

that it is not the business of the buyer to point out these things. It is his business to purchase the butter and to sell it again at a profit. When he has done that he has no further interest in the matter. It is not so with the creamery owner or the patrons, whose real interest in the butter does not cease until it is finally consumed, because the condition of the butter at that time will determine whether the demand for it will be increased or not; and demand for any article on account of its superior quality is a most important factor in determining the price that will be paid for it. Creamery owners should make sure of having an ample supply of ice for all purposes during the season of 1906.

J. A. RUDDICK,
Dairy Commissioner.

The Dairy Stable.

At this season of the year, when farmers are making plans as to building new stables or remodelling the old ones, a few general ideas might help some to avoid mistakes which would be hard to rectify. A stable to be healthy should be light and well ventilated. The stable should have as much of a southern exposure as possible, and the upper two feet of the wall should be at least half glass; that is, if the stable is sixty feet long on the south side (I like the south-west better, as it gives more afternoon sun) there should be four windows eight feet long by at least twenty-four inches deep.

Do not depend on the windows and door for ventilation; the foul air should be carried off above the stable by means of ventilator chutes. These should be not less than two feet square, and should run directly to the cupola above the peak of the barn. They should not open into the upper part of the barn where the hay is stored, or if they are to be used for hay chutes as well as ventilators, they should be fitted with tight doors, which should never be opened except when hay is being put down; of course, if they are to be used as hay chutes, they should be thirty-two inches square. Ventilators should be supplied with slides or doors at the lower end (i. e., the ceiling of the stable), so that one or more may be closed in cold weather. The windows should be so arranged that the upper sash may be lowered to admit fresh air, especially in warm weather. I have found it a good plan to have two or three sashes arranged with a stick, 1½ inches square and eighteen or twenty inches long, fastened to the upper part of the upper sash by a hinge, and having notches to fit onto the lower sash, so that the sash may be lowered two, four or six inches, as desired. My experience is that we do not need to worry very much about how to let the fresh air in if we will provide plenty of ways to let the foul air out.

Care should be taken that there is no draft under the cow stable, and this is one of the greatest objections I have to a manure cellar under the stable. If cold air is allowed to come up through the cracks in the floor there is danger of milking cows taking cold in their udders, and I have known cows that have been milking for months to have their udders become very badly caked from this cause.

Some of the other things that should be considered are convenience, warmth and water supply. Try to have the roots as near the stable as possible, and on the same level, so that they will not have to be carried up from a cellar. I like a good stone or concrete stable wall the best, but if one has a good foundation there is no reason why a good enough wall may not be built with lumber and building paper.

The water supply is one of the most important of all things to be considered, for cows will nearly always milk in proportion to the amount of water they drink. Certainly, the best way is to have the water always before the cows in basins, so that they may drink whenever they wish; but if this cannot be easily managed, the water should be brought to the stable in some way (pump or windmill or pipe), and provision should be made for watering the cows in the stable most of the winter season, even if they are turned out in the yard for half an hour every day for exercise and air.

Cumberland Co., N. S.

C. H. BLACK.

A Good Milk Record.

To the Editor "The Farmer's Advocate":

The following is a record of five Holstein cows in my herd, for one year, ending Dec. 31, 1905. I would be pleased to see it printed in your excellent paper:

Rank.	Name of Cow.	Age.	Lbs. of Milk.
1	Polly Tensen	6 yrs.	10,314
2	Jean Tensen	4 "	8,518
3	Loretta Springbrook	3 "	8,414
4	Nelly Tensen	6 "	7,422
5	Nettie Staple	3 "	6,688
Average			8,271

FREDERICK STEWART.

Wentworth Co., Ont.

I beg to acknowledge with many thanks the knife which you sent me as a premium. I am well pleased with it, and also with your paper. Every farmer should take "The Farmer's Advocate and Home Magazine." Wishing you every success.

S. A. CUNNINGHAM.

Dufferin Co.

GARDEN ORCHARD.



J. C. Gilman, Fredericton, N. B.

President New Brunswick Fruit-growers' Association.

Apples Suitable for New Brunswick.

Following is an extract from a letter received a short time ago from Mr. J. C. Gilman, of Fredericton, N. B., who is President of the New Brunswick Fruit-growers' Association, and one of New Brunswick's pioneer fruit-growers. He is a very careful orchardist, and a view of his orchard shows clean cultivation with cover crops as his system for obtaining best results:

"We have had a fine fall for work in the orchard. The crop, though not large, improved greatly the last month of growth. The Duchess, Wealthy and Alexander are most generally grown to supply the market with cooking apples till the holidays. Perhaps we have no one variety that is more generally planted than the Fameuse. Hardy in tree, fairly early bearer of showy fruit, and very fine quality; with so many good points we will have to look far to get a better variety for our fall and Christmas trade. The McIntosh is a great favorite with many buyers, and on some soils grows very clean. It generally scabs more or less, in spite of good spraying, but it is too good to drop for that one fault, and must be counted as one of our best varieties. The Ontario has disappointed us, being too tender in tree; top-grafting appears to be the only chance for it here. We are very much in need of one or two good kinds to supply the market after January, for while there are many that do fairly well in a local way, we cannot think of any that would be generally satisfactory. New ones are being tested, and we hope to see some good hardy kind that will fill the bill. With all its drawbacks, cold climate, etc., New Brunswick still offers good chances for many to grow apples, if they will go at it in the right way."

