

the difference between car lots and lesser quantities is so out of proportion that they are practically forced. While cars may be shipped to Toronto at the rate of 13 cents per 100 lbs., yet lesser quantities cost to Stratford, Woodstock, etc., 26 cents per 100 lbs., although general freight agent has stated that it is only 23 cents, and in quantities of 100 lbs. and less a rate of 50 cents is charged.

Vast quantities of apples, onions, etc., have gone to waste this year in Essex that might have gone to benefit deserving poor were it not for the above-mentioned causes. Such are some factors which are receiving attention on the part of farmers in Essex.

Essex Co., Ont.

A. E.

Coburn on Breaking up Alfalfa.

Breaking up a well set alfalfa field is no trifling matter. It may be done with three heavy horses, but it is hard work and they will not be able to do more than one acre a day. An authority says the best plan is to use five heavy horses—three in the lead and two on the end of the beam. They can go right along and plow two acres a day. Alfalfa roots are very tough and strong when the plants have attained full growth, and they give a jerky motion to the plow, which is severe on the horses' shoulders. A cast steel plow is the best to use and if it is tempered right a file can just cut it. It can be hammered out thin at the blacksmith's shop when it becomes too thick to file easily. "The reason for filing, rather than using the hard, thin edge as in other plowing is that the edge needs to be roughed as well as thin, or the roots will slip along the sloping edge of the share and not be cut." It is important that the furrow turned shall not be wider than the plowshare will all the time cut clean, as any main roots that are left uncut will send up a more vigorous growth of stems than before, which, in another cultivated crop will be the same as weeds.

—From Coburn's "The Book of Alfalfa."

THE DAIRY.

Cow Testing in California.

Bulletin No. 233 of the California College of Agriculture, compiled by Leroy Anderson, gives an account of this year's work of the Ferndale (Humboldt Co.) Cow Testing Association. It is stated that the usual estimate places the average production of cows in that State approximately at 150 lbs. of butter per year worth probably \$45, or about the cost of keeping a cow there. Many cows are being kept at a serious loss. The object of the cow-testing associations is to make the use of scales and Babcock machines a community affair—to unite the dairymen into a partnership for the purpose of employing a trained man to visit each herd at regular monthly intervals and weigh and test the milk of each cow. At the end of the year, this man gives each dairyman a record of the individuals in his herd with little work or trouble to him and at a cost of about one dollar per cow, as it has been found difficult to induce dairymen to carry on the work individually. California has three associations in active operation. The first one was organized in 1909 in Humboldt County by Mr. C. L. Mitchell, then Dairyman with the United States Department of Agriculture. This is called the Ferndale Cow Testing Association.

The most important man in the association is the one who weighs and tests the milk and keeps the records—or the tester, as he is known. He is engaged by the board of directors and works under their direction—or more immediately under the secretary who is the association's executive officer. A man of fairly mature years is preferred, of some technical training and practical dairy experience. The usual wage for the tester in California is sixty dollars per month in addition to board and lodging. He is also provided with a horse and wagon to convey himself and his testing outfit from dairy to dairy. Here and his horse are provided for at the ranch where he is working. The tester visits each dairy one day in each month. He weighs and samples the milk of each cow at the evening and morning milking and tests the combined sample for butter fat. The amount of milk and fat produced in the twenty-four hours multiplied by the number of days in the month is taken as the cow's monthly production. Before leaving the dairy, the tester makes the calculations so that he may leave with the dairyman the record of each cow down to date. If there are more cows in one herd than he can test in one day, he weighs and samples from all the first day and takes a second day to complete the tests and records.

The testing outfit consists of a twin-bottle hand Babcock tester with necessary glassware, sample bottles, spring balances, milk can for weighing, and appliances for heating water. The spring balance should have two pointers, one

adjustable so that it may be set at zero with the pail on. The balances should be graduated to tenths of a pound instead of ounces. A very convenient form of sample bottle is one 6½ inches high and 1½ inches inside diameter. It is the same size from top to bottom and has a large cork on the top of which may be carved the number.

