

ian and Syrian drones gave much better results than those mated with pure Carniolan drones. We found too that the Syrians were much improved by their cross with the Carniolans. The progeny from this strain seemed to seal their honey nicer and when finished had a whiter appearance than combs sealed by pure Syrians and the fact of having a part Carniolan made them gentle and more easily handled, while their honey gathering qualities were not injured but rather improved. We experimented considerably with pure Carniolans and with the different crosses; we found invariably that the crosses proved to be the better bee. We found that while the Carniolans worked with considerable vim and stored lots of honey when it was coming in rapidly, in a poor season 'when the yield was short they seemed to feel less inclined to work and they would gradually slacken off. We did not observe this slackening to anything like the same extent with the Carniolans which were crossed with Italians or Syrians. The pure strains seemed to lose their energies. We consider a cross between Carniolans and Syrians better than a cross between the latter and Italians. With the last mentioned cross there does not seem to be sufficient of the stinging propensities removed, but when they are crossed with the Carniolans they are about as gentle as the Italians. We found that first crosses were more valuable than second, but by careful selection the latter gave excellent results. We feel satisfied that for all purposes we can get better results from careful selection and breeding of crosses than from any of the pure races that we have yet handled. We say this with more experience to back up the statement than perhaps any other bee-keeper has ever had with pure races. We believe that better results will be obtained by a more frequent exchange of queens amongst beekeepers at a distance infusing new blood into the apiaries. With bees as with other stock we are satisfied that in and in breeding destroys the energy and vitality. We have found the plan of breeding queens in our own apiary and introducing them into colonies at our out apiaries. Our readers will understand that in taking up the different crosses we are perhaps talking against

our own interests financially as we have perhaps done a larger business in pure races than any other queen raiser in the country, but we prefer to recommend what we think will be found the best in the interests of the bee-keepers who desire to make money out of the business. That splendid results may be obtained from pure colonies is past question. This may be obtained from any race but the season and the strength of the colony has a great deal to do with it. Our recommendation is based on a general experience taking good seasons with poor ones and *vice versa*.

American Apiculturist.

#### IN-BREEDING.

THIS article which we copy from the *American Apiculturist* is a timely one and comes in very well in connection with our reply to Mr. Michner, which had been in type before the *Apiculturist* came to hand. Dr. Tinker is known to be a careful observer, and his success in the bee business in the past warrants us in saying that a good deal of confidence can be placed in his opinions, wherever he expresses them.

From the answers given to query No. 38 in the November issue of the *Apiculturist*, by a number of our ablest writers, it would seem that I stand almost alone in my views on this subject. However, it is evident that we have much to learn yet; that, as Mr. Alley so well states, it is "a question that upsets all hands." That its proper solution will have a vast influence in developing the best bees of the future I am fully persuaded, and everything bearing on this topic should be of interest.

In developing a new strain of bees I have for the past five years devoted special attention to the effects of in-breeding and have studied the matter in all its bearings. I have had many queens mated to brother drones of which I have been certain; so also I have had queen daughters mated to the parental drones (which latter is the worst possible cross) and in all cases have carefully noted results, and particularly the subsequent crosses in this line. Hence, I shall give my views with some degrees of confidence in my conclusions.

In the first place it is plain that the objects sought in breeding a superior bee are not of the same nature as those sought in improving cattle and horses and other farm stock. It is true we may develop larger bees with slight modifica-