Mr. Gilman raises a very pertinent question, i. e., a variety suitable for winter that will be of good quality and perfectly hardy. No one variety has so far been developed that is equal to McIntosh Red in quality, will keep until April, and prove hardy too. The Milwaukee is a good-looking apple, that will fill the bill for cooking until March, and it will sell readily, no doubt. It, however, is not a dessert apple. It could quite properly be called a winter Duchess. The tree is perfectly hardy. The Northwestern Greening is another excellent hardy winter apple. As grown at the Experimental Farm, Nappan, N. S., however, it had a tendency to go bad at the core after January, something after the fashion of the Gideon in its season. This trouble is not noticeable in this variety grown in this section, consequently that may not be a fault when grown in New Brunswick. The Blue Pearmain is not thought much of, on account of being a shy bearer. There seems to be a wide difference in the bearing habit of trees of this variety. One tree on the Experimental Farm, Nappan, N. S., planted in 1890, has fruited only in 1903 and 1904, yielding 11 pecks. Another one, planted in 1890, has fruited in 1903, 1904 and 1905, and yielded 56½ pecks of excellent fruit. Trees of the latter stamp would be profitable as a winter sort for New Brunswick. Finally, the American Golden Russet is hardy, of excellent quality, and we find a fairly good cropper. The trees are hardy. Care, of course, is necessary in storing the russet fruits to prevent wilting. This can be overcome by barrelling tightly and placing in a cellar not too dry.

Again, it is well when considering apple-growing in New Brunswick to bear in mind that

varieties suitable and hardy for some of the counties along the St. John River valley and Grand Lake districts will not stand the low temperature farther up the river; consequently the good work being done by the New Brunswick Department of Agriculture, in planting out commercial illustration orchards in the different counties of New Brunswick, will be productive of very great good. I would, therefore, advise those who are starting out in orcharding to communicate with Mr. Thos. A. Peters, Deputy-Commissioner for Agriculture, and Secretary of the New Brunswick Fruit-growers' Association, as to what varieties are most suitable for their respective sections. He is always glad to give what information is available, and information on this point is rapidly being accumulated by his department. W. SAXBY BLAIR, Macdonald College, St. Anne's, P. Q.

Cover Crops.

"Cover Crops: Their Relation to the Fertility and Moisture Content of Orchard Soils," was the title of an instructive paper read before the Fruit-growers' Association of Ontario, Nov. 16th, by Prof. F. T. Shutt, Chemist of the Experimental Farm, Ottawa. While much of the information is contained in his annual reports, a number of points brought out will bear emphasis. Leguminous cover crops sown in July, and plowed under the following spring, are the most economical means of adding to the nitrogen and humus content of the soil. They not only appropriate nitrogen from the air through the bacteria on their roots, but they take up soluble nitrates that would otherwise be lost by leaching, and they also make considerable quantities of mineral elements more readily available by converting them into organic form, to be utilized by the trees in future seasons. Cover crops take up excess of plant food and moisture in the late summer and fall, and thus tend to an earlier maturity of the new wood of trees, greatly lessening the danger of winter-killing. The presence of the cover crop in winter also does much to protect the tree roots.

Not the least advantage of the cover crop is that it lends itself to many adaptations. If the orchard is making too much growth of wood, the crop may be left for a year, being moved a couple of times during the summer. If the climate is a dry one, the crop may be plowed down in April or early May; or, when desired, it may be left till late May or early June. In most climates cultivation is necessary in June or July, but clean cultivation from year to year without some such crop would rapidly dissipate the humus content of the soil.

Why should we enrich the orchard soil? Some determinations made to answer this question showed that an acre of apple orchard containing 40 trees in full bearing, removed from the soil in fruit, leaves and wood growth, 600 to 650 pounds of nitrogen, 135 to 150 pounds of phosphoric acid, and 700 to 730 pounds of potash. While apples are not so exhaustive as some other crops, it will appear from the above analyses that they require rather generous fertilizing with soluble plant food, and it is unwise to attempt to harvest another crop besides fruit from the land. In taking off two tons of timothy hay per acre there is more plant food removed by the hay than by the trees. On the other hand, orchards continuously under clean cultivation lose more fertility than they would under judicious cropping. Under all ordinary circumstances there ought to be a continual return of plant food to the soil, and this can be secured most economically by plowing under legumes. By the growth of clover we can, in one season, add 1½ to 2½ tons of organic matter per acre, and as much nitrogen as is contained in 8 or 10 tons of barnyard manure.

On some soils alfalfa does very well as a cover crop, excelling clover, and one important point in its favor is that half its nitrogen is found in the root system. Hairy vetch has given 147 pounds of nitrogen per acre, as compared with 118 pounds by red clover, and it is a very promising cover crop despite its rather light root system, and the dearthness of its seed. Crimson clover seldom survives the winter at Ottawa, hence cannot furnish any spring growth.

Not the least virtue of the cover-crop system is that the clean cultivation in early summer conserves the moisture, and thus affords the trees a generous supply during May and June when it is needed to enable the trees to make growth. Later—in July, August and September—the cover crop utilizes considerable of the moisture, dries the soil out to some extent, checks growth on the trees, and gives them a chance to mature the new wood growth before winter.

He believed that the character of the autumn as to rainfall and temperature had much to do with the immunity of trees to winter-killing. A dry fall gave the trees a chance to mature, and the exhaustion of the soil moisture by a cover crop in late summer and fall had the same effect. He preferred a cover crop which would live through the winter and make some additional growth in the spring.