

in the week. Yet I suppose I shall always envy those who can winter outdoors, and every year or two perhaps try it in some new way, only to lose the bees that are left out.

C. C. MILLER.

Marengo, Ills. U. S.

Killing Angry Bees, The Prevention of Robbing.

(Written for the Canadian Bee Journal.)

I find that such men as Dr. Miller, G. M. Doolittle and even the Editor of "Gleanings in Bee Culture" advocate using "a paddle with which to kill bees that persist in chasing and scolding." Now my experience with bees extends nearly over the whole of my life, and with the movable frame 27 years and I have always found that if I should kill a single bee others would revenge the insult while I am at work in the apiary.

Again the Editor of "Gleanings" tells how he keeps robber bees from being troublesome by keeping them to work on "old combs containing much or little honey, placed in four or five hive bodies stacked in one tier an entrance at the bottom so as to admit but one or two bees at a time. Bees may behave differently under the Stars and Stripes but my bees would cover that tier of hives in a short time so that you could scarcely see them and the whole premises would be ransacked for more plunder, and my bees are mostly of the Doolittle strain of Italians.

Of course there are times when bees are gathering natural stores rapidly that a hive of combs might be allowed to remain anywhere, but the Editor is speaking of a time when robber bees are troublesome. Now I would like to know what the Editor of the C. B. J. thinks of the above subjects also the opinions of other bee-keepers of Ontario on the same.

ILA MICHENER.

Low Banks, Ont.

Now friend Michener this is very unkind of you to drag me into opposition to two such bee-keepers as yourself and friend Root, both of you have kept bees longer than we have and we must apparently disagree with one or the other. I say apparently, for when we look at the question closely there is perhaps not so much difference. A bee angry poisoning on the wing waiting for a favorable opportunity to sting is already doing all she can to arouse others to hostile action, she is throwing of the poison scent and under these circumstances the sooner she is killed the better. We are too lazy to carry any more than necessary and our hands are large enough and quick enough

to cover a bee. We turn away from the open hive to avoid disturbing them and with hands in position invite the bee to come within reach and make sure to drop her first attempt. Such bees will follow from hive to hive and the sooner destroyed the better.

As to the second question we have never tried the scheme mentioned and do not know, under these circumstances it would perhaps not be well to dispute the statement of one who has practical experience.

To allow room for only one bee at a time and greater space, we think would make a marked difference. You asked us would we recommend such a course to be pursued we would say no. We have never found it necessary to prevent robbing in such a way we have even two frame nuclei in the apiary in the fall some queenless; by keeping the apiary undisturbed we never have robbing. We should be pleased to hear from others along this line, many useful hints can be given and friend Michener let us hear from you again we have known you for years as a successful bee-keeper of long experience.—
ED.

Bees in Relation to Fertilisation.

By J. H. Panton, M. A., Prof. of Biology, Ontario Agricultural College.

During the process of fertilisation the contents of the pollen grains become mingled with those of the ovules, after which the latter develop into seeds. This takes place somewhat as follows: The dust-like substance (pollen) on the ends of the stamens falls upon the top of the pistil. The outer coat of the pollen grain bursts and the inner pushes out in the form of a tube which forces its way from the top of the pistil down through it until it reaches the ovary (the lower and enlarged part of the pistil) where the ovules are located. In the meantime a minute structure (germinal vesicle) has formed in the ovule. This point is reached by the pollen tube, and interchange of elements takes place, the ovule is fertilised and at once changes begin which end in the complete development of a seed.

The question naturally arises, How do the pollen grains get to the pistil? This effected, fertilisation will in all likelihood take place.

Observation shows that this may be done in several ways.

1. *By the wind.* Where this is the usual way we find the plants are rich in pollen, have no nectar grow crowded together, in some cases bloom before the leaves appear and are seldom attractive in appearance. The grasses, willows and some maples af-