

their factory would reason this matter out for themselves, give their maker a rate with which he can afford to send all milk home which will not make first quality of cheese, and tell the patrons that they were the losers in cases of any losses from bad flavor, that we would have no more trouble in obtaining good, pure milk, such as is necessary for the manufacture of first-class cheese.

"A CHEESEMAKER."

APIARY.

Spring in the Apiary.

BY MORLEY PETTIT.

It is high time for the apiarist to plan for setting out bees if they are in cellar. The first favorable day in April is the time. Let the day be bright and comparatively calm; thermometer not below 50° F. in the shade. The stands should have been arranged last November, as soon as the bees were put in the cellar, but if this has not been done, clear away the snow (if any remains) enough to level the stands on the ground. Be sure they are level from side to side and about one inch lower in front than behind. An inch block tacked on one end of the spirit level for this purpose is very convenient. The stands may be set on four bricks and then adjusted with small blocks of wood. Some set the hive directly on the bricks. Examine the hives occasionally during early spring to see that the frost going out of the ground does not leave them tipped up.

Now, a word as to the arrangement of the apiary. Every hive should be as convenient to the extracting room as possible. In all our work we must study short cuts, in order to accomplish as much as possible in the limited time at our disposal. The hives should be on separate stands, not on a single plank or bench. Bees are so sensitive to jars that one must be able to disturb one a little without disturbing the whole row. Then they must be far enough apart, either in pairs or singly, to allow the operator to stand beside the hive while manipulating combs. To set them in straight rows ten or twelve feet apart, leaving 20-in. spaces between hives in the row, is a very economical and convenient arrangement. A row that is long, however, becomes confusing to the returning bees. In the apiary of the present writer, the space allows some of the rows to contain fourteen hives so spaced; but the tenth hive is omitted from each row, leaving a path through the yard. To further relieve the monotony, two boxes are set in the row between the third and fourth and the sixth and seventh, and allowed to project beyond the entrances. Thus the workers and the virgin queens have less difficulty in locating their homes; as far as possible, the hives face southward. Bees do better if the hives are shaded in summer; hence it is advantageous to locate the apiary in an orchard, provided the limbs do not hang too low and the ground is not to be cultivated. The rows should be arranged with a view to giving the bees a clear way out between the tree-tops while working, and especially not across the public highway.

In removing them from the cellar, some of the leading speakers at the Ontario convention recommended setting out only a few hives daily, the reason given being that when a great many bees are liberated at once they are apt to become excited and "drift" to one part of the yard, nearly deserting many of the hives and overcrowding a few. That has not been the writer's experience; in fact, he sees strong reason why they should all be set out on the same day. On their first day the workers, engrossed with their cleansing flight and the novelty of their changed circumstances, give little thought to robbing or warding off robbers. The next morning, however, they are ready for business. Now set out more bees, and they fall an easy prey to the first. But, if all have an equal start, all have guards posted on the second morning, and the robbers have a poor chance.

Even then, some are weak, and some by nature defend themselves but poorly, and eternal vigilance must be exercised to ward off robbing, for "an ounce of prevention is worth a pound of cure." Then, too, one should encourage breeding by sheltering the hives from cold winds, and providing clear water, containing a little salt (about a teaspoonful to ten or twelve quarts), in a sunny, sheltered spot in the apiary. This, by the way, if kept up all summer, will make the bees better-natured, and also keep them away from where the cattle and horses are watered. A wooden pail and a ten or twelve foot piece of matched flooring will make the fountain and trough. In the side of the pail, close to the bottom, bore a hole and insert a plug perforated longitudinally with a gimlet. A nail placed loosely in this hole will regulate the flow of water. Adjust the board edgewise, groove upward, with one end beneath this spout and the other slightly lower to cause the water to flow slowly down the groove after it drips from the spout of the "fountain." One who has never before tried this simple device will be surprised how the bees gather on the edge of the trough. Although the water always runs, the trough should be washed out each morning. Cover the pail with a board to keep out the sun.

GARDEN AND ORCHARD.

Growing Fruit Trees from Twigs and Branches.

