

The Apiary.

Introducing Queens.

The method that will allow the new queen to be introduced the soonest after the old one is removed, is the most desirable. Quinby says: "In introducing queens, four points are necessary to be observed.

1st. That the hive contains no queen or queen cells.

2nd. That the bees are all induced to fill themselves with honey.

3rd. That the queen is pervaded with the same scent as the bees to which she is introduced.

4th. That she be introduced in such a manner, that she will not be hastily met as an intruder."

If we have any queens we wish to remove, and have laying queens on hand to introduce, we proceed as follows:

Open the hive containing the queen you wish to remove and draw out one of the frames, looking it over carefully for the old queen, shake the most of the bees off the comb into the chamber of the hive, or a box for that purpose, placed a little in front of the hive; now proceed with the remaining frames as with the first, and as soon as the old queen is found, destroy or cage her. By this time you should have bees enough in the box for a fair sized swarm. After taking some honey in a tablespoon from the hive, close it up again; now roll the new queen in this honey, until she is thoroughly daubed, shake the bees in the box together, and drop the queen among them. The bees will commence cleaning the honey from the queen, when they should be turned out upon a board in front of the hive, so that they may easily enter the hive, and all is done. You may safely introduce a queen and the bees did not know it. The reader will plainly see the advantage derived from the brood rearing, time and work, by following this method.

To introduce a queen into a hive that has been queenless for several days, we would first give the bees a good smoking, also the new queen; open the hive and proceed as above, only destroying all queen cells as you proceed; as soon as the hive has been closed give the remaining bees more smoke and watch the proceedings of the bees and queen in the box. When the bees have partially cleaned off the queen, give all another smoking and turn the bees out in front of the hive as stated before.

To introduce a virgin queen into a hive that has been queenless for several days, take a good sized queen cell, cut it open on one side, by cutting lengthwise of the cell with a sharp knife. Place the queen in the cell, close it gently, using great care not to harm the queen, and seal it up with a thin piece of wax, slightly warmed, so that it will stick; insert it in the hive with as little confusion to the bees as possible.

In practicing the last named methods, we may lose now and then a queen, but we consider the loss small, compared with the loss of time in brood rearing, as with the plan of introducing by caging.

We have also introduced many queens that are just hatching, by laying the cell at the entrance of the hive and allowing the queen to crawl out and enter the hive at her will, and we do not remember losing a single queen; but in such instances, they were introduced into queenless colonies, that were composed mostly of young bees.

G. W. H.

Honey.

Honey is the first sweet known, and is composed partly of natural grape sugar, contains some pollen, and is stored by the bees with but little, if any, alteration. The value of sugar as an article of food is very great; it assists in the production of heat and fat, but does not enter into the solids of the body. When starch is taken into the body, it is largely converted into sugar. Sugar is very digestible. The odoriferous qualities of honey are an important element in it; they are generally valuable, though sometimes injurious; such cases are generally due to an idiosyncrasy in the person. Cane sugar is the purest form of sugar. Honey is very valuable in some cases of sickness. If honey is adulterated with glucose, the fraud may be detected by the use of a warm solution of barium, which, if mixed with it, will cause a milky appearance. The honey should be thinned with water, which should be perfectly pure; if there is lime in it, the effect will be the same, although the honey may be pure.

Honey Wine.

Mr. Quinby, says the *Bee-Keepers' Magazine*, "has succeeded in producing a wine from pure honey rivalling, if not excelling, in all desirable qualities the imported wines. This wine has been submitted to experts, druggists, physicians and wholesale importers, and all, so far as we know, have expressed themselves as surprised and gratified, and predict that this discovery is destined to work a complete revolution in the bee-business, greatly in favor of the honey producer, as it turns much of his produce into an entirely different substance, and hence necessitates a larger supply."

Agricultural.

Roots and Cereals for Feeding.

The subject which I am about to discuss is in no way a small one for any person who has had an experience in beef making to dwell upon, and since the farmers of Canada are going more into the raising and fattening of cattle for both the home and foreign markets this is an important question to consider, for in time a large portion of the farming community is going to depend upon this branch of farming as one of its chief sources of money-making, and as it is just now that the farmers are beginning to see it, it is very essential that they should know which will yield the most profitable returns—roots or cereals?

Now the answering of this question depends upon two conditions.—First, whether you want to make your profit by the direct returns of your cattle, or, secondly, whether by increasing the value of your land. We shall discuss the former first.

When the analysis of roots is considered, we find that they do not contain more than 10 per cent. of flesh and fat, the remainder being water and other liquid ingredients; while on the other hand, if we take the cereals (by these I mean peas, oats, corn and barley), we find that they contain 80 per cent. of real flesh making material, and by experimenting it has been found that we can generally calculate on getting one pound of flesh from any food that has 10 parts of dry substances in its composition. Thus, 100 pounds of turnips or mangolds, having as much as 90 parts of water, will only give a pound (and not always) of flesh; while the same amount of cereals, only having 13 per cent. of water, will give 10 pounds of flesh; evidently showing that the cereals rank the highest in flesh making properties.

