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FARM AND DAIRY

&
RURAL HOME

DEVOTED TO
BETTER FARMING
AND CANADIAN
COUNTRY LIFE

Toronto, Ont., January 3, 1918

As per
Circular Jan 18
Comm of Coop. Association



IN PASTURES GREEN—THREE COWS RUNNING IN R. O. P. THAT HAVE BEEN SEPARATED FROM THE REST OF THE HERD AND GIVEN SPECIAL PASTURE.

—Photo taken on farm of J. H. Dent, Oxford Co., Ont.

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"I am not able to do this because my broiler flocks are at a minimum and the profits were at a minimum and feed bills at a maximum. A few weeks ago I passed this question on to Mr. Lewis N. Clarke, one of the most extensive specialized poultry farmers in Canada. "Can you renew your flock at a profit?" I asked him.

"It costs me practically nothing to renew a flock by buying eggs," Mr. Clarke replied. "The price a cock will cover that I did not sell for my broilers last spring for less than \$1.50 a pair."

"Do you mean," I asked, "that the receipts from the sale of broilers will pay for the feeding of both the pullets and the broilers?"

"Invariably," he replied. "We sell all of our broilers to our egg customers. They are driven to the farm and packed in ice for shipment. This may be a good deal of a nuisance, but it pays." Then Mr. Clarke added with a smile, "I find that most things which people regard as a nuisance are profitable."

The broilers from Oldham Farms weigh about two pounds dressed, but not drawn, at 12 weeks of age. They are finished on a ration of 100 lbs. flour, 100 lbs. corn chaff, and 40 lbs. beef meal. "This is the only sustaining meat I know of that rockeets don't get tired of," said Mr. Clarke. "The mixture is fed as a crumbly wet meal mixed with button mushrooms, skin medallions, and enough to make it slightly salty to the taste. We feed the cockerels in lots of 100. During the fattening process each flock has a small colony house and a wire run 26 feet square."

"Then you do not have to credit the money received for your old hens against the renewing of your flock?"

"No. I always have that money for specific purposes," stated the proprietor of Oldham. -F. E. E.

"Cheapness" in Poultry Matters

By Michael K. Boyer.
TO many begin the poultry business on a "cheap" scale. Anything purchased simply because it is "cheap" is a mistake. Men of the "make-a-bit" calibre are, as a rule, the unsuccessfui ones.

It is always wise to buy the best, and, rightly measured, the best is the cheapest in the long run. The writer has found that in nearly every case the man who buys his stock cheap, "poultry doesn't pay" began with cheap, poorly constructed houses, purchased common, dungy stock because they could be had at "table-fowl" prices, and fed them on grains not calculated to make them productive, as the price for the proper articles of food "cost too much money."

Beginning with "the bottom line" is important. If they be built of good, strong materials, well roofed, and only once constructed with poor, second-hand lumber, but, in order to cut down the cost are made narrow, contracted quarters, allowing insufficient room and very poor ventilation.

Then comes the question of stock! It must be cheap. If pure-blooded stock costs two dollars per head, and common dungehounds only one dollar per head, it is reasoned that "one must be a foot to pay two dollars for a hen when the same money will buy two

hens—and hens are hens, you know!" Occasionally we will find some excellent layers among common hens, but these are exceptions rather than the rule. On the other hand, breeds are the result of careful mating for a particular object. In other words, one wishing to establish a strain of extra good laying hens, will catch one carefully and mate its genetics with that strain in view. Such flocks often breed naturally. This, however, cannot be the case with mongrel birds, owing to the promiscuous mixing of bloods.

Therefore, the thoroughbred or pure-bred fowl is cheaper at two dollars head than is the mongrel at one dollar, for the reason that we have guaranteed quality in the one.

A sound point of "cheapness" is in the feed. What a common expression is it to say: "What will do for chicken feed," meaning some musty or damaged grain. There could be no more serious mistake. To make eggs not only calls for good feed, for that purpose, but it must be in a pure state, rich in the requirements. The bantam will not expect a good meal, with meat from his coops if he is fed a cheap, inferior ration. It is the same with eggs. Good material is required for good results.

How often we see beginners starting out with dunces, giving the excuse that they just want to test the business before investing considerable money. What capital are they likely to stretch as far as it will go? They intend, in the future to dispose of those mongrels and keep nothing but pure fowls, but they hardly ever get beyond the mongrel stage. Once mongrels always mongrel. Better invest the amount of available cash in Day-old chicks, or fowl than purchases with it double the number of worthless flocks.

Rely on a small scale—limited according to cash and knowledge—but let that start be strictly on the basis of quality. The safest start is made with good, substantial buildings, guaranteed pure-bred stock, and the greatest and best of feed. When it naturally grows on the same basis, and the industry will be established on a firm and safe foundation.

Poultry Pointers.

AT the outbreak of war, there is often a cry of cholera. It is a fatal disease, but the case, nevertheless, needs treatment. Boil some rice, and mix it with plenty of powdered chalk—an excess of this will do no harm, as it will effect a cure and pass off naturally.

Constipation in chickens is often noticed during the summer months. It has been advised to use Epsom salts in the drinking water, but this is a rather violent purgative, and very griping in action. It is better to use oily laxatives and purgatives. Linseed meal mixed in the soft feed will act as a gentle laxative. The writer uses it daily in the meal, at five per cent—the year round—and never, in consequence, in any case of constipation among his flocks. Some prefers a few drops of castor oil in the feed, after making the chicken miss one meal, and thereby rendering it hungry.

A hawk generally carries off young chicks. Where it attacks larger ones, their bodies will be left, and the writer found that death had been caused by the hock of the neck being cut through, the feathers being torn out, and the feathers of the wing being torn out. As the hawk has been devoured so that the skull evidence is not available, are widely scattered around, but not trashed. Should the chicken be found lying dead on its side, with its neck stretched out, and a small wound in the throat, it is the work of a weasel that has sucked its life blood. If a carcass is found with the head and breast cut off, it is the work of a fox. As a rule, the rat does not feed wholly at night, and here the carcass is often found badly mauled. The entrails are generally drawn out, but not eaten, and the carcass is bitten and gnawed in many places.

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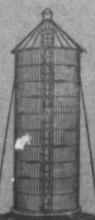
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Trade increases the wealth and glory of a country; but its real strength and stamina are to be looked for among the cultivators of the land.—*Lord Chatham*

VOL. XXXVII

TORONTO, ONT., JANUARY 3, 1918

No. .

"Mac" from Glengarry County, Replies to "Oxford"

The Pure Bred Cow, He Says, is a Good Investment, Even for the Beginner

I HAVE been greatly interested in "Oxford's" article which appeared on the front page of Farm and Dairy October 25th, under the heading "Shall a Beginner Start with Pure-breds?" Having had a few years' experience with both grades and pure-breds, I think the party of making a few comments upon the article. While Oxford has brought out many good points, I think the general impression given is somewhat misleading.

"Oxford" acknowledges the extra source of revenue derived from sales of pure-bred stock for breeding purposes. In my opinion this is but one of many features in which the pure-bred excels. Now, My Editors do not imagine me to be a knocker of good grades. I have every respect for the good grade cow and her contestation, borne out in actual experience, is that for the pure-bred to displace her grade sister, she must do so on a straight economic basis. This is what she is doing in many herds all over Canada.