It will probably be generally conceded by your readers that we have a sufficiently large variety of apples, pears, plums and all other kinds of fruit. What we need now is some mode of improving the qualities of our varieties, and one great improvement would be the elimination of the seed or pit in the fruit. We have an almost seedless peach in this part of Canada; we import a seedless orange, and in Persia they grow a large, thin-skinned, seedless grape. These results are obtained by growing peach trees, orange trees and grapevines, not from seeds, but from slips. The writer was told, in June last, that in Florida and in California all fruit trees are grown from the slip, and since then this information has more than once been confirmed. Can we do the same thing here? The writer's experience so far is thus: When told of what happened in the places named, he secured some branches, about half an inch in diameter, from several kinds of fruit trees, and planted them in earth and water in a barrel sunk in the ground. The season was so far advanced that he looked for no satisfactory result, but one of the branches (an apple) put forth new leaves, after the leaves which were on it at the time of planting were very nearly dead. It had on it a dozen or so of fresh young leaves when the weather became very warm and the earth and water sour, there being no hole in the bottom of the barrel, and the barrel had, for health's sake, to be removed. On pulling up the slip on which the leaves were growing, it was seen that roots had formed. This was encouraging, and this spring he intends, as soon as the frost is out of the ground, to try it again and on a larger scale. He will plant slips of different sizes, for experiment, of as many different kinds of fruit trees as he can obtain, including the mulberry, and, with the permission of the editor of the *ADVOCATE*, will make known the result through these columns. Will not a number of the readers of this valuable journal also experiment? Besides the benefit mentioned above as to be obtained if we can raise our fruit trees in this way, other two benefits will also be ours—1st, our fruit trees will cost us nothing, and, 2nd, we can be quite sure of our variety, for in this case no grafting is necessary, and the new trees will certainly be of the same variety as the parent tree.

The results to be looked for are of such great value that it will be unwise on our part not to try to reach them, and the writer hopes he will only be one of a great many in all parts of the country who will, to the best of their ability, make the inexpensive experiment.

W. M. FLEMING.

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Manures for Lettuce.

Prof. S. C. Plumb, Director of Indiana Agricultural Experiment Station, reports, in Bulletin No. 84, a series of trials conducted by him between chemical and stable manures in growing lettuce in a forcing house.

Some of the advantages of chemical fertilizers may be briefly summed up as follows:

1. They are not so bulky, hence the cost of handling is very much lessened.
2. They may be so combined as to contain approximately the right amount of the three elements essential to produce a maximum crop, hence they may be termed a more balanced plant food than stable manure.

3. They are not so conducive to the growth of fungous diseases in the forcing house as stable manure.

The disadvantages, if such they may be termed, are practically none to one familiar with their use; to the uninitiated they might be legion. The principal disadvantages would be included in the following list:

1. A too liberal use of chemical fertilizers is almost certain to prove disastrous to the growth of the plants, hence the novice is either deterred from using them, or else in using them he does not take into account the fact that they are such highly-concentrated plant food, and thereby ruins his crop.
2. Their cost is sometimes a serious drawback to their use; especially is this true when stable manure may be had for the hauling.
3. They do not, as a rule, improve the mechanical condition of the soil.

Where stable manure can be procured at little cost, it may not be advisable to discontinue its use in the forcing house, but it is believed that even then the addition of some form of phosphate and potash to the manure will enhance its value to the plants.

The results obtained from the several experiments enumerated seem to invite the following conclusions:

1. That in order to study the action of the three essential elements of plant food, nitrogen, phosphorus, and potassium, a soil must be used that is fairly deficient in plant food.

2. That potash when used in any considerable amount, either alone or in connection with nitrate of soda, produced conditions unsuitable to plant growth.

3. When phosphoric acid was used alone or in connection with nitrate of soda or muriate of potash, even in large amounts, a marked increase in the growth of the plants was obtained.

4. The muriate of potash proved somewhat

superior to the sulphate; the increase in each case being but slight.

5. But little difference seems to obtain in the efficiency of different forms of available phosphoric acid.

6. In each instance chemical fertilizers proved slightly superior to stable manures.

7. The application of liquid fertilizers from below by the sub-watering method proved perfectly feasible and gave satisfactory results.

