ABSTRACT

A pollen trap was designed that reduces the amount of trash within the pollen tray, thereby producing cleaner pollen and also reducing the possibility of transmitting American foulbrood disease.

The trap is positioned on the hive so it does not hinder the beekeeper from manipulating the colony of bees. Also, unlike traps opening directly to the front of the hive, it causes little disturbance of the normal flight pattern of the colony.

Pollen Trap With Trash Collector[1]

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During periods of pollen dearth, beekeepers sometimes feed pollen or pollen supplements to colonies of honey bees, *Apis mellifera* L., to insure normal brood rearing. Several types of pollen traps have therefore been devised to collect pollen that can be fed to the bees during periods of stress. All have one thing in common, namely, the pollen pellets are scraped from the pollen baskets of the hind legs of the bees as they crawl through narrow holes in a grid. Then the pellets fall through a screen into some form of receptacle.

Schaefer and Farrar (1941) described a pollen trap placed at the base of a hive so the bees could continue to use the normal hive entrance. However, dead bees could not be cleaned out of this trap without first removing the entire hive above the trap. Also, trash (bee legs, dead bees, bits of wax, etc.) fell down from the hive into the pollen tray and contaminated the pollen. Langwell (1942), Killian (1945), Nye (1959), Durante (1960), Smith and Adie (1963), Smith (1965), and Root (1967) described pollen traps of slightly modified design.

Kremer (1948) and Stewart and Shimanuki (1970) used traps that could be inserted into the front entrance without any hive manipulation. Stewart and Shimanuki's (1970) trap was used solely to get small samples in a short time.

Lavie and Fresnaye (1964), Makar (1964), and Harp (1966) designed pollen traps to fit against the front of the hives above the broodchambers. These permitted bees to enter above the broodchambers, but the traps had to be removed before the hives could be manipulated and the bees were often irritated by this action. Also less trash was found in such pollen traps than in those placed at the bottom of the hive. Another disadvantage was that the bees entering the hive were temporarily disoriented when one stood in front of the hive to remove the pollen drawer.

Moriya (1966) developed a trap to hang at the front of a hive at entrance level. Smith and Adie (1963) drilled small holes in the trap so drones could escape and would not clog up the grid areas.

The pollen trap described in the present paper was designed to fit on the front of a hive above the usual entrance at the bottom board and to hang off the top front edge of the bottom broodchamber (Fig. 1). Two 1⅛-inch L-screws hold the trap against the hive instead of a wooden frame as in Harp's (1966) pollen trap. The upper broodchamber is merely moved backward to leave a ¼-inch gap, and the trap is hung in place so it covers this opening. The bees enter the hive through the pollen trap opening when the regular hive entrance is closed with a removable wooden cleat. All hive manipulations then can be carried out without removing the trap, and the bottom board can be cleaned by merely removing the wooden cleat. The lid of the trap is hinged so it can be raised for the insertion or removal of the two 2-screen grids. As the bees crawl through the outer (first) pollen grid (2 sheets of No. 5 mesh screen ⅛-inch apart), they lose their pollen pellets,