One of the chief reasons why it is more profitable to invest in pure-breds lies in the value of the pedigree. Not only is this so in the selling of pure-bred stock, but also to an even greater extent in the buying of foundation stock. Many people look upon a pedigree as a somewhat useless appendage to an otherwise inferior animal. But others know that the pedigree with records attached, is the only sure means of knowing the producing ability of the ancestry of an animal. The Record of Merit and Record of Performance statements whereby a man may verify his opinion of a producer before he buys, while the man who goes out to buy a grade cow has nothing to guide him but the word of the present owner, the appearance of the cow and the reputation of the herd. None of these tests are by any means infallible guides.

Good Grade Cows Hard to Buy.
Further, good grade cows are not so easily bought as "Oxford" seems to imagine. One cannot pick them off bushes after the manner of picking berries. The farmers who own them do not usually want to sell, and when they do the price is good and the buyer would not care to invest in a grade cow unless she was at the time showing every evidence of being a producer and at that time her market value would be above par, while a registered cow can be bought on the strength of her pedigree and past record even if her present condition will not warrant her selling anywhere near her real value. It is a saying among horsemen, "Buy a horse when he is thin and sell him when he is fat." This is just as sound a policy in the buying of dairy cattle, particularly pure-breds. Anyone who attends the sales held throughout the country can see the truth of this statement. Many animals of excellent breeding and productive value, just because they are in poor condition, are picked up at small cost by shrewd buyers who know their real value.

"Oxford" states that low grade pure-breds are a poor investment at any price. I quite agree, and would also place in the same list the "ordinary scrub," which "roam the fields in summer and the barn yards in winter." If, however, the latter is his ideal of successful dairying, it is to him that I speak. What he requires are not grades or pure-breds, but just "scrub." They are the sort for such conditions, and there is a decided difference between scrubs of all kinds and good cows, whether pure-breds or grades.

Those "Artificial Conditions."

On the other hand, if the artificial conditions of which he speaks are necessary for satisfactory milk production with pure-breds, are they not also necessary in the case of good grade,

which must of necessity have several crosses of pure-bred blood. Again, if the *ex-a-breds* have been accustomed to those artificial conditions through past generations, are they not in a better position to stand up under them than grades accustomed to "roaming the fields in summer and the barnyards in winter?" The pure-bred cows taken from such conditions and places as the aforementioned artificial conditions present a similar case to that of the North American Indians who under natural conditions, were the healthiest race on earth but who have fallen down completely under the artificiality of modern civilization.

Regarding the bull. If a bull of good breeding is necessary to produce proper results in a pure-bred herd, it is even more necessary to produce the same results in a grade herd. In fact, our grade cattle enthusiasts are quite strong, and rightly so, on the absolute necessity of the best pure-bred sires available. The advantage is with the pure-bred, as the extra revenue from stock sales pays the expense of the bull.

Can Beginners Afford Them?

The common fancy that a beginner cannot afford pure-breds is an idea which features quite strongly in "Oxford's" article. I have had occasion to look up in the herd books the ancestry of many of Canada's best cows, and was surprised to find what a large percentage of them were bred by practically unknown breeders. These animals were bought later by breeders, who recognized their possibilities as revealed in their pedigrees. They bought them in many cases at prices far below their present value. We are now aware how new families and strains are constantly coming into prominence by just such means as this. Let me state an example which has come under my own observation.

Several years ago a farmer who was short of capi-

tal wished to invest in a pure-bred female. Having some idea of pedigree, he bought a young cow from a practically unknown herd, for which he paid the sum of \$50. That cow had for many years qualified in R. of P. with a considerable margin. She has had seven heifer calves. The oldest was sold when young, and is now one of the most valued animals in a prominent Ontario herd. The next in age is a very likely candidate for Canada's list of 20,000 lbs. cows, while the younger ones are bidding fair to follow the same course. Can you calculate what per cent. interest that farmer is receiving and will continue to reap on investment of \$50? Would \$50 invested in a grade give such results?

In a recent issue of Farm and Dairy there was a photo of a pure-bred cow which was bought for \$40 and sold later on for \$800. Could such a spread as this be realized on a grade animal?

The experience of a young dairyman of western Ontario is well worth quoting here. He had always had a desire for a pure-bred herd, but the price was much above his purse. For many years he had just plodded along in straight mixed farming and a few "ordinary" cows. One day, however, his ambition forced him to make the change. In addition to several good grads, he purchased one pure-bred animal, and the following year another. Both these animals were the right foundation type, strong and large and producers. With his grades he adopted the same methods as he would with pure-breds, putting the entire herd on the R. O. P. basis. Of course, he was a born dairyman, and in the first year they averaged 10,000 lbs. The last year, when he held his sale of grades, the herd averaged him 10,700 lbs., and naturally brought premium prices higher than any other grade herd that year—one going for \$185 after producing \$150 in cream for him that year. At the meantime his pure-breds have increased to a goodly herd, and the young breeder is fully experienced now to handle them to the best of advantage. His grade herd had paid the way both in experience and cash for the introduction of the pedigree producers.

These are not isolated cases. If space were to permit I could multiply them many times. All this goes to prove that the careful buyer, by watching his chance, can buy good pure-bred cows even if his capital is limited.

In conclusion, let me say that it has been my privilege for the past fifteen years to have fed, milked and cared for in general, a herd of good dairy cows, composed of both pure-bred and grade, intermingled in the one stable, and under ordinary farm conditions. During the latter ten years of this time, every milking of every cow, both grades and pure-breds, was weighed, and occasionally tested. Given the same care and treatment in every way I have seen the pure-breds gradually outclass their grade sisters in economy of production, in both quality and quantity of milk, in general health, and freedom from the disorders common to dairy cattle. This has been my experience, it may not have been the experience of every one. But basing my opinion upon it, I would advise the beginner who feels capable of handling either good grades or pure-breds to secure at least one or two good pure-breds, and if he is a careful buyer he can get them at a price which will suit his pocket. Never buy a cheap animal just because it is cheap. That is a different policy from the one I have mentioned. It is this difference that "Oxford" in his article



Cost of Producing 100 Pounds of Milk

INVESTIGATION made by Purdue University and the United States Department of Agriculture to determine the cost of producing milk, shows the following facts regarding the cost of production: (Average winter, six months):

	Pounds Rate, ton Cost	Estimate
Grain feed	\$14.2 \$50.00	\$1.03
Carbohydrates	45.3 10.00	.226
Corn stover-time	23.5 10.00	.233
Legume roughages	23.5 20.00	.233
Roots, roots	23.5 20.00	.233
Succulent roughages	155.5 8.00	.622
Masty sludge	21.1 5.00	.09
Bedding	21.1 5.00	.09
Total cost feed and bedding5216

LABOR REQUIRED TO PRODUCE 100 LBS. MILK.
(AVERAGE FOR ENTIRE YEAR.)

Man hours	2.4	.30	.48
Horse hours26	.12	.03
Total labor cost51

OVERHEAD COST OF PRODUCING 100 LBS. MILK.
(AVERAGE FOR ENTIRE YEAR.)

Total478
Total5148

January 3, 1918.

Extending the Influence of the City Milk Demand

A Visit with Mr. Fred Dean, Manager of the City Milk Shipping Plant at Woodstock, Ont.