8. Nitrate of soda gave quicker returns than did dried blood, and seems best adapted to lettuce culture.

9. The sub-watered plants made a better growth than the surface-watered ones.

The Cherry.

BY JOHN B. PETTIT.

Taking the past season through, the prices obtained by the horticulturist for his products were somewhat higher than for two or three years previous, and the industry has assumed a more promising aspect. But it must be remembered that the two main reasons for this change are the great quantity of bearing stock that was killed in some sections two years ago and the comparatively light crop of last season. The time has now come when some of those who contemplate planting this spring will be somewhat undecided as to what kind of fruit to plant, that the investment may prove a paying one for the future. By taking but a very little time and looking over the market reports of the last few years, we find that no other fruit has sold as high as has the cherry, and often when other fruits have been a "glut," the cherry has been in brisk demand, and it is quite evident that this fruit will bring a good price for years to come.

There are several reasons why the cherry should be planted extensively. In the first place, it is a fruit that has been tested in nearly every district, and has been found to be hardy and productive. It seems singular that a fruit so delicious and well-known should be so neglected as has been the case. A few years ago nearly every farmer had his cherry trees and his annual crop of cherries. But, as is the case with all our other fruits, the cherry became subject to pests, and the thousands of trees throughout the country were destroyed by black knot, and those trees that escaped this, had their fruit ruined by curculio, aphids, rot, etc. When these pests first introduced themselves, little was known of how to combat them, but experience has taught that with the fungicides and insecticides now in use, they can be destroyed quite easily.

Another reason why the cherry should be extensively planted, is its simplicity of culture. It is only necessary that some varieties be planted; they are certain to thrive, and in a few years give an annual abundant yield. This we do not say is the proper treatment—far from it—but it has been the treatment that the average cherry tree has received in the past, having a situation along some fence in stiff sod, or beside some building, where it could neither get sufficient sunshine nor free circulation of air, and yet, in spite of all, it grew and bore, and bore abundantly. What, then, might we expect from proper location, care, and cultivation?

It has long been thought by many that it is an impossibility to succeed with the cherry unless it could be given a situation in the richest sandy soil. While the Heart and Bigarrea types do thrive in such soil, it is not absolutely necessary to success. The great secret of success with the cherry is to have a well-drained, dry soil, and although a stiff, hard clay is not desirable, any good loam will do. It is a good plan to plant cherry trees a few feet from a ditch, where the water will be kept drained from the roots, as "wet feet" is certain death. One of the finest rows of cherries I ever saw was planted in a black clay loam, along a ditch about 2½ feet deep, the trees being about 8 feet from the ditch.

There are two classes of cherries: (1) *Prunus Cerasus* (sour) and (2) *Prunus Avium* (sweet). Duke and Morello go under class 1, and Heart and Bigarrea under class 2. The Duke and Morello cherries are, for the most part, round shaped; the flesh generally acid or sub-acid, though the flavor of some varieties is very pleasing. The trees of this class are naturally of smaller growth than those of class 2, and the Morellos in habit are more slender and spreading than the Dukes, these being of an upright, vigorous, stocky growth. The Heart and Bigarrea varieties are of very rapid growth, with large, glossy leaves, and the trees form into large, pyramid-shaped heads, making an excellent appearance and producing luscious fruit of a heart shape. Among the Duke and Morello types, the following are probably the best and most profitable: Early Richmond, May Duke, English Morello, Reine Hortense, and Ostheim. Of the Heart and Bigarrea types, one would make no mistake in selecting the following: Black Tartarian, Gov. Wood, Napoleon Bigarrea, Yellow Spanish, and Elkhorn. Cherries of the Heart and Bigarrea types are more difficult to manage successfully than those of the Duke and Morello types.

Cherries should be planted from 15 to 20 feet apart and carefully worked. If any trace of black knot should appear, it should at once be cut out and burnt. When trees come into bearing, the spray pump must be used to fight fungi, curculio, etc., and the soil fed as required to sustain growth and crops. If these few hints are followed, the cherry will be found to be profitable, and it will again take the place among our cultivated fruits it so justly deserves.