and drones; and if near the swarming point, a few cells of unusual size, devoted to the rearing of young queens. Of the substances found in a hive, there is wax, a fatty secretion of bees, of which the combs are built; bee-bread or the pollen of flowers; honey, and propolis or bee glue, which the bees gather from the resinous plants and flowers. The queen bee is the only perfect female in the hive, and all the eggs are laid by her, which is the only duty she is expected to perform. The drones are the males; their office is to impregnate the queen, hover the young brood and assist in the capping of the honey cells. The last point has been disputed, but careful observation has satisfied me of its correctness. *The workers are females*, whose ovaries are not sufficiently developed to enable them to lay eggs, but who retain the female instinct to care for the young brood. The time required for the reproduction of bees from the eggs is twenty-one days for the worker, twenty-four for the drone, and sixteen for the queen. A low temperature in the hive retards the development of the brood, and a high one facilitgtes it. A good strong colony of bees in the working season will number about twenty thousand. The natural instinct of the bee is to gather liquid sweets; and this instinct is so strong that it cannot resist the temptation under any circumstances when an opportunity presents itself. And in carrying out this instinct of nature given to it for a wise and beneficent purpose, there comes incidentally the fertilization of fruits and flowers.

FERTILIZATION BY BEES.

For the value of the United States hay and grass crop, $1,200,000,000 is probably not a large estimate. When we consider that the clover, of which there are forty native species in this country—the common red clover, so valuable and nutritious for hay and pasturage; the White or Dutch, frequently a considerable addition to the hay crop, and very valuable for pasturage in conjunction with blue grass, thriving well in the shade; the Alsike or Swedish clover (Trifolium hybrida), so valuable for both hay and pasture; the Southern clover (*Trifolium Carolinianum*) valuable for pasture: the *Trifolium Involuratum*, an annual; the Japan clover (*Lespedeza Aspiata*), which has been tried with gratifying results in the South—when we consider that these furnish at least one-fourth (perhaps one-third) of our hay crop and pasture grass, and that they are all, except the red clover (and that in conjunction with the bumble bee), dependent on the honey bee for the fertilization of their flowers and consequent production of seed, we see something of the value of this wonderful little insect, in the economy of nature. There are upwards of 5,000,000 farms in this country which, with an average of six colonies of bee per farm, and an average yield of forty pounds per colony, would give 1,200,000,000 pounds of the purest honey and most healthful sweet known to man. By this we see something of the possibilities of apiculture in connection with agriculture. Every horticulturist, every orchardist, nearly every fruit grower, knows that among the blossoms on our fruit trees and vines are many imperfect flowers, and particularly among strawberries, many having only pistillate bloom. Also that for fertilization insects are required; as the stigmas are ripe before the pollen is produced, bees walking over the bloom, seeking honey, carry pollen to the stigmas. In the apple bloom the stigma comes to maturity before the anthers, and bees passing from bloom to bloom carry pollen from the older to the younger, and secure fertilization, without which no apple could be produced.

It is not my intention (it would not be possible in this brief paper) to enumerate the many beneficent works of this most useful insect, "who acts as marriage priest to a thousand flowers," but to only touch upon a few prominent points. Those who have never given time or thought to this subject are referred to those classics, Langstroth on the "Hive and Honey Bee," and Darwin's "Forms of Flowers." Observant horticulturists have estimated that our fruit crop is increased one-third by the cross fertilization of flowers by the honey bees. Bees never injure sound fruit. In the vineyard, where grapes are pecked by birds, stung by wasps, or chilled by rains, the bee comes in as a scavenger, to gather up and utilize what would otherwise be lost. If the bee could puncture sound fruit, and its instincts led it to do it once, it would do it continuously.

And now in conclusion, my agricultural and horticultural friends, remember that the busy little bee is your friend and co-worker. She is trebly a benefactor, she causeth many blades of grass (I use the term in its broadest sense) to grow where none grew before, she multiplieth your fruits, she gathereth the richest of nectar to tickle our palates and soothe our lungs; she toileth early and late, and at the close of her brief but useful life she asketh neither grave nor monument. Let a grateful people write her obituary.