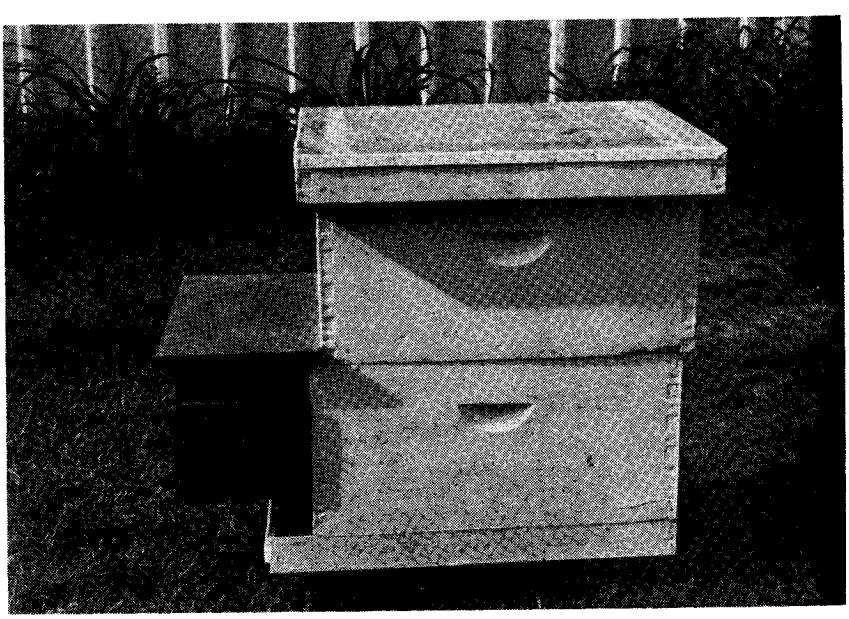

Fig. 1. — Side view of pollen trap attached to front of hive.

which drop through a No. 7 mesh screen cover into a drawer beneath (Fig. 2). Since these two sheets are offset, the holes do not "match up" (Fig. 3) and the bees must twist their bodies sideways as they crawl through both screen sheets. This action increases the amount of pollen collected by increasing the certainty that the pollen will be knocked off. After the bees have passed through the pollen grid, they pass through the inner (second) trash grid (also 2 sheets of No. 5 mesh screen 3/16-inch apart) into the hive. The two screens in the trash grid are not offset, and the holes match, which makes an easy passage for the bees.

A drawer (smaller than the pollen drawer) is located beneath the trash grid and covered with a piece of wire mesh with ½-inch squares (Fig. 2). This drawer collects the trash, dead bees, drones, and bits of wax that the bees attempt to carry out of the hive. Occasionally a small amount of pollen is found in it. In several traps that did not have such a trash grid and drawer, the dead bees piled up and plugged the grids, which reduced the ventilation into the hive. Regular cleaning then was necessary. Since little trash is dropped into the pollen drawer, the cleanliness of the stored pollen increased and the chance that particles of wax contaminated with American foulbrood spores will fall into the pollen is reduced. When one does not want to collect pollen, both grids can be easily removed by lifting the hinged top (Fig. 2). Traps with the grids removed have been left on a hive for a full year without having any ill effect on the coming and going of foraging bees. Bottom boards should occasionally be cleaned off.

The trap is made largely of wood (plywood and pieces from 1-inch pine boards), ½-inch hardware cloth (above trash drawer), No. 7 screen hardware cloth (above pollen drawer), window screen (wire mesh) (covers the bottoms of trash and pollen drawers), and No. 5 mesh hardware cloth (pollen and trash grids).

Federal government patent proceedings are in progress.

REFERENCES CITED

Durante, Gustave. 1960. Trappe á pollen á grille horizontale. Abeilles et Fleurs. **81**: 5-8.

Harp, Emmett. 1966. A simplified pollen trap for use on colonies of honey bees. U.S. Dept. Agr. ARS 33-111, 3 p.

Killian, Carl. 1945. Construction and use of the pollen trap. Amer. Bee J. **85**(2): 50-51.

Kremer, J. C. 1948. Traps for the collection and distribution of pollen in orchards. Mich. Quar. Bull. **31**(1): 12-21.

Langwell, Hugh. 1942. Pollen traps. Aust. Beekpr. **64**(3): 50-51.

Lavie, P. and J. Fresnoye. 1964. Etude experimentale de la trappe a pollen en position superieure. L. Apicultuer **108**: 52-65.

Makar, Stanyslaw. 1964. New concept for pollen trapping. Univ. Wisc. Exp. Stn. Bull. 568, 7 p.

Moriya, Kiyoki. 1966. Effects of pollen trap on numbers of pollen foragers in honey bee colony. Jap. J. Ecol. **16**: 105-109.

Nye, William. 1959. A modified pollen trap for honey bee hives. J. Econ. Entomol. **52**(5): 1024-1025.

Root, Viotti E. 1967. Combined pollen collector and entrance restriction for bee hives. U.S. Patent No. 3,350,728, granted Nov. 7, 1967.