THE growth of Canadian cities in the last score of years is the direct cause of a great transformation in the dairy industry. Whereas a few nearby farmers once adequately supplied all the requirements of the town and city "or milk, this trade has developed until our cities are now taking practically all of the milk and cream produced within miles of their borders. The commonest sight at any rural station these days is a stack of hay, or a stack of badly battered, but still useable milk cans. Lately, in the case of our larger cities, the milk supply from the nearby townships has become insufficient to meet the ever growing need, and city dairy companies have been going still further afield and establishing milk shipping stations. At these stations milk is collected from neighboring farms, cooled and shipped in ice cars to the parent concern in the city. The most important of these stations in Ontario was established at Woodstock some years ago by the Toronto City Dairying Company. A better situation for such a plant could not have been selected, and a brief visit with Mr. Fred Dean, the manager, early last September, gave one of the editors of Farm and Dairy a pretty accurate idea of the magnitude of the business conducted at the Woodstock plant.

"We will receive over 12,000,000 lbs. of milk this year," remarked Mr. Dean. "Last year we paid out to our patrons \$195,000. In the first eight months of this year we have paid out more money than we did in all of last year. Most of the milk is shipped to Toronto as milk. Part of it, about 3,000,000 lbs., we will condense in our plant here. We also purchased cream from farmers and purchases this year will total 250,000 lbs. fat. The condensed milk, I may add, is used by the City Dairy Company for the ice cream purposes in place of the usual starch fillers."

"And what has happened to the Woodstock district cheese factories since you came in the field?" we asked.

Dairying on the Increase.

"Oh, there is still lots of competition," Mr. Dean assured us. "Since we came in two cheese factories have burned down, but they were small ones. Within a radius of seven miles there are six cheese factories, Neilson's powder factory, and our own plant, and all are doing better than ever before. The explanation is more cows. Farmers who were grain growers a few years ago are now in cows, and the increased milk flow has met the increased demand and kept us well supplied."

"The price of milk has been increasing than?" we suggested. Mr. Dean told of the increased dairy output of the district. Mr. Dean referred to his books. "In 1912 we paid \$1.28 per cwt. for milk," he told us. "In 1913 we paid \$1.42; 1914, \$1.41; 1915, \$1.46, and 1916, \$1.60. This year, although the year's rates are not completed, we will pay about \$2.30 a cwt. The cost of delivery to the plant here, which the patron pays, runs from seven and three-quarter cents to 12½ cents per hundred pounds of milk, and 40 cents a cwt. for cream.

"Do your patrons have to observe the regulations imposed on dairy farmers who deal directly with the city?" was our next query.

"The conditions under which the milk is produced must be the same as ours," said Mr. Dean. "We take samples of each patron's milk three or four times a week, and test twice a month for fat. The result of this test is sent to the farmer along with the disks from the sediment test. We do not take milk that tests under 2.25 per cent. fat. We have never had to reject a patron's milk because it fell under this standard, although some of it runs pretty close to the mark. When a patron begins to get in danger, he usually buys a Jersey or two to bring up his test, which speaks volumes for the productiveness of the Jersey."

All Farms Inspected.

"And how about sanitary requirements?"

"The Toronto Board of Health maintain an official at Woodstock who looks after all milk shipped from Oxford county to Toronto. He visits farms and inspects dairies, cattle, stables, utensils. He can forbid any farmer to ship milk if he likes. In case he is suspicious of tuberculosis he tests the cows and the farmer has to get rid of them if they react or stop shipping milk."

"The advantage of a plant such as this," explained Mr. Dean, "is that milk is in our hands soon after it leaves the farm, and we have a chance to cool it properly and then ship it in ice cars. We use 1,000 tons of ice yearly in icing cars alone, and the quality of milk received in Toronto under this plan has been so satisfactory that another shipping plant is being established at Listowel."

At Mr. Dean's request we then passed out from the

office to inspect the plant. We found every convenience for handling milk in great quantities with a minimum of labor. The morning's milk was just coming in, and as it poured from the farmer's cans it passed immediately to the cooling vats where it was reduced almost to the freezing point by mechanical refrigeration. An important part of the plant is the condensing equipment, with which it is possible for the company to handle milk received without loss. The cans with the various products of the plant are loaded and switched right up to the doors and both icing and loading are accomplished with a minimum of labor. "We are also planning to install a powder plant," remarked Mr. Dean. "This may go in till next spring. The milk powder will be used for ice cream purposes."

Few Patrons Under \$100 a Month.

On our return to the office we looked through the milk books for the previous month. Altogether we

ment end? He would be a bold man who would endeavor to predict.

From our visit with Mr. Dean we could not help but be impressed with the absolute fairness and impartiality of the company's dealings with the farmer, and the very great increase in business during the first eight months of 1917 over all the previous year is abundant evidence that the patrons of the Toronto City Dairy Co. are not slow to appreciate the fact.

Roughage is an important item in the calf's ration. At two to three weeks of age a calf should have all the good clean hay it will eat. With skim milk and alfalfa hay, little grain will be needed.

A Comfortable Dairy Barn

With Special Reference to the Basement

COMFORT, neatness and economy in construction characterize the new barn that shelters the Ayrshire herd of Mr. Rennick, Vankleek Hill, Ont. Finished as it is in a battlehip gray with white trimmings, in conformity with the other farm buildings, and flanked with two stave silos, the new barn lends an air of distinctiveness to Elm Lane Stock Farm. Even a stranger driving out from "the Hill" looking for Mr. Rennick's farm, knows that "he's there" when he comes within sight of the barn.

The new barn is of plank frame construction 38 x 66 feet with a wing 30 x 40 feet. The basement of the barn accommodates the milking herd of Ayrshires, and that of the wing is furnished with box stalls for calves.

The first thing about the barn that strikes the observer is the construction of the basement walls. These are made of cedar blocks, set in mortar. Cedar blocks make one of the best walls obtainable for dairy barns. The wood acts as an insulator, and results in a warm, dry stable. Moisture will not form on the walls as it does on stone or concrete, and Mr. Rennick informs us that his cattle have never cold feet, even though some of the windows remain open all the time, and this in addition to the ventilating system. The wall looks good, for the round ends of the blocks as they lie in the mortar give the appearance of round boulders or cobblestones. This cedar wall is a cheap one for anyone who can get the cedar blocks. Fortunately, Mr. Rennick has all the cedar he wants in his own bush. In less than a day all the blocks needed for the basement were cut with the circular saw.

The stable equipment is thoroughly up-to-date and the water is supplied from a large never-failing spring, some distance from the barn, through the agency of an hydraulic ram. With a five foot, two inch head, the ram lifts the water 47 feet to the barn.

In front of the cows Mr. Rennick has fitted up a rack that prevents the cows knocking feed out of the manger. This also acts to prevent the cows stepping up too far in their stalls. All manure therefore falls in the gutter, and keeping the cows clean is a comparatively easy matter. A milking machine has not yet been installed, but will be put in the spring.

Mr. Rennick is building up a nice herd of Ayrshires. His herd sire, Dunlop Choice Peace (imported), and a son, Hobart, R. O. P. have been added to Mr. Rennick's herd, two cows, Midleton Fleckie 2nd and Lady Alice, qualified Q. C. to the O. P. in 1916. They are now preparing for further work to be carried on this winter. One cow from this herd, White Flora, toured the West a couple of years ago, with Ness' exhibition herd. This cow was champion female at the Vankleek Breeders' Show in 1915. Mr. Rennick is getting a nice stock of young stuff on hand of his own breeding. His herd sire is a good representative of the breed, and is making his effect felt in the herd.—S. R. N. H.

