quite independent from the odor that we perceive, and there is no reason why the same may not be true of insects. As pointed out by Forel, experiments on the sense of smell should be made with odorous substances that the insect meets with in a state of nature, which would be principally the materials it feeds on. Insects are indifferent to almost every mildly odorous substance not used as food, which, however, does not prove that they do not smell them.

Again, in many cases, it would be difficult to decide whether the results of an experiment should be accredited to smell or sight. For example every bee-keeper knows that hungry bees are attracted to honey a long distance from their hives, and it would seem almost self-evident that they are guided by a sense of smell. Yet one might contend that they find the honey by sight, as, indeed, is claimed by a number of entomologists who have made experiments on the olfactory powers of bees. This question has been decided in some other insects by painting the eyes with some opaque substance or by removing the antennæ, but the evidence is not conclusive on either side in the case of bees.

Experiments made by a large number of competent investigators including Lubbock, Schiemenz, and Forel, have proved conclusively that the organs of the smell in insects are located principally on the antennæ. The most interesting of these experiments are perhaps those which Forel (1903) made on carrion-feeding beetles. He found the dead and putrid bodies of a hedgehog and a rat infested by a swarm of these beetles belonging to several genera. He collected more than 40 specimens from the carcasses and removed their antennæ. Then he placed them all at one place in the grass and moved the dead bodies to a distance of 28 paces from the beetles where he concealed them in a tangle of weeds. Examination the next day revealed the fact that not one of the mutilated beetles had found the carcasses. Repeated experiments give the same results—no beetle without its antennæ was ever found on the dead animals, although at each examination new individuals of the several species were present. It might be supposed that the mutilation itself distracted the beetles to such an extent that they did not care to eat. In order to test this point Forel next cut off all the feet on one side of the body from a dozen intact beetles and changed the location of the dead bodies again. The next day five of this lot were found on the carcasses.

The same results have been obtained from experiments on other insects. Ants distinguish between their comrades and enemies by means of their antennal sense organs. Males of the silk-worm moth and many other moths and butterflies perceive the presence of the females and are guided to them by the sense of smell located on the antennæ for they fail completely to find them when these appendanges are removed, although one immediately recognizes a female when placed in contact with her.

Similar experiments have been made on the bee, testing the ability of the workers to find honey hidden from their sight, The results, according to Forel, seem, curiously enough, to indicate that bees can perceive odors but a very short distance from their heads. Forel found that hungry bees in a cage would pass and repass hundreds of times within a few millimeters of some honey concealed from their sight by a lattice without discovering it. They ate it greedily, however, when the lattice was removed, though it had been perfectly accessible to them all the time, Forel believes that "bees guide themselves almost exclusively by vision," and Lubbock holds the same opinion. At the same time it would probably be a very difficult matter to convince many practical bee-keepers that bees do not "smell" from long distances. It is a well-known fact that at times when nectar is scarce bees are attracted in large number to the