Mr. C. P. Dadant, of Hamilton, Ill., is the author of the following very interesting essay, on "The Relation of Bees to Horticulture," which was read before the Farmers' Institute, at Hamilton, Ill., on Feburary 1, 1894, to which the readers attention is invited:

The honey-bee follow the white man in his civilizing course, in this country at least. It was unknown to the Indian, but an evidence that some such insect was necessary to the welfare of the wild flowers of America, is it to be found in the fact that the different species of wasps, hornets, bumble-bees, and other honey gathering insects, were very numerous when the country was first settled.

Bees are useful in the fertilizing of most flowers, and in some cases their presence, or that of some other honey gathering insect, is indispensable to the production of fruit, Their role in this matter of fertilization will be the subject of my essay.

Most of you are acquainted with the elements of botany, and know the structure of flowers. The organs of reproduction consist of stamens (or male organs) and of pistils) or female organs). The pollen or fertilizing dust is produced by the stamens, and must reach the pistil, or the blossom is barren. More than this, it is necessary that there should be some intermingling or cross breeding between the different flowers of one plant or tree, and also between the blossoms of several trees of the same kind, for in many cases barrenness would follow a too close in-and-in breeding.

The role of the honey-gathering insects is to bring about this crossing, and the honey-bee is, of all, the best fitted for it, for she not only gathers the honey, and in so doing scatters the fertilizing dust which becomes attached to the hairs of her body, but she also gathers this pollen and takes it home for her own usuage. Have you ever watched a colony of bees in busy season, and seen the little insects coming home with their posterior legs loaded with a yellow substance that many people mistake for beeswax? That is pollen which is called "bee-bread" after it has entered the hive, as it is used almost entirely to feed the young larvæ in the course of their growth.

The bee carries her honey in her first stomach, or honey-sac, but Nature has wisely provided for her baskets (cavities on her posterior legs) to carry the pollen, and as this is loosely packed in these cavities, loaded on much as a farmer load a rack with loose hay, small particles are dropped as she goes from blossom to blossom, and answer the purposes of fertilization.

In some plants the organs of reproduction (male and female) are on different blossoms some distance apart, and in many of these plants the interference of the bee is absolutely necessary. The melon, cucumber and pumpkin are in this situation. The male blossoms of these plants produce pollen in such abundance that the bees that visit them often look as if they had rolled in powdered gold-dust, their hairs being absolutely covered with the bright dust. After visiting the male blossom for pollen they go to the other for honey, and thus cause fecundation. Pumpkins and melons being closely allied, cross-breeding is possible, between them, with the help of the bee, when in close proximity, and the result is a mongrel vegetable which is of no use, except to illustrate the action of the insects in this matter.

There are other plants, such as corn, in which the two blossoms, although some distance apart, are not visited by bees, for they have no honey; but these plants have the male blossom higher than the female and the pollen is produced in such great quantities as to cover the ground around them. Of the same kind is the rag-weed which covers our stubble fields in August. The pollen of these plants is so plentiful that it pervades the air about us, and causes hay fever in persons who have a predisposition to asthma. In these cases the pollen falls upon the female blossom, or is carried to it by the breeze. But in some cases these agencies fail. Thus a single corn-stalk growing alone in the middle of a potato field may prove barren, even though very thrifty, simply because the pollen has been been carried away from the tassel by the wind, without reaching the ear.

In other cases, the reproducing organs are still further removed from one another, being on altogether different plants, as in hemp. In those cases, unless the pollen is produced in enormous quantities, the agency of insects is indispensable. In a few instances, plants under cultivation which were perfect in reproducing power when left to Nature, have become imperfect by cultivation. The strawberry is among these. A number of varieties have either no stamens, or very imperfect ones, so that they must be planted in close proximity with other varieties possessing both stamens and pistils. The use of the honey bee has been clearly evidenced id this case, for the pollen of the strawberry is not very plentiful, and it grows so near the ground that breezes have but little effect, so that the agency of a pollen-carrying medium is plainly needed. At the meeting of the State Horticulturists in December, 1893, an extensive strawberry grower stated that he