

Cover Crops in Orchards.

The cover crop for orchards is a comparatively recent invention, only brought into prominence in the last decade or so, since the cultivation of orchards became common. Yet it is already widely recognized as a valuable feature in orchard management, and though, like every other good thing, including honesty, it is not used as much as it should be, it is gaining in favor with each year.



FIG. 1.—ORCHARD OF MR. J. ELLIOTT SMITH, OF WOLFVILLE, N. S., SHOWING CLEAN CULTIVATION DURING EARLY PART OF SEASON.

In the old days, when orchard lands were not even plowed, and when the hay which grew in the orchard was of more value than the fruit crop, there was no opportunity to use a cover crop, the land being perpetually "covered." But since the "strenuous life" which U. S. Vice-President-elect Roosevelt advocates for man has been extended to the apple tree, and orchards have been called upon for larger crops and better fruit, the need has been felt for something which should check the luxuriant growth induced by cultivation and fertilization, and lull the orchard back to rest before the coming of winter. This need has been met by the cover crop.

Almost every plant that will grow upon land has been made use of for this purpose, the commonest being weeds, and the best, perhaps, some kind of clover. Yet, whatever the plant used, if it is properly used, it is of value to the orchard. The commonest and best method is to plow the land in the spring as early as the soil is in proper condition, and, by thorough cultivation throughout the early part of the season, to keep down all weeds and put the plant-food of the soil in the best possible condition for the use of the trees. It doesn't require much judgment to appreciate the fact that if you are growing apples or pears on a piece of land, it is poor economy to let a part of the plant-food which might add to the size of the fruit be used up in forming luxuriant couch grass or vigorous rag-weeds. Every orchard, from the time it is plowed in the spring until midsummer, ought to be as nearly as possible in the condition shown in cut No. 1. The soil is here in almost ideal condition for growth; the particles are finely divided, so that the largest proportion possible of the plant-food is available for use; the top soil is stirred to retain moisture, and there are no plant robbers in the shape of weeds. But there comes a time when these conditions are no longer conducive to the best interests of the orchard. By midsummer the new growth of wood and leaves is practically finished, or should be, and it remains only to mature and ripen the fruit. It is then that the cover crop should be sown, and as it grows it gradually takes more and more of the water and other plant-food away from the trees, so that their growth is checked, and by autumn the wood is well ripened and the buds sufficiently matured to winter without damage. Figure 2 represents the same orchard above referred to as it appeared in the autumn after the cover crop of crimson clover was matured. This clover was sown on the 15th of July, using 10 pounds of seed per acre, and by the middle of September it had formed such a mat, along with the few weeds which grew among it, that windfall apples were scarcely bruised when they fell. Moreover, this carpet of vegetation will capture every leaf as it falls and hold it on the land, to be plowed under in the spring along with the clover, thus adding its humus to the soil, instead of being blown into the fence-corners to become a source of infection for "black spot" and other fungous diseases.

It ought, perhaps, to be said in this connection, that not every orchard will produce such a crop of crimson clover as the one shown. The land must be in the best condition physically, and fairly rich, for it to succeed. But if an orchard won't grow clover, begin with buckwheat and educate it up to the point where it will grow clover.

There are other and important benefits to be derived from the use of cover crops, yet the ones already pointed out should convince the man who cultivates that if he has not already adopted them, he needs them in his business. F. C. SEARS, School of Horticulture, Nova Scotia.

VETERINARY.

Contagious Abortion.

In some of the great breeding districts in Scotland and England outbreaks of abortion occasionally assume quite alarming proportions, and some herds have been known to lose quite half the season's calves through this malady. Of late years much has been done to check its ravages by

attention to cleanliness and to the health of the cows, but, like all other diseases which are caused by germs or bacilli, it is very difficult of eradication once it succeeds in getting a foothold on a farm or in a district. It is now well established that the disease is of a contagious character, and is transmissible from one animal to another. When one cow in a herd aborts, every effort should, therefore, be made to prevent the disease spreading, and the best way of accomplishing this is to immediately isolate the animal from her companions and thoroughly disinfect her immediate surroundings. The whole of her afterbirth, as well as the aborted calf, should be buried deeply in quicklime, and the stall in which the animal is kept should be given a thorough course of disinfection. It is now known that the disease can be introduced into a herd (which has hitherto enjoyed immunity from it) through the medium

of apparently healthy cattle, and for this reason some of our most experienced breeders always make a point of isolating newly-purchased cows until after they have calved, lest they should be instrumental in introducing the infection. As a preventive of the disease the practice of sponging the region of the tail and the vent daily with some antiseptic is now followed in many herds where trouble has been experienced with the disease in previous years. For this purpose a weak solution of carbolic acid is the dressing usually applied. M. Nocard, the well-known French veterinarian, who made a special study of this disorder some years ago, found that a very good dressing for use as a preventive of the disease consists of 1½ ounces of hydrochloric acid and 2½ drams of corrosive sublimate in about 3 gallons of water. Animals which have once aborted are very liable to suffer from the same trouble with future calves, and for this reason, except cows are especially valuable, it is inadvisable to breed from them a second time. —Farmer's Gazette.