But what does this mean with our Canadian farmers—all grain and no roots? No, not by any means. Roots are as necessarily essential in the feeding and fattening of cattle as it is itself to mixed farming.

Supposing we take an acre of grain and an acre of roots, both first-class crops, and grown on the same kind of land, the roots will yield 700 bushels per acre, and we may average a crop of cereals at 35 bushels per acre. But then some may say that this is a rather high estimation for cereals. But 700 bushels of roots to the acre is also a good crop, and if you take the yield per acre of each of the cereals, add them together, and take the mean, you will find that I am not far astray. Then, since we know that from any food having 10 parts of dry substances in it we can obtain one pound of flesh from every 100 pounds of the material; therefore, the 700 bushels of roots, or 42,000 pounds, would put on 210 pounds of flesh, and the 35 bushels of cereals, or 2,100 pounds, would put on 210 pounds of flesh, as it only takes 10 pounds of cereals to put on one of flesh (averaging a bushel of each at 60 pounds). Thus from this we see that more flesh can be obtained from one acre of roots than there can from one acre of cereals; but then it must be remembered that we are not considering the value of the straw obtained from a cereal crop and the amount of roots that generally rot during the winter and spring, which would in both cases be in favor of the cereals. But then there is another point we have to consider in connection with this, and that is, How much flesh making material can an ordinary sized fattening animal consume in a day?

Now an animal of this stamp could consume two bushels, or 120 pounds, of roots per day, and there being one-tenth of that flesh making material, would give 12 pounds. Another animal of equal qualities could consume three gallons of meal, or that means 20½ pounds of flesh making material. But any person that has had any experience in the feeding of roots will know that if they are fed alone the animal to which they are given is apt to

scour and consequently not put on any flesh; and, moreover, it takes the larger part of the 12 pounds of flesh making material to keep up the working of the animal's system, and leave but very little to store away to increase the individual's weight; while with the cereals we have 20½ pounds of flesh making material, of which the larger portion goes to form flesh.

Now in discussing this question manure must also be considered.

When the use of farm-yard manure is considered as a fertilizer its value is unknown, and some farmers venture to say that it is the main source of profit in this most important branch of farming. It is a well-known fact that there is a larger quantity obtained from an acre of roots than there is from an acre of cereals, but while the roots are ahead in quantity they lack in quality, but not enough when the two things are compared to bring them down on equal footing with the cereals, for we could not expect the cereals to take the lead in this owing to there being less bulk per acre and also a larger amount of solid substance in them, most of which goes to increase the animal's weight and to keep the system in working order.

It is well known that the cultivation of roots is necessary in all good and successful farming—that is in districts where you can reckon on a fair crop. But at the same time I would venture to say that it is carried in some cases to extremes. By this I mean farmers that grow too many according to the amount of stock they have to consume them, and also as regards the condition of their farms. I have known some to put one-fifth of their land under root cropping for feeding purposes, and then only having a small number of animals, according to the proportion of the roots, to consume them, and probably feed during the winter a bushel and a-half to two bushels per day to an animal. Well, now, this on heavy land, where a proper rotation of cropping is adopted, in my estimation, is not essentially needed, for when we consider that roots are not really flesh makers the amount of labor required to grow them and the trouble in storing them, also the large number lost by rotting every season, they do not prove such a profitable crop as many make them out to be, and it would not be advisable for any farmer that has a heavy farm and in good condition to put too large a portion of it under a root crop unless he fed a large amount of stock every winter, nor would it be advisable for a farmer whose land was in an exhausted condition to put too small a portion of it under roots, for on a farm of this condition summer fallowing and cultivating roots is one of the best modes to clean and increase the value of it.

But a question may here present itself to the mind of the reader—Which kind of roots are the most profitable to grow?

The principal kinds grown in Canada are turnips, carrots and mangolds, but a great deal more turnips than mangolds, which is a bad mistake, for experimenting shows that mangolds contain more nourishment, yield as well per acre, keep longer, and are better for spring feeding (especially for cows, also ewes after lambing), than turnips, and are not so liable to be eaten off by the fly when first they make their appearance through the soil. The only disadvantage being that they are not safe to feed until two months after being taken out of the ground. And it might also be hinted, as I have touched upon this point, that salt as a fertilizer is very beneficial to their growth.

Now, before concluding, I will say that while roots have no great feeding properties in themselves, they increase the value of other hard foods when fed in connection with them, and on the other hand cereals containing a large amount of flesh making material seem to want something to feed with them to keep the animal in proper trim for fattening purposes, and this is the work which the roots perform.

I think I have now discussed a few of the most important points which go to show that stall feeding cannot be carried on with success without the aid of roots, either to the farm or the animals themselves; although the larger portion of the flesh is put on by the harder kinds of foods there is a certain amount of roots required to do it successfully.

W. E. P., Guelph.

Speaking of the monster roots with which British seedsmen still astonish the gazers at shows, the *Gardener's Chronicle* says: "The weight in these cases is mainly due to increased relative quantities of water which might be desirable in a melon or a cucumber, but which is not required when the product is intended for more substantial use."