

such conditions as are found on so many of our dairy farms.

It isn't too late yet to use the clippers on the flanks of your herd (although the fall is the time to do it), and by beginning now, a good habit will be acquired for another year. Cleanliness is ahead of godliness; for, if you're not clean, you can't be godly.

L. V. E. SMITH.

Dairy Homogenizer.

The United States Board of Food and Drug Inspection, Washington, D. C., have issued the following report on the use of homogenized butter and skimmed milk in the manufacture of ice cream:

Investigations have shown that there has lately come into use in the trade an apparatus known as a "homogenizer," which has the faculty of so disrupting the globules of fat that a whole milk homogenized does not permit the separation of the cream through the ordinary gravity methods. In cream through the homogenizer form a milk, passed through the homogenizer form a product from which the butter does not separate on standing, and which resembles in its other physical characteristics whole milk.

Investigations have further shown that butter and skimmed milk are passed through the homogenizer to form a so-called "cream," which is used in place of real cream in the manufacture of ice cream.

The Board is of the opinion that skimmed milk and butter-fat in appropriate proportions, passed through the homogenizer, are not entitled to the name of "milk" or the name of "cream," as the case may be, according to the quantity of fat which is present. The Board is further of the opinion that the product made from homogenized butter or skimmed milk cannot be properly called "ice cream."

What to do with a cow that commences to "spring bag" in anticipation of parturition before she has been fully dried off from her previous lactation period, is a question that occasionally confronts owners of persistent-milking cows. The writer's practice has been not to attempt to dry a cow off after this stage has been reached. Our veterinary editor is also of the opinion that, "when a cow milks up to the time the lacteal apparatus is becoming more active, in preparation for parturition, complications are less likely to occur if she be milked right along." What has been the experience of readers on this point?

GARDEN & ORCHARD.

Give the Orchard a Chance.

People will admit that the old orchard should be pruned, plowed, tilled, manured, and sprayed. But it's too much work, they say, and will not pay. Still, in the case of "The Farmer's Advocate" demonstration orchards, where every item of outlay for just such work was charged at day wages, it did prove profitable, because of the increased value of the salable crop. One might not have to travel far in any county yet to find somebody to argue that the apple would thrive as well under sod as under tillage, and so the land lies, growing grass and weeds and bugs. But is a grass mulch as good as an earth mulch and a subsequent cover crop? The New York Experiment Station at Geneva undertook a comprehensive orchard trial to find an answer to that question. At this season it is well that we should be reminded of the result. The apple trees in the trials were Baldwins, 40 feet apart each way, 118 in sod, and 121 in the tilled plot. The soil was a fertile loam, on a sandy subsoil. Except in the soil treatment, the care, such as pruning and spraying, was uniform. The sod plot was seeded with orchard grass, blue grass and timothy, which was cut and left lying on the ground twice in three of the five years, and but once in the other two. The tilled land was plowed each spring, and cultivated from four to seven times, followed by a cover crop sown in summer, of mammoth clover three seasons, and oats the other two. Among the facts brought out were the following:

The average yield on the sod portion for five years was 72.9 barrels per acre; for the tilled portion, 109.2 barrels per acre; difference per acre in favor of the tilled plot, 36.3 barrels.

Actual count showed 434 apples per barrel on the sod lot, weighing 5.1 ounces each, and 309 apples per barrel on the tilled lot, weighing 7.4 ounces each. That is, larger apples.

The fruit on the sod land matured more quickly and was more highly colored than on the tilled portion. But it was like the hectic flush of disease.

In common storage, the fruit from the tilled portion kept four weeks longer than that from the sod portion, but kept about the same in cold storage.

The tilled fruit was of better flavor than the sod fruit, crisper and more juicy.

Both by foliage and wood growth, the tilled

trees were shown to be in a far more healthy condition.

The leaves of the tilled trees came out three or four days earlier, and remained on a week or ten days longer, than on the sodded trees.

The roots of the sod-plot trees came to the very surface of the ground, where they were injured by heat and drouth; while, in the tilled portion, the roots were in greatest abundance at a depth of from 3 to 10 inches.

The root system of the sod plot was irregular, indicating an effort of nature to reach out after moisture and food, and escape the evil effect of the grass roots.

The average cost per acre of the two methods of management, not including harvesting, was \$17.92 for the sod, and \$24.47 for tillage, a difference of \$6.55 in favor of the sod. The average net income per acre for the sod plot was \$71.52; for the tilled plot, \$110.43, a difference of \$38.91 per acre in favor of the tilled portion, or an increase of 54 per cent. for tillage over the sod-mulch method.

Now, briefly, what are the reasons that the apple does better under tillage than under sod? One important reason is that the farmer provides the trees with more moisture, and it is through free water that plants take in their food. The soil of the tilled orchard was better supplied with humus, and was warmer to a greater depth, and better aerated, than the sodded land.

Orchards may thrive in sod, but they thrive in spite of it; and the apple trees do not become adapted to grass. The sodded trees began to show ill-effects the first year the orchard was laid down to grass, and each succeeding year has seen greater injury; while the other plot continued to improve in appearance and bearing.

Moral.—Break up the orchard, and give it a chance for its life.

Alfalfa Ruined Orchard.

Have you had any experience in sowing alfalfa in orchards? I have four acres of a rolling orchard; not many trees in it; in some places, none. Would you think it would hurt to sow, or would it injure the trees?

Ans.—Yes, we have had such experience. We ruined a small plum orchard that way once. The alfalfa was sown with the expectation that it would not be good for the trees, but it proved even worse than we anticipated. Fortunately, the orchard was one we were not particular about, being awkwardly situated, and hard to cultivate. As a cover crop, to be plowed under the following spring, alfalfa is all right, except that it is hard to plow, but it should never be left to make a season's growth. Its deep-ranging root system robs the trees of moisture and plant food.