APIARY.

The Frame.

BY MORLEY PETTIT.

Hive-making has made rapid strides in the last century, and many valuable improvements have been effected on the old straw skep and box hive. Not the least important of these is the movable frame, which enables the apiarist to easily remove any comb or combs, or perform any other of the countless manipulations and exchanges of combs which are necessary in modern bee culture.

Leading up to this invention were movable bars, used in Greece and Candia in the eighteenth century? Della Rocca mentions them in his work, published in 1700, as bars placed across the top of the hive, to which the bees attached their combs. Dzierzon used these bars in 1838, but each comb had to be cut loose from the sides of the hive before it could be lifted out. About the same time Huber invented the leaf hive, which consisted of twelve frames, hinged together so that they formed a hive which could be opened or shut like a book. Here we have the nuclei, as it were, of the two great classes of frames, viz., standing closed-end frames and suspended frames.

Several attempts were made to invent a practical hanging-frame hive, but none were successful until Mr. Langstroth in 1851 discovered the principle on which the modern suspended-frame hive is based (it may be mentioned that Baron Von Berlepsch, of Germany, also invented a hanging-frame hive about the same time). In this hive each comb is built in a frame which is suspended by projections from each end of its top-bar, resting in rabbets cut in the top of the hive. For best

results, the top-bars are flush inch in width, and the frames are spaced 1½ inches from center to center. The spacing requires to be very accurate, as, if it is a little too wide, the bees, wishing to economize space, build in burr-combs, and if it is too narrow, they seem to fear the collapse of their hive, and brace the narrow space very firmly with brace-combs, which are readily distinguishable from burr-combs.

In a well-built hive, with nicely-spaced frames, these burr-combs and brace-combs rarely appear, and the frames when the hive is opened have a clean, neat appearance, pleasant to the experienced eye. But often the top-bars are too thin, and the weight of the comb causes them to bend in the middle and leave the space above too large, or the careless or inexperienced beekeeper does not space the frames nicely, and the top-bars present a mass of burrs and braces.

Despite these difficulties, loose frames are very commonly used, for, by employing a thick top-bar, the sagging can be prevented, and long experience of using the end of the thumb or finger as a gauge enables the operator to space the frames quite rapidly and accurately. To facilitate spacing, some have the top of each hive body "spaced" with marks, which show exactly how each end of each frame must come.

Many, however, have frames with some mechanical device which cause them to space themselves automatically. These are called fixed frames. Ordinary loose frames having thick top-bars are made self-spacing by driving a staple in each side of the top-bar, near the ends, and diagonally opposite. The staples project so that no matter which way the frames are turned they are spaced by simply pushing them together. Another style of fixed frame, the Hoffman, has the end-bars wide at top and touching about 2½ inches down. One side is brought to a blunt V edge, and the other left square so that a V edge comes against a square edge, to reduce propolis sticking and danger of crushing bees. It is said that in localities where there is not much propolis, the Hoffman frames may be handled more rapidly than staple-spaced frames; then, they are held more securely in position in moving bees. Other suspended frames have the end-bar wide all the way down, forming a closed-end frame.

This brings us to the standing closed-end frames, of which the chief are the Quinby and Heddon. The closed-end Quinby has end bars 1½ inches wide their entire length, which fit tight together. They are held in an upright position by a strap-iron hook on one corner of each, fitting into a groove in the bottom board. "With a panel on each side, a cover and a bottom board, the Quinby-Hetherington hive is complete, the ends of the frames forming the ends of the hive, though for additional protection in spring, Mr. Ellwood and Mr. Hetherington both use the outside case to set down over the whole." —A B C of Bee Culture. The main distinguishing feature of the Heddon frame is that it is only 5½ inches deep, but the idea is to use two sets of such frames for one brood chamber.

With regard to dimensions, frames may be classified as square and oblong, but the latter are given the preference, the standard frame for America, the Langstroth, being 9½x17½ inches. In the matter of frames, we are largely creatures of circumstance, but the writer would recommend to beginners a fixed frame of standard dimensions.



FIG. 2.—THE SAME ORCHARD AS IT APPEARED IN SEPTEMBER, WITH COVER CROP OF CRIMSON CLOVER.

"At Ardee I made the acquaintance of a beekeeper who had taken 112 lbs. of splendid honey from a stock simply hived in a box. At Dundalk I found a beekeeper, who accompanied me on my rounds, who had taken honey that season which had brought him the nice sum of £26 10s. 8d., £20 of which was, he said, clear profit. Then at Carlingford I met a lady beekeeper whose monetary returns for three successive years were £35, £20, £27." —Correspondence Farmer's Gazette.