Schaefer, C. W. and C. L. Farrar. 1946. The use of pollen traps and pollen supplements in developing honeybee colonies. U.S. Bur. Entomol. Plant Quar. E-531, 7 p.

Smith, M. V. and A. Adie. 1963. A new design in pollen traps. Can. Bee J. **74**: 4-5.

Smith, M. V. 1965. The O.A.C. pollen trap. Apicult. Dep. Ont. Agr. Coll. 2 p.

Stewart, J. D. and H. Shimanuki. 1971. Rapid sample pollen trap for honey bees. J. Econ. Entomol. **63**(4): 1350.

FOOTNOTE

[1] In cooperation with the Louisiana State University Agricultural Experiment Station.

The Smell of Honey

Has honey a smell? I have been flattering myself and friends in these first days of June by saying that at last honey is forming in the supers in my apiary because we can smell the bittersweet fragrance of it around the hives when the wind drops in the evening.

That venerable French scientist-beekeeper, Alin Caillas, assures us that honey has no scent of its own, be it heather, lavender, acacia, clover or what have you. Scent has an animal or vegetable origin, as from flowers for example. He will admit, however, that honey has a specific fragrance and taste.

What we are smelling around our hives at this season emanates from the propolis gathered by the bees and used on frames and combs. As we all know, propolis is an aromatic resin constituted from many substances, and the bees use it to polish the cells. That, it seems, is what produces the scent that flatters our noses. From The Scottish Beekeeper.

Dark Honey

The use of atomic absorption spectrophotometry confirms that dark honey has a higher mineral content than light, as has been known for many years. Dark honey is significantly higher in iron, aluminum, calcium, magnesium, potassium, phosphorus and cobalt. It would be valuable to know if the cobalt is present as cobalamin. If so it would prove a valuable source of vitamin B12 — the anti-pernicious anemia factor. From British Bee Journal, 1973.

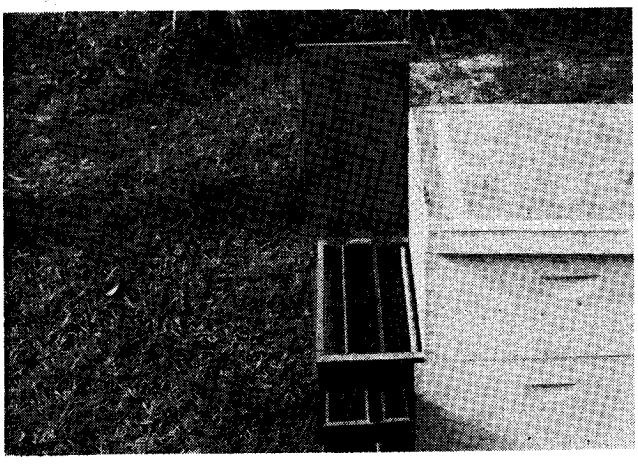

Fig. 2. — View of inside of pollen trap showing pollen grid and pollen drawer to the left and trash grid and drawer to the right. Honey bees enter from the left. Top is raised.

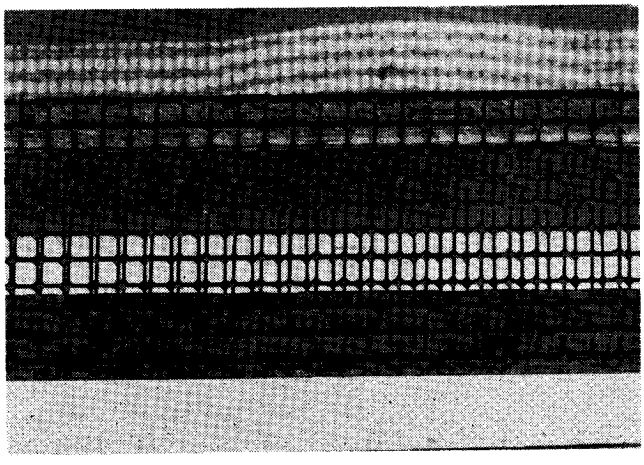

Fig. 3. — Offset of the 2 wire meshes used in a pollen grid forces bees to wiggle through and release more pollen.