The cow's ration is used for two purposes—to maintain body weight and produce milk and butter fat. If the ration is limited, a good cow will suffer in condition and lose in production.



Farm Buildings on an Alberta Settlers' Farm on the Grand Trunk Pacific.

Mr. W. M. Williams, owner of the buildings illustrated, was a city man and native of Pennsylvania, previous to moving on to a homestead in Alberta. He is doing well with a combination of live stock and grain growing.

Where a Milker Replaces a Man

A Visit with G. D. Mode of Bonny Brae Farm, Vankleek Hill, Ont.

S. R. H. Hodgins, Associate Editor, Farm and Dairy.

A 250-acre farm with 80 head of pure bred Ayshires and but one hired man? The answer is a mechanical milker. For many years Mr. G. D. Mode, of Vankleek Hill, was prejudiced against milking machines. He was afraid that such a machine would work havoc in his pure bred herd. But without his mechanical milker and the other labor savers which he has grouped together in his power house, it would be impossible for himself and his hired man to run his farm and keep up his large herd of pure breeds.

Bonny Brae Farm is the home of such well known Ayshires as Eileen, who produced in one year 1322 lbs. milk, weighing 62.18 lbs. butter fat, and Hazel of Bonny Brae, a Canadian champion three-year-old Ayshire, who produced 22,129 lbs. milk and 861 lbs. of butter fat in her first two years milking. The farm is beautifully situated on a hill above a mill and a half distant from the village of Vankleek. The present owner, G. D. Mode, received the farm from his father, who in return had had it handed down to him.

The former owner of the farm, G. D. Mode's father, was well known among his neighbors as belonging to the hard working school of old-time farmers. The push which characterized him has been handed down to the present owner, G. D. Mode, who is recognized as an exceptionally good farmer and an enthusiastic breeder of Ayshires. To him belongs the credit of building up the splendid herd of Ayshires which have made his farm famous. His father had tried out several different breeds of cattle, but it was for him to start in persistently building towards his ideal of a good Ayshire herd. And that he has gone far toward realizing this ideal is well known to those acquainted with Ayshire breeding in Canada.

The visitor to Bonny Brae Farm gets a good impression of the place on his arrival. The farm "looks well from the road." The present owner established a fine lawn between the house and the road in the space that was formerly taken up by unproductive fruit trees. Along one side of the driveway is a fine perennial border. The house is one of four big comfortable houses to be found only on farms a couple of generations removed from the settler's cabin. It is equipped with electric lights and running water, as are the barns which, although not new, are comfortable, and with their two silos give a good substantial look to the farm.

The Power House

The outstanding feature of Bonny Brae Farm is the efficient power house which stands between the house and the barn, and cuts down labor in both. Were it not for the labor saving device which are to be found in this house, much more help would be required in the running of this large dairy farm, and life would not be so sweet for Mr. and Mrs. Mode. The power house is 10x30 feet and is divided into three compartments. In one compartment stands a 6 h.p. engine and an electric dynamo. The engine turns an overhead line shaft which runs the length of the building, working the machinery in the different compartments and protecting the end of the building far enough to hold a pulley which is used when wood is to be sawed or when other similar jobs need doing. The compartment holding the engine and the dynamo is the width of the building, and eight feet long.

Next room contains the pump and vacuum tank of the milking machine, a pipe running out from here to the barn and along in front of the cattle. This room is deep enough to hold the building and 10 feet in length. A stove has been installed for heating the water used in washing the milker, cream separator and the churn. Mr. Mode has had two taps put on the vacuum pipe close up to the tank in this room. He is therefore able to attach the milking

apparatus here and wash up his milker in this room instead of being compelled to carry the hot water out to the barn.

The next room (which is the one entered first) has a cream separator, a pump from which water is pumped to the barns and to the cream house, a churn and a washer. The engine runs at the same time the milking machine, the cream separator, the pump and the electric dynamo regularly twice a day. It also runs the washing machine on wash days and the churn whenever it is required to do so, but butter is not usually made on the farm, the cream being shipped to Montreal.

The Farm Lighting System.

The electric lighting plant used on the farm of Mr. Mode has been in use for five years and has given excellent satisfaction. Twenty-eight lamps are supplied the necessary light in barns and in the house. The power is generated by a small electric dynamo, while the engine is doing the other necessary work. Sixteen jars supply the current, and light is always on tap. Outside the cost of installing the system, which was about \$300 altogether, Mr. Mode considers its cost of lighting absolutely negligible. The extra work of running the dynamo and all appear to make any difference with the engine when it is running. One-half horse power is enough to

A Promising Youngster.

This is a young son of Eileen, Mr. Mode's famous cow. As long as such typy young stuff is coming on prospects for the future of the herd are bright.

and after an inspection of this machine Mr. Mode decided to install one.

"Milking those 32 cows twice a day in addition to the farm work, was too much," said Mr. Mode, looking back on those dark days. "It used to take Mrs. Mode and me until eight o'clock every night to get done with the milking. Now we start in milking at a quarter to five and at six o'clock we are all through and are able to jump in the car and go off for the evening. Mrs. Mode never has to come out to the dairy barn now."

"If dairymen realized for one moment what a milker will do," continued Mr. Mode, "everyone with over a dozen cows would have one."

"Do any of your cows object to being milked by the milker?" I asked.

"Not for the slightest," replied Mr. Mode. "We have one cow in the stable that was at all difficult to milk. When we used to milk her by hand we never attempted to do so without first tying her feet. Since we have got the milker, however, we have had no trouble with her."

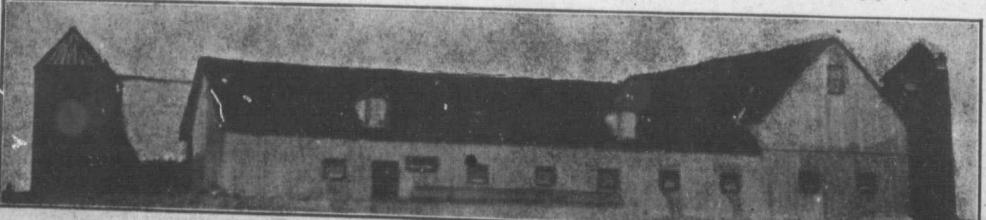
Thirty-eight cows are now milked at Bonny Brae Farm with the milker. It is a four unit machine and milks 26 to 28 cows in an hour. Mr. Mode handles the milker entirely himself. He looks after the machine and carries the milk to the separator. The hired man strips the cows, assisted by Mr. Mode's two boys of seven and eight years, the older of which can strip 10 cows. "It is not a big task to strip the cows after the milker," states Mr. Mode, "if the milker is used during the whole of their lactation period. This is especially true with young heifers that have never been milked in any other method of milking. They let their milk right down."

"Five gallons of gasoline runs the engine a week. It therefore costs me \$2 a week to milk 36 to 40 cows, separate the milk, pump the water to the barns and house, generate electricity and run the washer."

A concrete cream house stands next to the separating room. This has a tank in which running water is provided to cool the cream, and another compartment in which the cooled cream is placed in ice.

