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A NEW SPECIES OF PSEN.

BY HENRY L. VIERECK.

Psen (Mimesa) barthi n. sp.

Wings brownish transparent, nervures and stigma dark brown. Belongs to Fox's group *Kohli*, but clypeus subbidentate.

Female. 10 mm. *Head*: Pretty much the same as in *simplicicornis*; polished portions with a steel blue reflection.

Thorax: Dorsulum approximately as in *simplicicornis*; scutellum punctured and striate; mesopleura distinctly but sparsely punctured; dorsulum and mesopleura with a steel blue reflection; knees black, spurs whitish, tarsi brownish testaceous to brown; otherwise as in *simplicicornis*.

Abdomen: Pygidium bounded by a distinct carina; otherwise as in *simplicicornis*.

Barring the exceptions already alluded to, this insect is almost uniformly black.

Type Public Museum, Milwaukee, Wis. Type locality, Milwaukee, Wis. One specimen collected by Dr. Geo. P. Barth.

ON THE NESTING HABITS OF *PSEN BARTHI* VIERECK

BY GEORGE P. BARTH.

Revenge is sweet. This spirit may have tinged the feeling of satisfaction which was derived from demolishing the abiding place of the above described intruder on what I fondly regarded as my crabro preserve. During the years 1905 and 1906 this old log in Bradley's Woods, on the Milwaukee-Waukesha County line, had been a continuous source of pleasure and profit to me in my

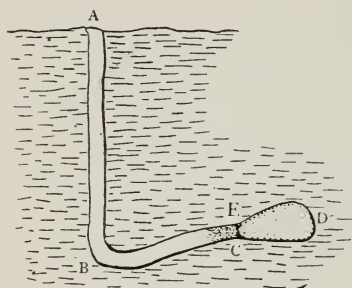
growing intimacy with the habits of the Crabronidæ and a feeling of disappointment and chagrin was experienced when it was seen that a colony of slender, black wasps had usurped this haunt of a more beautiful though coarser structured family. Nothing remained of the numbers of *Crabro obscurus*, *chrysarginus*, *sex-maculatus* and *montanus* which formerly nested here. During the summer but one *Crabro brunneipes* ventured to dispute the right of possession with *Psen* and built her nest in the log. One specimen of *Psen* was caught carrying a leaf-hopper to this log last year, but others must have builded to account for the numbers that chose this for a nesting site during the present season.

The flight of the wasp is rather slow and not graceful. When hunting for a place to begin excavations she frequently alights and tests rather methodically here and there, walking from place to place, occasionally taking wing along the log in arcs with the side of the log. She is not at all shy, seemingly indifferent as to whether she is being watched or not even though the observer be quite close to the nest. The numerous parasitic flies which were constantly about the nests also did not seem to be a disturbing factor, although several times the returning wasp lunged at one which happened to be too close to the entrance. The prey of the wasp seems to be exclusively adult leap-hoppers, of which the following species were found in the nests: *Cyrtolobus fenestratus* Fitch and *Atyma inornata* Say.

The method of carrying the hopper was practically the same in all instances. It was firmly grasped at the neck or anterior part of the thorax by the middle legs, ventral or lateral side uppermost, and projected backwards under the abdomen of the wasp. Occasionally the body was carried somewhat to the right side and below thus pushing the abdomen of the wasp to the left. In no instance was the wasp seen to fly directly into the nest, but alighted some inches away and deliberately walked in without shifting its grasp on its victim.

NEST.

The entrance to the nest was usually marked by a quantity of sawdust scattered about without definite form or arrangement. The nest remained open during the absence of the wasp though material was at hand with which it might easily have been closed to intruders. Frequently the entrance was in the side of a crack which extended into the log and in this event the sawdust was in large part carried to the surface and deposited there. A short gallery, smooth and evenly rounded, from three to four millimeters in diameter, led perfectly straight or rather tortuously to the cells. The accompanying drawings and measurements will illustrate. In all nests the cell was rather sharply divided from the gallery by a ridge formed by the abrupt incline into the bowl of the cell. In shape these varied to a considerable degree, the oval in some form being maintained however. The cell was provisioned with from three to five leaphoppers which were in the majority of cases mixed with a little sawdust. These, presumably, were stung to death as neither the ones taken from the wasp immediately on her return from a hunting expedition nor those in any of the cells responded to stimulation with forceps, fingers or alcohol and they soon dried up. All the nests except number three were in the log. This nest was found in the debris which littered the ground about one foot from the log proper, the entrance being concealed under several chips of wood. Thence it took its course downward irregularly, then horizontally and finally in a sweeping curve downward to the cell. This irregularity was not due to a desire on the part of the wasp to avoid obstructions as where a piece of wood was encountered the wasp bored its way through instead of around it, at least three pieces of wood, none larger than three-fourths of an inch in any diameter being thus perforated. The cell itself occupied the center of a small square piece not over one inch each way.

