

ting ants. They do their business very thoroughly. According to Dr. Burck's observations, that ant-guard system is enlarged in a very peculiar way. The enticement by which these plants gather the ant-guards around them consists in the secretion of honey outside the flower at the corolla, just at the point where the danger is apparent: consequently there are already some busy ants licking this secretion. The honey-glands, where this is secreted, are called the outer nuptial nectaries, to distinguish them from the inner ones, as they are not meant for fertilization. As soon as a bee observes the ant-guards on the outside it enters the flower in the natural way. Should it venture among the ants, it would be immediately laid hold of by its antennæ and legs, and it would be "done" with her. Besides this, it is seen that flowers with out this guard, as the *Fragroea oxphylla*, of the *Lojuniaceæ* order, possessing no extra-nuptial nectaries, have 99 per cent of injured flowers, done by the carpenter bee (*xylocopa*). Another kind, *Fr. crassifolia*, has a few nectaries, on which Mr. Burck found only 70 per cent injured. But *Fr. littoralis* has more such nectaries, and only 40 per cent injured. Dr. Burck remarked, moreover, that a carpenter bee which had cut open 20 or 30 blossoms of the *Fr. oxphylla*, and tried *Fr. littoralis* in the same fashion, had to give up at once and enter the flower on account of the ant-guards, though the three kinds of *Fragroea* resemble each other in shape, size, and color. Several such plants even provide their protectors with lodging, in shape of a recurved ear-shaped booth, affording shelter to these ants. Very often they also furnish these soldiers with ammunition—bread growing out at the flowers, having an albuminous and nutritious substance.

*Thunbergia grandiflora* more liberally feeds quite a number of ants the year round with such aliments; consequently the carpenter bee never approaches the outside of these flowers, but is obliged to look out for its business, and take the natural way.

PH. J. BALDENSERGER.

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From Gleanings.

### Contraction.

#### ITS THEORY, OBJECT, AND RESULTS.

SOME years ago, at a convention in Chicago, I was sitting talking with E. J. Oatman before the opening of the session. I told him I would give a good deal to know of some way to prevent swarming when working for comb honey. A little to my surprise he replied,

"I would rather have every colony cast a prime swarm." Then putting his hand to one side of his mouth, and speaking in a very low tone, he said, "The secret of it is to hive each swarm on four frames, and let them store for all they're worth, and then double up in the fall." That was the first I had heard of contraction.

Contractionists have been a good deal misunderstood. Some of the theory is easily understood. Suppose a queen is capable of keeping seven frames full of brood. It seems very easy to understand that, if the colony of that queen be kept in a hive of six frames all the year round, when the harvest comes, if the queen keeps the whole six frames filled with brood, the bees can have no help for it but to put all their surplus in the supers for want of any other place. Without taking time to give reasons, let it suffice to say that, in actual practice, a six frame hive all the year round is a failure, and no genuine contractionist stops his theory in that bound. Yet that is about all the idea a great many seem to have of contraction, that it simply means to keep the room for brood rearing restricted.

As Doolittle has so vehemently urged, the most important part of contraction is expansion. Use all means to have as strong a force as possible at the beginning of the harvest, and no six-frame hive will do for that. Then, when the harvest commences, limit the room in the brood chamber, and that is the contraction of contractionists.

Contraction or no contraction, few will question the wisdom of getting the strong force ready for the harvest. Beyond this there is room for difference in opinion. Crowding the queen awakens the swarming impulse, unless, indeed, there can be awakened such a greed for storing that queen and all hands may turn their attention in that direction. Is there not naturally a tendency that way in any heavy harvest? Still there can be no question that unlimited laying room tends to discourage swarming, and hardly more question that a colony that never had the desire to swarm is the better for storing, other things being equal. So, on the whole, it is probably right to set down the tendency to swarm as a pretty serious objection against contraction.

"Contraction stops raising a horde that will be too late to be of service in the harvest, and will help consume that harvest after it is gathered." I confess I have been gradually losing faith in that till I have come to the point that I do not believe it at all. Mind I don't say that I know there is nothing in it, only I don't believe there is. The argument is something like this: Suppose the harvest stops July 15.