Farm Practice.

Mr. Mode is a dairy farmer. His herd of 80 pure bred Ayshires is the main thing on the farm. All (Continued on page 7.)



The barns and silos on Bonny Brae Farm as they look from the road.

Photograph taken on a dull rainy day.

Where a Milker Replaces a Man

(Continued from page 5.)

crops grown are grown to feed the cattle. Twelve to 16 acres of corn are grown every year to supply ensilage for the winter; few oats are grown for horse feed, but most of grain area is devoted to such mixed grain as oats and barley for grinding for cattle feed.

Twenty-six to 30 calves are registered each year on Bonny Brae farm and last year 20 were sold for breeding stock. This side of the business brings in substantial monetary returns, but the main source of income on the farm is from the cream which is shipped to market. The mother will soon have good assistance from his two boys. They are only seven and eight years of age respectively yet, but they are already deeply interested in breeding work and know every cow and calf on the farm intimately.

Two cars are kept on the farm. A Ford has been run for four years with an output of 40 miles to 40 cents. This was spent for two patches for the tires and for a new fan belt. The tires on three of the wheels have never been touched yet, either the inner or outer. The outer tire is worn out, but they are using the spare. This car is used for delivering cream and for driving during bad weather. A new car which has only been in use this year, a Reo, is their pleasure car. It also has run this year without the need of any repairs.

In speak of the cars and the milking machine, Mrs. Modie summed up her feelings in this way: "If I were to be told that we had to give up either the cars or the milker, I would say, take the cars, but leave the milker."

SHEEP AND SWINE

Buildings for Sheep

THE high prices being realized for wool and mutton make sheep look good to the farmer. Many farmers are, therefore, adding a small flock to their stock. To farmers just getting into sheep the problem of housing presents itself. What sort of shelter is necessary for sheep? Will a suitable shelter be expensive? These are the questions asked by the new or the prospective sheep owner.

As a general rule the beginner should give his attention first to the quality of the sheep and afterwards to the barn. Almost any kind of barn will do for a sheep shelter, provided it is waterproof, roomy, well drained and well ventilated. Sheep will stand very cold temperatures, provided the air is dry and drafts are prevented. In estimating the size of building required for sheep, at least 18 square feet should be allowed for each ewe, exclusive of the space for pens, passageways or racks.

One of the first considerations in the shelter for sheep is ventilation without drafts. The animals are naturally provided against the cold, but in a damp shed or in one where they are exposed to drafts, sheep will catch cold readily, and sickness will leave its effect not only in a smaller lamb crop in the spring, but also in the decreased quality of the wool. If possible provision should be made to allow the sunshine into the sheep barn.

The sheep shelter should be provided with a lamb creep. This may be made by fencing off part of the barn in such a way that the older sheep cannot get underneath the fence while the lambs can. Thus, when a system the lambs will be able to get extra grain and so keep up their growth. Arrangements should also be made for separating sick ewes, or those with very young lambs, from the rest of the flock. If a few fence gates are

lifted off in the fall they will serve a useful purpose in the sheep barn during the winter.

The sheep barn should be provided with plenty of feeding racks. It is important that these are well built. The best time to start in the production of clean wool is when you are building the feed racks. "V"-shaped racks are the most popular for feeding sheep. If they have a tight bottom they can also be used for storing grain and roots. With the addition of a number of feed racks and several fence gates, almost any barn space can be fixed up into a suitable shelter for a small flock of sheep.

Sheep Raising Prospects

THE good prices for wool and mutton have certainly given the hobby sheep raiser a new status among farm beasts. Things are going to hold good for sheep right along. In normal times beef usually leads in our country. Top prices for good beef are usually better than top for either pork or mutton. But mutton has run away from beef in price. The reason for this is not that of greater suitability of mutton for either local or foreign feeding, but

is directly due to the profits arising from production of mutton and wool combined. Fifteen or sixteen dollars invested in a good grade ewe will bring in this month back ten months' worth of wool and mutton combined. This is fast and likewise sure. The absolute shortage of meat and the awful wastage of clothing combined intensify the wins on sheep investments.

In any case it is hard to see how the men who have sheep or those buying in just now can go wrong. Mutton and wool are, however, the scarcest and most valuable articles in the world. Wool is a commodity in a class by itself for shelter and endurance. Mutton is a quickly and cheaply produced substitute for heavier meats, and its low cost of production is in its favor for domestic use. This use is likely to increase. One of the prominent officials of the Food Conservation Commission has predicted a decided drop in the home consumption of beef within a few months. If this happens the best cuts of mutton will go to the local price of bacon now—about fifty cents a pound.

Every farmer should keep all his ewes, and might breed the biggest of his ewe lambs if he is keeping grades. They will need a little extra care to keep them growing and full fleshed.

Wether lambs should be carried over at least until Easter. Town men should be encouraged to buy surplus ewe, such as the thin ones that go to market for lambing plants sometimes, and put them out on shares. There will be good prices for lamb, mutton and wool next year.

Next to swine, sheep make the best kind of contribution to the farm living by furnishing a supply of wholesome fresh meat in conveniently small carcasses. This is very cheaply produced. It is also less costly to produce of a such fat dry ewe or thick lamb that is just right for killing without any special feeding. A 90-pound lamb will dress fully 40 pounds, and it is doubtful if the cost of production of the lamb can be figured above a dollar and a half. Cured meat is too much used on the farm, and the sheep is the best animal to vary the meat diet, especially in summer time.

There are other advantages of sheep keeping. It requires small capital outlay for foundation stock or buildings, and makes a light demand on labor in its care, winter or summer. It is the best kind of stock through which to encourage an interest in live stock in children as it is inexpensive and easily cared for.—J. McCaig, Alberta.

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The paid subscriptions to Farm and Dairy approximate
20,000. The actual circulation of each issue, including
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to 32,000 copies. No subscriptions are accepted at less
than the regular subscription price.

Sworn detailed statements of circulation of the paper,
showing its distribution by counties and provinces, will
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We guarantee that every advertiser in this issue is
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columns of Farm and Dairy are as carefully edited as
the editorial columns. We do not publish any
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reported to us within a week of its occurrence, and that
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this contractor that in writing to advertisers you state:
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of these columns; but we shall not attempt to adjust
trifling disputes between subscribers and honorable busi-
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bankrupts.

The Rural Publishing Company, Ltd
PETERBORO AND TORONTO

"Read not to contradict and to refute, nor to believe
and take for granted, but to weigh and consider."
Bacon.

Our Railroad Policy

ON the same day last week the governments of
Canada and United States announced their
railway policies. The Canadian announcement
leads us to believe that the railway barons are
still in power at Ottawa. According to the judgment
handed down to us by the Board of Railway
Commissioners, there will be an increase of fifteen
per cent. in passenger rates in all parts of Canada
with the exception of British Columbia, and a ten
per cent. increase in freight rates in the West, and a
fifteen per cent. increase in the East. The compa-
nies are still left in undisputed control of this
greatest of all public utilities. The United States
government, on the other hand, has followed the
example of England, and the gigantic railway sys-
tem of that country have been nationalized in
order that transportation facilities may be made to
more fully serve the war needs of the allies and the
domestic requirements of the country.

