manipulated to a greater extent than formerly. The hive, although for some years on the market, is meeting with but poor headway. True, it has its warm advocates, but they are few. The advantages to men of experience are fewer than the disadvantages. To those not having experience, no one need hesitate to condemn such a hive; the chances for blundering are too great, and the box hive would be far better. The eight-frame Langstock hive—which is not patented—is used more generally throughout America than any other; in fact, it would be safe to estimate that eighty out of one hundred are of this design. Other hives of about the same capacity are probably just as good, as far as results in honey production go, but supplies for this hive are more easily purchased, and when the time comes that these hives are to be sold (that time, however distant, is almost sure to come) they can be sold more readily in this hive than any other.

An old and successful beekeeper, who has tried many hives, and who has a hive of his own design in the majority, stated to me, "After all my experimentation, I confess with regret that Father Langstock struck it just about right when he made the first movable frame hive." Above all, do not get up an odd sized frame of your own if you continue in the business. You will surely regret it. Take, at least, some hive that is somewhat generally used. The chaff hive may be sufficient protection for winter; but a severe winter may come when it is not. A single-walled hive is cheaper, and if outside wintering is desired they can be put in large boxes and packing placed between.—R. F. Holtermann in the *Canadian Horticulturist*.

The Science of Beekeeping.

Pollen Gathering: with some New Discoveries on the Formation of the Pollen Pellets.

Continued from page 234, C.B.J., Nov. 1, '92.

Another common error in several standard works is to regard the brushes, so called, which the bee carries on the inner part of its hinder legs, as appendages used to gather pollen. Take as example Prof. Cook's *Beekeepers' Guide* (13th ed., pp. 126, 129), where he says:—"Opposite the pollen cavity of the first tarsus, or on the inside, are about eleven rows of stiff hairs. They are of a golden color and very beautiful. These may be called the pollen combs, for it is they that gather, for the most part, the pollen from the gathering-hairs of legs and body, and convey it to and pack it in the pollen baskets."

Now, the hind legs of the bee play positively no part whatever in gathering pollen. That fact alone disposes of the question; but nature has especially ordained that the brushes shall not gather pollen. I maintain that the brushes or combs, so called, are not brushes at all, but a special apparatus adapted to a special purpose, and must be kept clean and free from outside substances of any kind excepting the specially prepared substance which is conveyed to them. In fact, the so-called brushes cannot even be used by the bees to remove obstructive pollen grains from the under part of the body, the bees doing this with the inner part of the tibia.

In the same paragraph the author speaks of "the gathering-hairs of legs and body." It is perfectly misleading to say of these hairs that they "gather," because, if we except the hairs along the side and near the extremities of the centre and of the fore legs, which assist these limbs to gather pollen, the only use to which the hairs are applied is to receive or retain pollen.

The most interesting part of the whole subject, however, is the manner in which the pellets are formed, and, in order to show how our best-known authorities have gone wrong, I quote a passage from our very much esteemed friend, A. I. Root, editor of *Gleanings*. In the *A B C of Bee Culture*, edition 1887, p. 183, he says:—"Well, between the pollen-gathering legs and pollen-basket legs are another pair. These play a very important part in getting the pollen into the pollen baskets. With the tongue, fore leg and middle leg the bee pads up the pollen and honey until there is quite a wad of it, and then, with a very pretty sleight-of-hand, he carries this little cake, scarcely so large as the head of a small pin, between the middle and fore leg, back to the pollen basket. When in place, it is firmly pressed into the basket, and then neatly patted down with the middle leg, much as a dexterous butter-woman gives her neat rolls the finishing taps. This motion seems to be a sort of automatic movement, for the bee is the while intently engaged with tongue and fore feet in gathering more pollen from the flowers. The operation may be witnessed easily by taking on your finger a bee that is gathering propolis from some old quilt or hive. As he picks and pulls off bits of wax with his mandibles he will convey them back to the pollen baskets much more leisurely while he stands still, and you can easily follow the whole proceeding."

Who would trouble to solve the question of the formation of the pollen pellets after the researches of such an able observer, and who would question the accuracy of