The charge to the dairymen for testing varies in California from 80 cents to \$1.50 a year for each cow. This variation is due to the number of cows in the associations and to the size of individual herds. The Ferndale Association, which has over 1,200 cows, charges 80 cents to all members having 50 or more cows tested, and \$1.00 per cow to members having less than 50 cows. The Stanislaus Association with 700 cows charged \$1.50 per cow, because it was necessary in order to have sufficient funds to operate the association. The Tulare Association had more cows than Stanislaus and charged \$1.25 per cow. The following items of expense need to be considered in forming an association:

Salary of tester, 12 months at \$60.....	\$720 00
Testing outfit (approximately)	75 00
Sulphuric acid, 6 carboys at about \$3.50	21 00
Printing and binding records blanks (1,000 duplicate and tester's dairy sheets)	25 00
Horse and buggy for use of tester.....	250 00
Total	\$1,091 00

The following table gives a summary of the average Ferndale production for each of the three years:

Year.	Number of cows.	Average pounds milk.	Average pounds fat.	Gain pounds fat.
1909	581	5,900	251.0	
1910	601	6,483	277.0	26.0
1911	609	6,890	291.5	14.5

The record shows a total gain of approximately 40 pounds of fat per cow in 1911. At 30 cents per pound this is an average gain of \$12.00 per cow. If the cost of testing is put at \$1.00 per cow per year, this shows a net gain of \$9.00. In other words, the dairymen has made \$4.50 per cow per year during 1910 and 1911 above the total cost of testing, from the knowledge which the testing gave him of his herd. If this gain of \$4.50 were possible with eight dairymen and 600 cows, it might have been possible with the 10,000 cows which are said to be in the Ferndale district. In that case there would have been an annual net increase of \$45,000 distributed in the district during the years of 1910 and 1911. In spite of the great decrease in rainfall during the last two years and its resultant effect upon grazing and feeding conditions in general, the average production of milk and fat increased.

In the herd records attention is especially called by the Bulletin to herd No. 8—beginning in 1909 with 30 cows and an average fat production of 334 pounds—increasing in 1910 by 15.8 pounds with 34 cows, and again in 1911 by 22.2 pounds with 33 cows. With fat at 30 cents per pound the average production of 352.6 pounds during three years is an average annual income per cow of \$105.78. The Bulletin also directs attention to the value of combining pure bred sires with a systematic testing of each cow.

POULTRY.

Winter Egg Production.

Editor "The Farmer's Advocate":

With the extreme cold weather almost here and fresh eggs approaching the sixty-cent mark in the large cities the question of winter egg production is one which is important to all successful poultry raisers. This is the time of year when a few precautions and a little added care and management may add many dollars to the pocket-book of the poultry man.

If the poultry houses and roosts have not already been thoroughly cleaned and disinfected this should be done at once. All old hens should also be marketed. Nothing keeps down egg production so much as over-crowded quarters, and moreover, the hen over two years old is unprofitable as an egg producer. Twenty-five young hens will lay more eggs, take less care and less feed than fifty old hens. As the pullets are the mainstay of the flock for winter egg production, they should receive special attention at this time of year. May-hatched pullets should begin to lay in December, and with this end in view they should be handled accordingly. It is, perhaps, not wise to encourage pullets to lay earlier

than December, as, when the cold weather sets in, they are liable to cease laying, and, once stopped, they are not always easy to start. The pullets should be removed to their winter quarters and slowly placed on winter rations, the amount of grain fed being gradually increased. Wheat, corn and oats are common grains on almost every farm, and there are none better for poultry. As these grains are all contained in the daily rations fed at the Ontario Agricultural College, Guelph, farmers and poultrymen cannot do better than follow the system in vogue there—namely, one part of corn and two of wheat for breakfast. Clover or alfalfa leaves and mangels for dinner, with a rehash of breakfast for supper. In addition to this, the fowls have crushed oats in the feed hopper at all times and abundance of sour milk to drink. This system is simple, requires little time, and is recognized throughout America as the leading ration for egg production. It is one which is easily applicable by every farmer.

