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ANATOMY OF A WORKER BEE

(1) Compound eyes able to analyze polarized light for navigation and flower recognition.
(2) Three additional eyes for navigation.
(3) Two antennae for smell and touch.
(4) Grooves on front legs to clean antennae.
(5) Tube-like proboscis to suck in nectar and water. When not in use, it curls back under the head.
(6) Two jars (mandibles) to hold, crush, and form wax.
(7) Honey tank for temporary storage of nectar.
(8) Enzymes in honey tank which will ultimately change that nectar into honey.
(9) Glands in abdomen produce beeswax, which is secreted as scales on rear body.
(10) Five segmented legs which can turn in any needed direction.
(11) Pronged claws, on each foot, to cling to flowers.
(12) Glands in head make royal jelly.
(13) Glands in body make glue.
(14) Hairs on head, thorax, and legs to collect pollen.
(15) Pollen baskets on rear legs to collect pollen.
(16) Several different structures to collect pollen.
(17) Spurs to pack it down.
(18) Row of hooks on trailing edges of front wings, which, hooking to rear wings in flight, provide better flying power.
(19) Barbed poison sting, to defend the bee and the hive.
(20) An enormous library of inherited knowledge regarding: how to grow up; make hives and cells; nurse infants; aid queen bee; analyze, locate, and impart information on how to find the flowers; navigate by polarized and other light; collect materials in the field; guard the hive; detect and overcome enemies;—and lots more!

How can a honeycomb have walls which are only 1/350th an inch [.007 cm] thick, yet be able to support 30 times their own weight?

How can a strong, healthy colony have 50,000 to 60,000 bees yet all are able to work together at a great variety of tasks without any instructors or supervisors?

How can a honeybee identify a flavor as sweet, sour, salty, or bitter?

How can it correctly identify a flower species and only visit that species on each trip into the field—while passing up tasty opportunities of other species that it finds en route?

All these mysteries and more are found in the life of the bee. A honeybee averages 14 miles [22.5 km] per hour in flight, yet collects enough nectar in its lifetime to make about 1/10th of a pound [.045kg] of honey. In order to make a pound of honey, a bee living close to clover fields would have to travel 13,000 miles [20,920 km], or 4 times the distance from New York City to San Francisco!

With all this high-tech equipment on each bee, surely it must have taken countless ages for the little bee to evolve every part of it. Yet, not long ago, a very ancient bee was found encased in amber. Analyzing it, scientists decided that, although it dated back to the beginning of flowering plants, it was just like modern bees! So, as far back in the past as we can go, we find that bees are just like bees today!