This unification and coordination of railway sys-
tems is the policy that has been consistently advo-
cated for Canada by the organized farmers. The
farmers' organizations waged what they had been
led to believe was a successful fight against freight
increases, contending that a union of all the roads
under government ownership and operation would
result in better service and a chance of profit on
the venture even at the old rates. Freight in-
creases, they pointed out, might help needy roads,
but would result in great gain also to the roads that
need no assistance and are to that extent a burden
on the general public. Even with the increases that
are now granted, no guarantee is required that the
increased revenues will be devoted by the railway
companies to improving their service. Such coor-
dination of effort as there is, is still left in the hands
of a board of railway executives.

We in Canada are lagging behind the United
States and England in the organization of our trans-
portation facilities. It is not a showing of which we
have any cause to be proud.

FARM AND DAIRY

The Need for Organization

ONE statement made by Mr. John Kennedy of
the United Grain Growers, Limited, at the recent
U. F. O. Convention, should be carefully
pondered by every Ontario farmer who has not yet
seen fit to ally himself with the farmers' movement
of that province. The threat held out by Mr. Ken-
nedy is, that the capitalistic interests are now forming
an organization within themselves to which all
stock holders in commercial corporations will be
asked to subscribe. The object of this organization
will be partly to protect the legislative favors that
they now enjoy and which are threatened by the
growing power of organized agriculture and organ-
ized labor, but more to see that the after-war debt
is placed on the farmers and wage earners rather
than the capitalists. This organization will not work
in the open, as does the Canadian Council of Agri-
culture or the Trades and Labor Council of Canada.
Rather it will be their plan to conduct an insidious
campaign at federal and provincial capitals to in-
fluence our legislators on their behalf. Their suc-
cess with similar campaigns in the past probably
gives the privileged interests every reason to put
their faith in the wherewithal of which campaign
funds are made. The success of such a movement
would practically mean the reduction of Canadian
farmers and laboring men to the position of tax
paying serfs.

The two forces that stand in the way of rule by
privileged interests are organized agriculture and
organized labor. Neither are as yet powerful enough
to control legislation. Certainly they are not strong
enough to cope with an organized money power.
Ontario farmers are the best organized in Eastern
Canada, but even here the proportion of farmers orga-
nized is very small, some 12,000 farmers being
affiliated with the U. F. O. out of the 260,000 farmers
in the province. In Western Canada the farmers'
organizations are more influential. In both east and
west, however, there is need for further vigorous
organization work. There was no lack of enthusiasm
at the recent meeting in Toronto, and if the dele-
gates to that convention carry their enthusiasm
home with them and there transmit it into organiza-
tion effort, there is no reason why the membership
of the U. F. O. should not be doubled this winter.

The Call of the Farm

THE call of the farm is for labor and still more
labor. The need for foodstuffs is urgent.
The civil and military populations of
this and other countries must be fed. The
supply of this much needed food will be directly in
proportion to the number of experienced laborers
engaged in its production. During the past three
years, farmers have been working as they never
worked before. Their wives and children have been
helping to the limit of their ability. Mr. Stonehouse,
speaking at the recent U. F. O. convention, estimated
the length of the farmer's working day during
the past season at fourteen hours, and he did
not overstate the case. And yet, in spite of the
tremendous efforts that have been made, the acre-
age under crop in Eastern Canada has been decreas-
ing. The crop of 1918, if we read aright the signs
of the times, will not be up to the standard of the
past three seasons and unfavorable weather condi-
tions next year might precipitate famine conditions
in this country.

For this decreasing production of foodstuffs, farmers
are in no wise responsible. They have worked
as no class in the community has worked, and that
without the stimulus of excessive profits or of exorbitant
wages for themselves and families. Extra
exertion on the part of those who remain on the
land, however, cannot make up for the missing effort
of the great number whom the war has removed
from rural districts. Even before the war started,
the farm-reared boys who once manned our farms,
had in large measure answered the call of the city
and Canadian-bred farm workers were comparatively
few in number. Their places have been taken by

emigrants, and these Old Country men, be it said to
their credit, were among the first to answer the call
when war broke out. Many of the Canadian boys
also responded nobly but inadequately to the appeals
of recruiting sergeants, and now we have the Mil-
itary Service Act operating to still further reduce
the supply of farm labor. The net result of this
depletion of labor has been a corresponding decrease
in agricultural production; and that at a time when
food is more needed than ever before.

Supplying the Labor

THE food situation calls for vigorous action.
Two lines of endeavor would tend to ease the
situation—the placing of more labor on the
farms and the providing of more efficient equipment.
In meeting the demands for labor it must be borne
in mind that inexperienced help, while useful at cer-
tain seasons, cannot take the place of the boys and
men who are "to the manor born," or who have had
farm training. Few farmers would care to trust a
green hand with expensive machinery and a spirited
team, and it is with teams and machinery that the
greater part of the work on the modern farm is
done. So far as is possible, therefore, all farm boys
should be allowed to remain on the farm and be
exempt from the operations of the Military Service
Act, so long as they are engaged in the agricultural
production. When there are more sons on any one
farm than are absolutely necessary, the lads who
then become liable for service, should be given the
alternative of helping other farmers who are more
happily situated. Even this, however, would be
merely a drop in the bucket of the farmer's total
requirements if production is to be what it should be.
The remainder of the help needed must come
from the city.

This city help need not necessarily be inexperienced.
In our towns and cities are many men who
came originally from the farm, many of them at-
tracted there since the war began by the lure of
high wages in munitions plants. If at all possible
these men should be induced to return to the farms
for the summer season at least. To secure their
services, two courses are open—conscription for pro-
duction or such high prices for farm produce as will
enable farmers to pay wages commensurate with
those now paid by city employers of labor. In the
unskilled class, high school boys have already ren-
dered much appreciated assistance the season
through and a well organized campaign should make
available much unskilled adult labor to help in har-
vesting the crops.

Mechanical equipment to a certain degree may be
a substitute for labor. Tractors, mowing machines
and wider working machinery, all tend to increase
the efficiency of the farm workman. The steadily
advancing prices of all of this equipment, however,
is proving a serious handicap to its use. These
prices are at present enhanced by an almost prohibitive
protective tariff. In no one way can our
law makers so convincingly prove their interest in
the production of foodstuffs as by removing those
obstructive duties which are a serious handicap on
the farming business. There may even be cases
where it would be wise for the government to take
steps to supply tractor power, as the Ontario govern-
ment has already done. Yet the best of mechanical
equipment will replace only a small portion of
the men who have been removed from the army of
production. The first essential is man power.

We realize that we have merely touched on the
outskirts of this great problem. Its solution calls
for statesmanship of a high order. If anything is to
be done to increase production next season, it must
be done in the next two or three months. It would
be a national calamity if our armies at the front
were to be weakened because of a deficiency in the
supply of food. It would be equally regrettable if
the spirit of the people at home were to be broken
by under-nourishment. Yet this is the danger we face
if labor is not made available to the farmer at a
wage which is reasonably proportionate to the price
of farm products.

Prof. Geo. E. Day.

FEW men are better known to the live stock fraternity of America than Prof. Geo. E. Day, who has recently resigned his position as Professor of Animal Husbandry at Guelph to become secretary of the Dominion Shorthorn breeders' association. Prof. C. C. Day has long been known as our premier live stock man. Born and brought up on a farm in Wellington Co., Ont., Prof. Day's earliest associations were with beef cattle, which were a specialty on the home farm. When 21 years of age he left the farm to attend the Guelph



PROF. GEO. E. DAY
Secretary Dominion Shorthorn Breeders'
Association.