Two handfuls of grain is usually sufficient feed for a hen, but the poultryman must use his own judgment in handling his flock. Close watchfulness will, in a short time, reveal the correct quantities to feed.

Exercise is an essential in the production of eggs. All grain should be buried in six to eight inches of straw. Mangels should be placed on nails, requiring effort on the part of the hen to reach them. The hen must be made to work for every particle of food she gets. Exercise stimulates the circulation. Increased circulation means greater vigour and more robust health, which is the herald of high egg production.

Delicacies are much appreciated by poultry, and should be given whenever possible. They should, however, be supplied in limited quantities, as the hen cannot control her relish and will over-eat, resulting in disastrous results. Meat scraps, bread crumbs, boiled potatoes, crushed bones, and any other scraps from the table, serve as a change and stimulus to the appetite of the hen.

In no case must any serious change be made in the daily ration fed. If it is essential that a change be made, it must be effected slowly and cautiously. The digestive organs of the hen, like those of animals, are upset by the introduction of new foods into the ration.

The hens should have some form of dust bath. Ashes answer very well for this purpose. All drinking utensils should be kept clean. The buildings should be well lighted, airy, dry, and free from drafts. Careful management, proper food, exercise, pure air, cleanliness, and dry, draftless buildings are details which, if neglected, result in low monetary returns.

Durham Co., Ont.

A. A. McMILLAN.

GARDEN & ORCHARD.

The Fate of the Apples.

By Peter McArthur.

About those apples—you may remember that I shipped a car-load to Edmonton over a month ago. Well, they arrived in good condition, and matters have now progressed to a point where I can report progress. They were shipped on the C. P. R. in a refrigerator car provided with heaters, and instructions were given to keep the temperature not higher than forty-five degrees and not lower than thirty-five. The delivery was made in twelve days after the car was loaded in Appin. The Spies and Baldwins have all been sold for \$7 a barrel, and the Peewakes are selling at \$6. The Ben Davises have been put in storage to await a later market. This experiment at independent selling may now be described as a success, for enough apples have been sold at \$6 and \$7 a barrel to pay for the freight and all incidental expenses, and the remaining apples are selling freely. It might be better if I waited until the whole business is closed before reporting, but, as the Ben Davises may be held until February, I may be excused for speaking of the matter now. A number of important points have been demonstrated that may be interesting to people whose apples are rotting under the trees. To begin with, apples are worth more than was paid in this district. Few orchardists with whom I am acquainted got more than fifty cents a barrel, but if all my apples had been Baldwins and Spies, I would have got between three and four dollars. Besides, I am assured that if the whole consignment had been of these varieties, they would have sold off the car. The fifty odd barrels I had were sold before the car got to Edmonton.

But the most important point brought out was the value of proper packing and grading. The apples I shipped were of excellent quality—thanks to the instruction and supervision of F. M. Clement—now Prof. Clement, of MacDonald College, Quebec. The grading was done according to the instructions of Mr. Smith, of the Fruit Branch, and Mr. Whale, District Representative for Middlesex. Moreover, under the advice of the

above-men-
lowed to
now given
apologize
ter I hav
monton v
ples are
all the w
been buy
these we
got." "I
all holl
"Tell yo
ples out
are what
them tha
me tha
the mess
about th
ples." "I
was alt
shipped
dollar a
Edmont
Spies ar
It looks
apples
seems to
the Depu

Now,
hearing
than a
per bar
barrel,
loading
Total, \$
to be d
how we
but I a
Accordin
buyer,
pect to
If I ma
\$3.75 f
demand
willing
the spe
vided e
about f
I had
me. I
argued
tising,
surely
I can
less th
barrel
in the
gether
about
depend

You
ideal s
I got
the co
ers. V
market
help m
contra
more
proper
think
I was
satisfie
price t
in tha
this c
plenty
a bar
Edmon
him t
a pro
would
ducer.
buy a
expect
He w
barrel
home
and,
had a
have
man
up pr
profit
know
do no
to ge
Assoc
an A
mers
get t
be er
seem
ducen
them