

and undeveloped females. The undeveloped females are either workers or soldiers for the protection of the colony. In some species there is more than one kind of worker, and the different types have different duties to perform. In such cases the workers do the same kind of work all their lives, and the soldiers are for the protection of the colony only, and do none of the work which belongs to the workers. Here, then, the division of labor is carried on to a much higher degree, and the individual is destined to certain duties by its very structure. In the bee the same thing is brought about by the bees taking up various duties at different ages. If the division of labor in ants is caused by structural differences, how are we to account for the same thing in bees where we do not have more than one type of worker?

We may explain this by saying that the bee knows by instinct that it must make cells and feed the larvae while it is young; but instinct is blamed with too many things already, and it is better to find, if possible, some real cause than to fool ourselves by attributing all the actions to a thing which we cannot define. I do not mean to imply that it is impossible for instinct to bring this about, but I think it very improbable, and personally, prefer some other explanation.

In my work on "Compound Eyes." I notice that the entire eye is covered by unbranched hairs; and in trying to find some use for these I was entirely at sea until I noticed, that, although the young bees have their eyes well covered, the field bees have almost every hair removed. These hairs are so dense in the young bees that it is difficult to conceive of them seeing anything clearly; but there is no such obstruction for old bees. Then it occurred to me that possibly this was in some way connected with the division of labor which we find.

It has been shown that a young bee can get along without sight, since none of its actions require acute vision, and the presence of these hairs indicates that it is probably nearly blind. Can we not then, explain the confinement of the young bees to inside duties of the hive by the fact that it can see to do nothing else? We do not call it instinct when a soldier ant protects the colony and does none of the work of the workers, since it is structurally unable to care for the larvae, and it is equally unnecessary to attribute to instinct the fact that the young bee does not gather honey, since it cannot see to fly further from the hive than the distance to which scent will guide it. There may be some other structural differences between young and old bees, but it seems to me that these small hairs must be of great importance to the colony in compelling bees to do the different kinds of work. Old bees can build comb and feed larvae, but do so only when it is absolutely necessary; but a young bee can do nothing else.—Gleanings in Bee Culture.

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A roused-up, or angered, colony will sometimes decline to be subdued by smoke. The moment the smoker is laid down, dozens of angry bees attack the operator. Such behavior is characteristic of the Cyprians. The proper treatment is to close the hive, and the entrance, and then drum, or pound, on the hive a short time, when the bees will fill themselves with honey and may be handled with ease. Some one (I think it was Mr. L. A. Aspinwall) called my attention to this point while I was out on one of my inspection trips.

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