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Le "Sans de la Direction" Chez les Abeilles

Gaston Bonnier

Bonnier, G. 1909. Le "sans de la direction" chez les abeilles.
C.R. Acad. Sci. de France, 148:1019-1023.

Bonnier recounts how the indians (Peaux-Rouges) sought wild bee nests. They would start out in 2 different localities, capturing bees, releasing them, noting direction of flight, moving a short distance in that direction and repeating the process. The lines from the two localities converge in the near-vicinity of the hive. This shows that when foraging bees are disturbed, they return directly to the hive.

Bonnier captured foraging bees in a locality containing only 1 hive. Transported them as far as possible, staying within 2 meters from hive (bees closed in box), released one, noted direction of flight, went to a different spot still within 2 meters of hive, released another bee, etc, etc. The released bees all go in direction of the hive. This couldn't, obviously be due to a knowledge of the route, nor could it be due to eyesight, because there was a screen of trees between bees and hive.

Bees blinded by a blackened colodion (over compound and ocelli) will fin their way directly back to the hive.

Bonier reviews proofs that an odor-sense is not responsible for the return to the hive. That is, Lefebvre's experiments which showed this odor to be localized in the antennae and to be operative over only short distances and Huber's experiments with deantennized bees.

Bonnier placed a bunch of sugar-coated branches about 200 meters from a hive. The bees began visiting this and he marked them green. He placed a similar pile 6 meters from the first (200 m. from hive). Bees began visiting this, but not those marked green. He marked these red. This experiment was repeated with 2 piles 2 m. apart and 20 m. apart. The closer the piles, the more mixing of bees, vice versa.

If a hive is miss-placed a few feet, the bees return to its original site and pile up there. Their eyes and entennae arenot sufficient for them to find their hive only a few steps away.

Bonnier concludes that bees have a special sense, "un sens de la direction", more or less comparable to that of carrier pigeons, and that the seat of this special sense does not appear to be the antennae, but probably in the cerebral ganglia.