waste, so far as the honey crop is concerned, because the bees which we now have are unable to reach the honey. An experiment of the United States Fish Commission on the breeding of fish suggests to me still another possibility in the breeding of bees. According to a recently reported interview, Mr. D. E. Crawford, of the United States Fish Commission, stated: "We have little doubt now that before two more years we shall have evolved what the seaboard public has been clamoring for for so many years—the boneless shad. Of course I don't mean a shad that is actually boneless, but one that will be to all intents and purposes as boneless as the flounder of this country or the sole of England. This will have been accomplished by the cross breeding of the shad, the flounder and a peculiar edible jelly fish which is a staple food among the seacoast natives of Japan.

Our experiments, while at first rather discouraging, now leave but little doubt of turning out successfully. At first the crossing resulted in the production of a lot of jelly fishes with an elaborate outfit of bones, which was just what we did not want; but time and study showed us our mistakes, and now we have a few hundred half-grown shad with less than 18 per cent as many bones as the ordinary sort.

A few years ago, when the belief in the unalterability of species both of animals and plants was generally accepted, the attempt to alter the bony structure of the shad would have been regarded as a hopeless undertaking; but now that so much has been accomplished, no one can say what the limit of possibility is. Professor Goodale, of Harvard University, predicts the time when fruits of all kinds will be produced without seeds. There is ground for hoping that this result may be attained in the fact that the banana regularly grows without seeds, or rather with only rudimentary seeds which appear as dark specks in the fruit, and so do not interfere in the least with our enjoyment of eating the fruit; and if these rudimentary seeds are planted in the ground, they refuse to germinate. Occasionally also an orange is found without seeds, and there are many other facts which give good reason to believe that before many years we may enjoy the pleasure of eating seedless fruits of several kinds.

If we are to have boneless shad and seedless fruits, it does not seem too much to hope that we may also have a race of stingless bees. It is said that there are at least two distinct races of stingless bees in South America; but these races have not much value as honey gatherers, and moreover they build combs with very thick-walled cells, and probably they would not be worth cultivating as compared with the European, Asiatic, and African races. But there is apparently as good reason to hope that these races may be used to give their one good quality of stinglessness to our common races as there was that the flounder and Japanese jelly fish could be used for the improvement of the shad.

If we can cross our present races of bees with the giant bees of India and obtain a race with long proboscis and perhaps increased size (if that should prove to be of any advantage), and cross this improved race with the South American stingless bees, and by these crosses secure a race with all the good points of the Italian bee, with the additional feature of a lengthened proboscis and with the sting taken away, we shall then have a race of bees which it will be difficult to improve. It might be desirable to improve still farther by breeding out the swarming instinct, and there appears to be no reason why the swarming instinct cannot be bred out of bees as thoroughly as the sitting instinct has been bred out of certain races of domestic fowls; but now that swarming can be so thoroughly controlled by the use of queen traps and automatic hivers, this point is not as important as it would otherwise be.

Of course no one knows as yet whether it will be possible to secure a cross between our common races and those of India or South America, and no one knew whether a cross could be secured between the shad and the flounder until the experiment was tried; but now that the experiment has succeeded, the process seems so simple that we wonder why it was not done before.

It seems to me that this matter is of sufficient importance, and the prospect of success sufficiently great, to justify the agricultural department of the United States in undertaking the cost of the experiments. The cost to the government would be trifling in comparison with the benefits which would be gained if the experiment should be successful; but very few individuals who are competent to do the work would have the means to carry out the experiments at their own expense, because a residence of a few years in South America would perhaps be necessary in order to study the habits of the stingless races in their native country; and to do this it might be necessary to domesticate the bees, if this has not already been done.

I have not seen the statistics of the last census; but according to the census of 1880 the honey crop for 1879 amounted to twenty-five millions pounds, or about half a pound for the year to each inhabitant of the United States. At an average price of ten cents per pound. the value