

their knowledge of the effects of food on development that they are able to produce workers or queens as they wish. A worker is the result of insufficient nourishment. The larvæ are fed on food, which only develops workers. If during the first eight days of the life of a larva it is fed on royal food, the reproductive organs and instincts become fully developed and the larva becomes a queen. Royal food is a highly nitrogenous diet composed of the pollen of flowers. The insufficient nutrition which develops workers, but not the reproductive instincts, is less highly nitrogenous—indeed is largely carbonaceous. In case the queen dies or is lost the workers at once set about providing for a new queen by feeding a larva at the proper time with this highly nitrogenous food. I think this compels us to believe that they do it consciously, and that the colony of bees also rear workers consciously, for it is only by an abundance of workers that the colony can exist. How can they know, except by highly developed intellect and inherited experience, that one kind of food will produce one effect and another kind another?

There is a remarkable difference in the mental traits of queens and workers. The queen knows that it is not well to lay eggs when there are not workers enough to feed and care for them. This is a most reasonable procedure, and one which human beings might study to advantage. She is also aware of the fact that it is not well to have too large a number of drones, who eat honey and do no work, and so she produces them at will—by laying unfructified eggs to the extent to which drones may be required and no more.

That bees reflect and adapt their conduct to their requirements is, it seems to me, evident from the fact that when carried to countries where they find supplies of food all the year round they cease to store it up. They do not do this immediately, but only after they have learned that it is unnecessary. In Australia, where food is abundant most of the year, in order to have honey it is necessary to import new queens that will produce workers which have not had experience in that country. And if they cease to store up honey when experience tells them it is not needed, is not the opposite true that when they do store it up in those climates that have long winters they do it consciously and with a full knowledge of the need they will have for it? Again, why do bees pursue and sting one who robs them of their honey if they do not know its value? It has been stated on very good authority that the Italian bees will sometimes attack in a mass a man who has robbed their hive