Mr. Casar, of the Ontario Agricultural College, states these three great reasons for spraying:

1. To keep the trees healthy and vigorous, so that they may live longer and bear better.
2. To prevent the fruit from falling off the trees prematurely.
3. To keep the fruit tree from injury by either insects or fungous diseases, so that it may grade high and bring a high price.

Sound reasons, every one of them, amply proven by results.

APIARY.

Beehives.

By Morley Pettit, Provincial Apiarist, Ontario Agricultural College.

The first hives that were provided for bees were as rude as their natural abodes; and, while valuable scientific observations were taken even with the old straw and box hives, no progress was made in commercial beekeeping until the movable comb hive was invented. This invention was made simultaneously by Rev. L. L. Langstroth, the American "Father of Bee Culture," and by Baron Von Berlepsch, in Germany. The earlier hives were cross-sections of hollow trees, straw or willow skeps, and pottery hives. The latter were earthenware tubes, placed horizontally, with ends closed by movable wooden disks. These are still in use in Asia and Africa. In the Islands of Greece they were sometimes built transversely in stone walls erected for the purpose, or the walls of dwelling-houses. As bees would store honey at the back of such a hive, the disk inside the house could be taken out, and honey removed, without danger from flying bees.

In using the straw or box hive, beekeepers, learning that honey was stored at the top, added a cap or super, replacing the hive ceiling by bars with spaces between. The hives were later divided into several horizontal sections called "ekes." These are mentioned by Butler in 1634. In 1750, Plateau advised perforated ceilings, to be placed at the top of each section; and, in 1821, Radouan replaced these by triangular bars, to which the bees attached their combs. Chas. Soria, in 1845, used these bars at both top and

bottom of each section, leaving bee-space, so that the ekes were not built together with combs, but could be manipulated separately. This was a good forecast of the modern sectional hive invented by Heddon. There are several requisites in the construction of a complete hive which cannot be overlooked:

The first of these is accurate workmanship, and material of such a nature as to render the hive impervious to dampness, extremes of heat and cold, and sudden changes of temperature.

Second.—The entrance to the hive and through the brood-chamber to the super should be such as to require not one unnecessary motion of a single bee. No part of the interior should be lower than the entrance, and the floor should slant towards the entrance to enable the bees to easily remove the refuse. There should be one, and only one, entrance, the full width of the hive, and capable of being enlarged or contracted at the will of the apiarist.

Third.—The hive should permit the free manipulation and interchange of all the combs and other parts without cutting combs or crushing bees. All joints should be close-fitting, but free from bevels or hinges, as the bust workers will make all tight with propolis.

We have sketched the history of hives with immovable combs, which culminate in Chas. Soria's "ekes." Let us turn our attention to those which fulfil condition number Three. In 1790, Della-Rocca, a Grecian beekeeper, wrote of having his bees attach their combs to movable top-bars; but they had to be cut loose from the sides of the hives, and, for example, if the tenth comb was to be removed, the first nine had to come out. Dzierson, in 1838, revived this hive, improved it, and made many valuable discoveries in the habits and physiology of bees by its use. About the time of Della-Rocca's invention, Huber devised 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. The modern "closed-end Quinby" frames are similar to these.

In 1851, Mr. Langstroth invented the top-opening movable-frame hive. In it the combs are built within movable frames, "so suspended in the hives as to touch neither the top, bottom, nor sides; leaving between the frames and the hive walls a space of from one-fourth to three-eighths of an inch, called 'bee-space.'" The dimensions of the Langstroth frame are 9½ x 17½. This is the standard frame of Ontario, kept in stock by all supply dealers, and is generally considered the best style for beginners to adopt.

THE FARM BULLETIN.

Fears Reciprocity.

Editor "The Farmer's Advocate":

In all this controversy over reciprocity, the effect on our great national asset, the fertility of our soil, seems to be overlooked. This is a consideration which properly belongs to an agricultural journal. Reciprocity says a great deal about the better prices for barley, hay, wheat, corn, turnips, etc., all of which are the raw materials of the farmer; and doubtless these will be materially increased in price, with the exception of wheat, which is doubtful for the Ontario farmer. But what do you think will be the effect on the country if we are induced by high prices to go back to the old system of grain-growing for market? The West may stand it for a while, but it is not raw material, but finished products, such as fat animals, eggs, butter, cheese, poultry, etc., which the Eastern farmer should sell. But a careful study of the markets in the United States and Canada will show that there is very little difference in the prices of these products.

The Weekly Sun, after summing up prices for several years back, admits that there is only a slight difference in favor of Buffalo for hogs; and if we take its quotations for New York, and compare them with our large Canadian cities of Toronto, Hamilton and Montreal, we find that the difference is slightly the other way for eggs, butter, cheese and poultry. And we should not forget that the top price in New York is for something very extra, of which Canada, with her present methods of handling, would send but very little, especially butter and eggs.

Leading agriculturists in Ontario are very fond of telling us what strides Eastern Canada has been making under her system of live-stock husbandry. They have declared that the greatest blessing (in disguise) that ever befel us was the abrogation of the Reciprocity Treaty of 1854. Had we not then lost our great grain market in the United States, Ontario would now be like New York State—noted for its abandoned farms and worn-out soil. Is it not foolish to suppose that, if grain crops will bring a relatively higher price than finished products, the average farmer will still cling to the present system? It requires so much less capital and labor to produce and market these raw products that, even at the same profit, the tendency is always to follow that line of least resistance, without considering its effect on the soil. This applies also to the West,