**Nest No. 1.**

Gallery A to C 0.4 cm. in diameter.

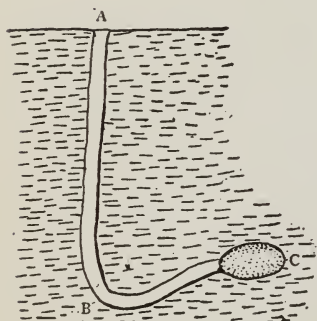
B to D 4.5 cm.

At E 0.8 cm. of packed sawdust.

Cell 1.2x0.6 cm; irregularly oval.

Entrance 0.3 cm.

4-leaf hoppers.

**Nest No. 2.**

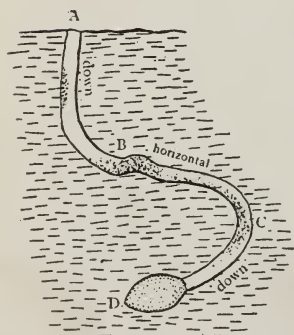
Gallery A to B extending vertically. 0.4

cm. in diameter; B to C = 4 cm.

horizontally.

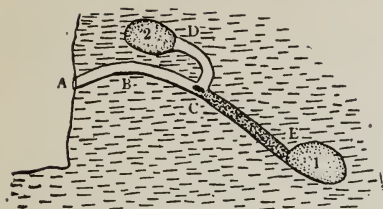
Cell regularly oval; 1.0x0.7 cm. En-

trance 0.4 cm. Contained 2 hoppers.

**Nest No. 3.**

Gallery C to D = 5 cm. in a sweeping curve. C to B = 6 cm., also curved. B to A = 5 cm., almost straight. A to D in a straight line = 11 cm.

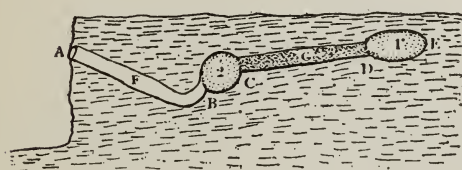
Cell Egg-shaped as drawn; 1.3x0.7 cm. Entrance 0.4 cm. Contained 2 hoppers.

**Nest No. 4.**

Gallery E filled with sawdust and 0.3 cm. in diameter. D and B open. D = $1\frac{1}{2}$ cm. long.

Cell 1 Irreg. oval; 1.2×0.7 cm.; clean and contained a cocoon very lightly attached to the walls.

Cell 2 regularly oval; empty and clean; 1.0×0.6 cm.

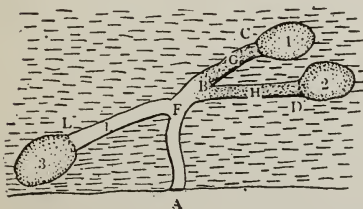
**Nest No. 5.**

Gallery A to B = 2.2 cm.
C to D = 1.5 cm.
A to E = 5.9 cm.
A to D = 4.6 cm.
G = 0.3 cm. in diam. and packed with sawdust.
F = 0.4 cm. in diam. and open.

Cell 1 1.3×0.7 cm.; 3 hoppers; egg on left thorax at edge of wing beginning at neck and extending parallel to the body.

Cell 2 practically spherical; 0.8 cm. in diameter. Empty.

Wasp caught in gallery F.



TOP VIEW.

A to D = 4 cm.

A to C = 3 cm.

A to L = 3.7 cm.

A to F = 1.2 cm.

D to B = 1.7 cm.

C to B = 0.6 cm.

F to L = 2.5 cm.

Cell 1 1.0×0.6 cm.; 3 hoppers; contents mildewed.

Cell 2 1.3×0.6 cm.; rather flat on one side, dome-like on other; cocoon.

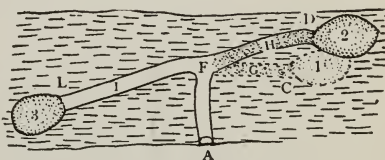
Cell 3 1.2×0.6 cm.; empty.

Gallery H 0.3 cm. in diam.; filled with sawdust.