Collegiate Institute, and then spent several years teaching a rural school. He entered the O.A.C. in the fall of 1891, taking the first two years concurrently. He was the sole conductor of the institution in 1892 and graduated in 1893, the college course then being a three-year one. In October of the same year he was appointed lecturer in agriculture, and shortly after became Professor of Animal Husbandry and farm superintendent.

Prof. Day is probably best known in connection with swine investigations which he has conducted, being one of America's leading experimentalists in this line. He is the author of "Practical Farm Husbandry," which is widely used as a text book in the United States as well as in Canada. He will have the best wishes of all Canadian farmers in the new work which he has undertaken.

Dominion Grange Meets

THE 43rd annual meeting of the Dominion Grange was held in the Labor Temple, Toronto, at the close of the U.F.O. conventions. The worthy master, J. C. D. Moorefield, occupied the chair, assisted by Bro. W. E. Wardell and Henry Glendinning. Reports showed progress during the year; although no new granges were organized, some showed considerable gains in membership.

The secretary-treasurer's report showed a balance on hand of \$105.42, which was considerably augmented by dues brought to the meeting by delegates who had decided to print in pamphlet form the proceedings of the meeting for circulation among the members, a practice that has been discontinued for the last three years.

The People's Salt and Soda Co. at Kincardine is one of the institutions of the Grange that has stood the test of time. The worthy master and Bro. Howard Bertram, of Midhurst, were appointed to look into the matter of dormant granges holding stock in the company. The following motion was passed unanimously: "That the executive be a committee with power to meet the directorate of the United Farmers of Ontario to make arrange-

ments for a permanent basis of affiliation of the Dominion Grange with this body instead of each subordinate grange affiliating or not year by year, which is the present mode of procedure."

The annual banquet was held in the Queen Mary Tea Rooms. Both the proceedings of the afternoon and the banquet of the evening were conducted in good old-fashioned grange style, and were thoroughly enjoyed by the grangers present.

The following officers were elected for 1918: master, J. C. D. Moorefield (re-elected); worthy overseer, Howard Bertram, Midhurst; secretary-treasurer, N. E. Burton, Port Stanley; astt. sec-treas., Miss Hattie Robinson, St. Thomas; chaplain, W. McCrae, Guelph; lecturer, Alfred Giftord, Meaford; steward, William Oke, Whitby; astt. steward, Henry Glendinning, Manilla; lady astt., Miss Alice Palmer, Middlemarsh; gate-keeper, W. J. Goodfellow, Ainsdale; Capt. Miss Judith W. Burnaby, Miss Lena Hill, St. Thomas; executive committee—W. E. Wardell, St. Thomas; Judson Austin, Simcoe; Wm. McCrae, Guelph; Auditor, John Fritchard, Guelph; representative on Toronto National Fair Board, W. McCrae, London; Western Fair, W. E. Wardell.

The New President

THE new president of the United Farmers' Cooperative Company, Limited—Mr. R. W. E. Burnaby, of York county—is one of the lights from the East—he comes from Nova Scotia. On leaving his native province, Mr. Burnaby embarked on a business career, and in business he was more than ordinarily successful. A few years ago, however, his love for the farm reasserted itself, and he is now farming at Jefferson, Ont.



R. H. E. BURNABY,
President of the United Farmers' Cooperative Co.

where he has established an unusually good Holstein herd, and promises to make as great a success of himself as a farmer as he was previously successful in commercial life. His experience in both cases will stand him in good stead as president of the Cooperative Company.

Mr. Burnaby has taken a keen interest in farmers' cooperative movements ever since he re-established his connection with agriculture. He is one of the live wires in the Toronto Milk Producers' Association, and his interest in the United Farmers' Cooperative Company is evident by his work in their local club at Jefferson, and in a wider field he has taken a leading part in the sale of stock during the last few months. As president of the company he will exercise a vital influence on the progress of the most promising farmers' movement ever launched in Ontario.

An Important Message
To Every Cow Owner

There was never a time in the history of the world when the saving of every ounce of butter-fat and every particle of effort and time was so important as now.

There was never a time when the use of a late improved De Laval Cream Separator meant so much to every cow owner.

This is true whether you are using no separator, some inferior separator, or even an old style De Laval machine.

Fortunately it happens to be not only a matter of patriotic duty but at the same time one of dollars-and-cents advantage as well.

A New Type De Laval Cream Separator skins cleaner and produces a better quality of cream than any other separator or skimming method.

Likewise, by reason of its easier turning, easier cleaning, greater capacity, simplicity and durability, it saves time and labor over any other machine or method.

Moreover, the use of a De Laval Cream separator is better than any other way of utilizing milk because it keeps the valuable skim-milk on the farm.

Nor should the installation of an improved De Laval machine be delayed a single day. It begins saving the first day it is put in, and will likely have paid for itself by spring.

We guarantee all this to be true—but the better way is to demonstrate it in your own dairy to your own satisfaction.

That every De Laval agent is glad of the opportunity to do—without any obligation on your part unless satisfied that every claim made is fulfilled.

There are local De Laval agents almost everywhere. If you don't know the nearest one simply address either of the main De Laval offices as below.

THE DE LAVAL COMPANY, Ltd.
MONTREAL PETERBORO WINNIPEG VANCOUVER

U.F.O. Convention Items

Over Seven Hundred Farmers were in attendance. Nearly Seven Thousand Dollars (\$7,000.00) stock in the United Farmers Cooperative Company, Limited, was subscribed in a twenty-minute whirlwind campaign.

Watch the U. F. O. grow in 1918. Information sent on application regarding organization.

Duplicating Order Books, per dozen \$1.00
Duplicating Membership Ticket Books25

All Club secretaries should use them. One Hundred and Fifteen Clubs and Four Thousand Members were added in 1917.

We want these figures doubled in 1918.

Let every Club put its shoulder to the wheel—Make your Club set a new high record in both business and membership.

The United Farmers' Cooperative Co.
Limited

2 Francis Street

Toronto, Ontario

OUR FARM HOMES



JIT is always safe to learn, even from our enemies
—Colton.

The Heart of the Desert

(Continued from last week.)

"**Y**OU aren't strong enough to do any good and soon one must stay here to run things," then DeWitt gave a groan and lowered his head against the mantelpiece. Katherine ran to him and tried to pull his head to her little shoulder.

"O John, don't! Don't! Maybe Billy is right. I'm afraid he is. But one thing I do know, Rhoda is as safe in Kut-le's hands as she would be in Jack's. I know it, John!"

John did not move, but at Katherine's words the color came back into Jack Newman's face.

"That's right!" he said stoutly. "It's a devilish thing for Kut-le to do. But she's safe, John old boy, I'm sure she is."

Billy Porter, conscience-stricken at the effect of his words, clapped John on the shoulder.

"Aw! shucks! I let my Injun hate get the best of my tongue. Of course she's safe enough; only the darn devil's got to be caught before he gets in."

Billy Porter, conscience-stricken at the effect of his words, clapped John on the shoulder.

"The best of my tongue. Of course she's safe enough; only the darn devil's got to be caught before he gets in."

