

intolerance. But now, with the riper experience which has been established by practical and scientific research, the continuance of hostilities of this kind may be safely regarded as somewhat unpardonable. Science has taught us that the vegetable kingdom has the same sexual distinction that marks the animal kingdom, and that the function of reproduction is impossible without conjunction of the seminal forces by which alone fertilization can be effected. To accomplish this in a vast number of species mechanical means are absolutely essential; in many instances, as in perhaps most of the bisexuals, nature has endowed the plant with conditions for self-fertilization; in the unisexuals however the process of inoculation must be accomplished by the intervention of other forces through which the pollen of both pistil and stamen is brought into conjunction when properly ripened. The wind does much toward effecting this, and in some countries plants of the same species, but of opposite sexes, are planted in rows apart, and in such position in relation to each other as that the prevailing wind about blossom time may distribute the pollen of one plant over that of the other; the fig is a notable instance of this kind. Research and observation, however, have shown that in all cases, whatever the sexual characteristics of the plant may be, the conjunction depends for the most part on the activity of insect life, and that nature has made wise provision for accomplishing the work just at the proper time. A practical writer in the *Fruit Grower's Review* says: — "For years it was an unsolved problem as to how the horticulturist could secure the perfect fertilization of his choicest fruits. He tried the fine pencil brush in distributing and mixing the pollen. This he

found expensive and unsatisfactory as he could not always do the work at just the proper time. On the other hand, when the pollen is ripe, ready for proper fertilization, nature places a tiny drop of nectar just at the base of the petals, on which the pollen or father dust is grown. To reach this the honey bee in its eagerness, brushes against the petals and knocks off this pollen dust, which is scattered all over the bee; then to the next flower it goes and the process is repeated; and in doing so leaves some of its own dusty coat. The back and body of the bee is peculiarly coated with short hair, which holds the pollen as it goes from one flower to another. Still another peculiarity of the honey bee is, that, it is said, it never visits flowers of a different species on the same trip from the hive."

It is thus easy to conceive that there is no other creature of the insect world so perfectly adapted to do the work of horticultural fructification as the honey bee. The bee is dormant during a period of the year when vegetation is also torpid. She recommences active work the moment vegetation is awakened in the spring. She is not only endowed by nature with the instinct necessary to aid her in the fructification of flower and fruit-bloom, but without the accomplishment of it she cannot exist. Under these circumstances, it is safe to say that without her aid the occupation of the horticulturist would be as completely gone as that of Othello. The bee may possibly exist without the aid of the horticulturist by confining herself to such food as may be secreted by the grasses, clovers, flowers and other species of vegetation. But without the bee it is safe to surmise that the area of our fruit production would be very much shortened up, if not eventually altogether destroyed.