

pointers. My experience with deep cell foundation, fence separators and plane section is too limited to be of value. But whatever changes we do make I do hope we will not depart from the standard 4½x44 sections. The cost will be too great for an imaginary gain.

NOTES

Foundation should touch the sides of the sections and come to within one sixth of an inch of the bottom bar.

I have used thousands of bottom starters and fail to find much benefit from them. But I have learned this, that if they overlap one-quarter inch or so no harm will result, the bees will cut them to fit and unite them all right.

If holes are found in the septum of foundation the bees lose time and add too much wax in mending.

Feeding back on account of granulating should be discouraged.

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The Scientific Side of Apiculture.

"Science is often said to be theory" while "labor is practice," and many of our successful, hard working men, look down upon those whose mind is entirely turned to the scientific side of a subject without much regard for the practical side of it. The scientist is said to be "lazy" because he wastes valuable time in apparent loafing, that might be successfully employed in money producing labor. It is true that he is always experimenting, trying new things, which fail oftener than they succeed. He spends hours, and days and weeks, watching his bees flying out and in, he tries all sorts of hives and never has two of the same shape. He wantonly destroys entire colonies in costly experiments. In short he make a botch of everything he undertakes. But, after all, it is he who makes the progress, of which we take the benefit.

It was the scientific apiarist who found out that the queen was not a "king," but a mother, and that the drones were not the females, but the male bees. He discovered how the queen was reared and how she mated, and how we could help nature and rear queens artificially. He has taught us why a queenless colony did not succeed and what could be done to save it.

He has discovered that the bee-moth was not the enemy of man's interest to the extent that was popularly believed, and that it was not much more to be feared than

the house-fly, and he promptly showed us how to avoid its ravages among the hives.

It was he who discovered that what the bees carried home on their legs is not wax, but pollen, and that this pollen is necessary to the rearing of brood, and he has taught us how to supply this needed pollen artificially in seasons of scarcity.

It was he who discovered that comb was made out of digested honey and not out of pollen, and that this comb was, therefore, the most expensive part of the habitation of bees. He has sought for the means of returning this expensive material to the bee, after it has been melted up in an undervalued article of commerce, and he has finally succeeded in pointing to us successful methods of doing this.

It was he who found out that success in bee-culture could not be achieved until the entire hive was under the control of the apiarist, and he invented the method of having each comb hung to a separate frame, so that we might take our hives to pieces "like a puppet-show." In this one particular alone there has probably been as much study and as many inventions, and brain worrying trials as on all the rest of the scientific study of bees put together.

It was the scientist also who ascertained and taught us that the drone is fit only for the reproducing function, and that we should avoid raising it in large quantities, that surplus consumed by them in a state of nature should be the share of the hard working apiarist.

Is the work of the bee-keeping scientist over? No, not any more in bee-culture than in electricity, or in farming. We might as well say that we have reached perfection and that nothing more remains to be learned.

To increase production by new methods, to improve our bees by selection, to breed races with longer proboscis and greater prolificness, to produce red clover with shorter corolla, so that our bees may derive profits from its plentifulness throughout the land are a very few questions of the day.

But there are probably many improvements to be made of which we do not dream any more than we dreamt of talking to our friends at the end of a wire forty years ago. Progress is so sudden and so unexpected in all things that it is quite probable that the next century will reveal as much novelty and as much advancement in our line as the past century has brought forth, and we may achieve in bee-culture as wonderful things, compared to the past, as has been achieved in