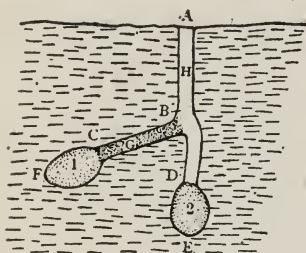
Gallery G 0.4 cm.; filled with sawdust.

Gallery I 0.4 cm.; open.

Wasp caught in nest. Entrance in a crack.



LATERAL VIEW.

**Nest No. 7.**

A to B = 1.8 cm.

B to C = 2 cm.

B to D = 1 cm.

A to F = 5 cm.

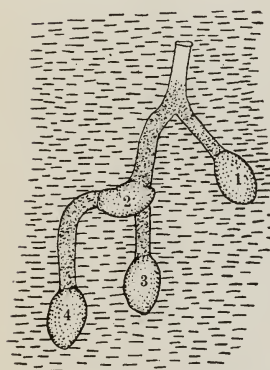
A to E = 4 cm.

Gallery H = 0.4 cm. in diam.; open.

Gallery G = 0.3 cm. in diam.; packed.

Cell 1 a cocoon.

Cell 2 1.1x0.7 cm. Empty.

**Nest No. 8.**

SURFACE VIEW.

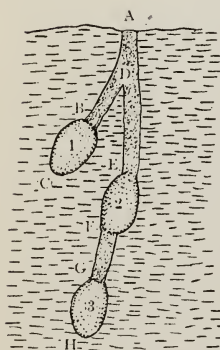
Galleries and cells were practically on the same horizontal plane, the entrance being in a crack in the log. All the galleries were packed with sawdust.

Cell 1 1.2x0.7 cm.; contained a cocoon.

Cell 2 very irregular in shape; contents mildewed.

Cell 3 1.3x0.6 cm.; regularly oval; contained a cocoon.

Cell 4 1.2x0.6 cm.; regularly oval; contained a cocoon.

**Nest No. 9.**

All the cells and galleries on practically the same vertical plane. All galleries packed with sawdust.

A to D = 1.5 cm.

A to B = 2.7 cm.

A to C = 3.8 cm.

A to E = 3.7 cm.

A to H = 7.0 cm.

F to G = 1.2 cm.

Cell 1 1.1x0.7 cm.; regularly oval; 3 hoppers; entrance 0.3 cm. in diam.

Cell 2 1.1x0.5 cm.; regularly oval; 4 hoppers.

Cell 3 1.1x0.6 cm.; one side considerably flatter than the other; 4 hoppers; egg on right thorax along the edge of the wing; contents beginning to mildew.

MISCELLANEOUS CELLS OF WHICH THE NEST STRUCTURE WAS NOT TRACED.

Cell No. 1: 1.1x0.5 cm.; empty; sharply differentiated from gallery; regularly oval; 0.35 cm. at entrance; gallery 0.4 cm. not packed.

Cell 2. 1.2x0.7; 4. hoppers somewhat mildewed; regularly oval; gallery to cell packed with sawdust.

Cell 3. 1.1x0.7 cm.; regularly oval; 4 hoppers.

Cell 4. 1.1x0.6 cm.; regularly oval; 5 hoppers; a small fly larva crawling about.

Cell 5. 1.0x0.6 cm.; regularly oval; 3 hoppers; egg on right thorax along edge of wing.

Cell 6. 1.2x0.7; egg shaped; entrance packed with sawdust and somewhat smaller than the gallery beyond; 3 hoppers.

Cell 7. 1.0x0.6 cm.; irregularly oval, one side being somewhat flattened; 3 hoppers; 3 fly larvae in cell.

Cell 8. Very irregular; contents mildewed.

Cell 9. Irregularly oval; 1.2x0.6 cm.; 3 hoppers; 2 fly larvae.

Cell 10. 1.1x0.5 cm.; regularly oval; cell and gallery empty; sharply differentiated by ridge; 0.35 cm. at entrance to cell; 0.4 cm. in gallery.

In no case did the hoppers completely fill the cell, being gathered in a ball either at one end or in the middle. Most of the cocoons, however, filled the cell and were lightly attached to its walls with the hopper rests attached to its outer surface.

The cocoons are buff or yellowish buff in color, frequently with whitish fibres or masses of fibre scattered over the surface. One larva in an artificial glass cell spun a cocoon which is entirely paper white. They are rather tough, tearing with difficulty, though quite thin.

Nests one, two and three were excavated August 4th. The remainder were obtained September 1st. On this day but two wasps were seen about the log, one resting in the gallery of Nest No. 5 and the other carrying prey into Nest No. 6.