patent and free from debris. When the level ground is chosen the tunnels are driven perpendicularly for from six to eight inches, the cells being formed irregularly in laterals along the sides chiefly near the base. From the number of cells of apparently the same age, and from other observations it is apparent that more than one bee utilizes the same tunnel. Having excavated a cell the parent bee utilizes the material removed to work over fashion into a cell as shown in the illustration. These cells are set hydraulically in the soil, and when completed measure on an average, externally eleven lines in length and six lines in greatest width. The upper end is a smaller diameter than the lower, and is neatly closed by a clay disc that may be frequently observed hovering about the cell, and only attack the bee when it is fully grown and which has been able to completely devour. After about a month the larva spins a cocoon of papyraceous texture of a cream or brown colour, fastened upright in the cell occupying about half the cell. In the larval stage it is of a light pearly colour and is very active in its movements until just before pupating. Those hatched in 1895 hatched out at irregular intervals from June to November of the succeeding season. The next most common parasite is *Melitta Cali-

Hab.* on some colonies half, at least, are affected by parasites of which the most common is *Spherothama anthophora* when their cocoon is partially formed. The bee fly, *Larina stigmata*, is frequently observed hovering over the cell; the next most common parasite is *Sphero*

Anthophora has in common with some other members of this family a peculiar habit of building a tower or chimney over the opening of their burrows. This tower when perfect is from one to two inches high and curved upwards at the extremity as shown in the illustration, which is an actual photograph of one discovered last year. Towers more or less complete are to be seen over almost every tunnel, and are constructed of fragments of clay usually pieced together. Occasionally the tower is smoothly and well rounded, but in the majority of instances when the fragments of clay are attached they are left untrimmed externally so that the whole looks decidedly angular or with the continuity of the pieces so broken as to resemble lattice rather than a tube wall. What object the bee has in view in constructing this tower I have not been able satisfactorily to determine. If it were as a protection against the winter rains it is but a sorry defense; as protection against parasitic insects it is undoubtedly useful, but against particular enemy this rampart is erected I am profoundly ignorant.

Charles D. Michener

**Spherothama anthophora**, Ashm., n. sp.

Eyes mandibles except at base, sides of thorax and legs black. Scafield antrabce, sides of thorax, and legs the large second ventral segment clothed with white hair. Paupi ferruginous; flagellum brown black. Pairs of fore legs long, from above subquadrate-shaped as in *S. Californica*. Radial spur punctate, about \( 2 \) mm. thick, larger than the pedicel \( \frac{1}{2} \) times as long as thick at apex; first joint of flagellum longer than the pedicel and the longest joint obtuse, about as long as the pedicel; second joint not so obtuse as the first; mesopleura smooth;
Charles D. Michener

2. Cocoon of Sphcerophthalmia in cell of Anthophora.
3. External tower over entrance to tunnel.

May, 1858.