

few places that the bees can annoy the apiarist by their free use of propolis. The T rest section crate as well as the closed end frame must go.

Now, the hive that comes the nearest filling the bill is the Combination, manufactured by the D. A. Jones Co. Some of the details could be changed to improve the hive, but for a cheap, simple, serviceable, handy and complete hive it has no superior.

There are some other good hives but I know of none that come nearer the requisites of a general purpose hive. When well made the section supporting honey board is just the thing, while the portable super is excelsior. With it, all the manipulation practicable and necessary in the production of comb honey, is possible. There is just one thing more to be added to make the hive complete and that is a convenient case to pack the hive in spring and fall. Something cheap and yet servicable, and having a neat appearance, for nothing can appear more untidy than many of the devices used for packing hives in.

EXPERT.

#### Method of Making Honey Vinegar.

IN the American Bee Journal of August 8, 1888, I had an article on "Bee work," and in the same I gave a method of making honey vinegar. Even to this date I receive letters, asking further particulars for making the vinegar. Instead of answering these communications individually, I will write an article for the bee journal on the subject, and refer my correspondents to the same.

When I wrote the former article, I made a honey vinegar only for our home market, and had it put up in barrels, and some in bottles. It was retailed at 50 cents per gallon, and 25 cents per bottle. The grocer paid me 30 cents per gallon and supplied his own vessels. The bottles had a neat label, printed in your establishment. I was not able to meet the demand for the article a year after its introduction, and of late have ceased making it, except for my family use, in consequence of ill health.

The vinegar is made as follows: Take 15 pounds of honey, 8 gallons of warm soft water, 1 pint of yeast. Mix well, and let it ferment in an open vessel, covered with cheese cloth. After it has fermented for about a week, make a mixture of 6 ounces of alcohol, 6 ounces of chemically pure acetic acid, one-half ounce of tincture of cardamom, in 2 gallons of soft water, and add it to the vinegar that is in a state of fermentation. The tincture is to go into the

alcohol before the water is added. If the vinegar is kept in a dry, warm place, it will be fit for use in about a month.

Only enough cardamom is required to give it the slightest taste, without revealing its character. The crude, commercial acetic acid will spoil the preparation, and will not be healthy, whereas the pure acetic acid is not only very pleasant to the taste, but makes a healthy vinegar.

This vinegar has been pronounced superior to any of the expensive foreign vinegars introduced in this city.

In making honey vinegar, I used the extracted-honey less than the washings of the cappings, honey vessels, etc. But whatever kind of honey you use, let it be free from all impurities. Do not depend on the process of fermentation for purification.

In using the washings there is only one way to determine when the honey solution is strong enough for making vinegar, and that is to ascertain its specific gravity. First, take the specific gravity of the standard solution given above—that is, 15 pounds to 8 gallons—and mark the meter at that point. Afterwards, you regulate your washings until you have reached the standard mark. It must be remembered when the solution of honey, (alone) is too strong, honey itself being a powerful antiseptic, it will not assume an acetic fermentation, but only the vinous.

In making honey vinegar, I have a secret worth keeping; and that is, if you once have good vinegar in a barrel, it will take the washings for a long time, leaving always good vinegar to draw from—that is, for family use.

Since I make honey vinegar only for my own family use, I resort only to the washings, and throw the fluid into an open vessel. In place of acetic acid and yeast, I effected the primary fermentation by dropping into the solution a part of a Mexican vinegar plant, that was sent to me for experimental purposes. Afterwards, I added the alcohol and cardamom as before. It made a very strong, superior vinegar, and I have kept up the supply for over a year by adding washings, as they happened to be on hand. The only objection the family had to it, was that it was too strong, and contained too much acetic acid. The fact is, there was not a drop of acetic acid put into it, and simply by adding water we find all objections removed.

I know nothing of the botanical name and nature of this Mexican vinegar plant. I was told that in Mexico and Southern Texas it was very much used for making vinegar.—S. P. HACHENBERG, M. D., in A. B. J.

Austin, Texas.