"I came to get fixed up for a long cruise," said John. "My pony went lame and I was thinking of shin-ing instead of this elk thing I had on last night. I wish to God Kut-le would come! I suppose he could read what we are blind to."

"You bet!" cried Jack. "I expect an answer from his friends this afternoon. I just had a telegram from Portie asking me to answer to one I sent him this morning. I caught him at Brown's and he will be here this afternoon. He knows almost as much as an Indian about following a trail."

They all spoke in the hushed tones one employs in the sick-room. Jack tried to persuade DeWitt to eat and sleep but he refused his friend's coaxing, giving way to a hoarse, "For heaven's sake, can I rest when she is dying out there?"

John had not finished his feverish preparations when Billy Porter stalked into the living-room. As he entered, the telephone rang and Jack answered it. Then he returned to the eager group.

"Kut-le has gone on a long hunt with some of his people. They don't know where he went and refuse to look for him."

Billy Porter gave a hard, mirthless laugh.

"Why certainly! Jack, you ought to have a hole bored into your head to let in a little light. Kut-le goes. Can't you find Rhoda's trail? He's been in touch with Rhoda. Kut-le is an Indian. Rhoda refuses him—he goes off—gets some of his chums and when he catches Rhoda alone he steals her. He will keep a man behind, covering his trail. Oh, you easy Easterners make me sick!"

The Newmans and DeWitt stood staring at Porter with horror in their

eyes. The clock ticked for an instant, then DeWitt gave a groan and lowered his head against the mantelpiece.

"O John, don't! Don't! Maybe Billy is right. I'm afraid he is. But one thing I do know, Rhoda is as safe in Kut-le's hands as she would be in Jack's. I know it, John!"

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Juvenile patriots: Doing their "bit" to beat the Hun.

to Mexico and makes some padres marry 'em. So it's us to the saddle a whole heap."

"We'd better get an Indian to help trail," said Jack.

"You'll have a sweet time getting an Injun to trail Kut-le!" said Porter. "The Injuns hold worship him. They think he's got some kind of strong medicine; you know that. You get one and he'll keep you off the trail instead of on. I can follow the trail as soon as he quits carrying it. Get the canteens and come on. We don't need promises over the sand. Numbers don't help in trailing an Injun. It's experience and patience. It may take us two weeks and we'll outfit for that. But we'll get him in the end. Crook always did."

There was that in Billy Porter's voice which put heart into his listeners. John DeWitt lifted his head, and while his blue eyes returned the gaze of the others miserably, he squared his shoulders determinedly.

"'m ready," he said briefly.

"Oh, let me come!" cried Katherine.

"Oh, let me come!" said Billy.

"I can't bear this waiting!"

Billy smiled.

"Why, Mrs. Jack, you'd be dried up and blown away before the first day was over."

"But Rhoda is enduring it!" protested Katherine, with quivering lips. "God!" John DeWitt muttered and flung himself from the house to the coral. The other two followed him.

It was mid-afternoon when the three rode into the quivering yellow haze of the desert followed by a little string of pack horses. It was now nearing twenty-four hours since Rhoda had disappeared and in that time there had been little sand blowing. This meant that the trail could be easily followed were it found. The men rode single file, Billy Porter leading. All wore blue flannel shirts and khaki trousers. John DeWitt's East Texas pack fashion with short stirrup, rising from the saddle with the trot. Jack and Billy rode Western fashion, long stirrup, an inseparable part of their horses, a fashion that John DeWitt was to be forced to learn in the fearful days to come.

Billy Porter declaimed in a loud voice from the head of the procession.

"Of course, Kut-le has taken to the mountains. He'll steer clear of ranches and country roads a while. Once chance has in his driving to cover his trail after he gets well into the ranges. We will set his trail and hang on till we can outrun him. If he was alone, we'd never get him, barring accident. But he will be a lot hampered by Miss Rhoda and he'll have to be hampered him a whole lot after she gets her hand in."

All the rest of the burning afternoon they moved toward that mountainous region where they entered the foothills. The way not good at best, grew difficult and dangerous to follow. Billy led on, however, until darkness closed down on them in a little cactusgrown canon. Here he halted and ordered camp for a few hours.

"Lord!" exclaimed DeWitt. "You're not going to camp! I thought you were really going to do something!"

Billy finally lit the fire and planted his light so as to illuminate the look of the burned, sand-grimed face, the bloodshot eyes, blazing with anxiety, caused him to speak patiently.

"Can't kill the horses, DeWitt. You must make up your mind that this is going to be a hard hunt. You got to call out all the strength you've been storing up all your life, and then some. We've got to use common sense. Lord, I want to get ahead, don't I? I've seen Miss Rhoda. I know what she's like. That ain't any joy ride for me, either. I got a lot of feeling in it."

DeWitt extended his sun-blistered right hand and Billy Porter clasped it with his brown paw.

Jack Newman cleared his throat.

"Do you give your horse enough room, John? There is a good lot of grass close to the canon wall. Quick as you finish your coffee, old man, roll in your blanket. We will rest till midnight when the moon comes up, eh, Billy?"

DeWitt, finally convinced of the good sense and earnestness of his friends, obeyed. The canon was still in darkness when Jack shook him into wakefulness but the mountain peak above was a glorious silver.

It was broken golden in the short time DeWitt was leading the way up the scattered trail. DeWitt's four hours of sleep had helped him. He could, to some degree, control the feverish anxiety that was consuming him and he tried to turn his mind from picturing Rhoda's agonies to castigating his friend for leaving her unguarded even though Kut-le had left the ranch. Before leaving the ranch that afternoon he had telegraphed and written Rhoda's only living relative, her Aunt Mary. He had been thankful as he wrote that Rhoda had no mother. He had so liked the young Indian; there had been such good feeling be-

tween them that he could not yet believe that Porter's surmise was wholly correct.

"Supposing," he said aloud, "that you are wrong, Porter? Supposing that she's—she's dying of thirst down there in the desert? You have no proof of Kut-le's doing it. It's only told on your Indian hate, you say yourself."

"That's right," said Newman. "Are you sure we aren't wasting time, Billy?"

Billy turned in his saddle to face them.

"Well, boys," he said, "you've got half the county scratching the desert with a fine-tooth comb. I don't see how we three can help very much there. On the other hand we might do some good up here. Now I'll make a bargain with you. If by midnight to-



The introduction.

night we ain't struck any trace of her, you folks can quit."

"And what will you do?" asked Jack.

"Me?" Billy shrugged his shoulders. "Why, I'll keep on this trail till my legs is wore off above my boots!" and he turned to guide his pony up a little branch trail at the top of which stood a rock with the telltale windlass and forge on it.

Before the tent that drew rein. In response to Billy's call, rough-hands led off the tent flap and stood suppressing a yawn, as if visitors to his claim were of daily occurrence.

"Say, friend," said Billy, "do you know Newman's ranch?"

"Sure," returned the prospector.

"Well, this is Mr. Newman. A young lady has been visiting him and his wife. She disappeared night before last. We suspicion that Cartwell, educated Injun, has stole her. We're trying to find his trail. Can you give us a hand?"

The sleepy look left the prospector's eyes. He crossed the rocks to get a hand on Billy's pommeil.

"Gee! Ain't that ungodly!" he exclaimed. "I ain't seen a soul. But night before last I heard a screaming in my sleep. It woke me up but when I got out here I couldn't hear a thing. It was faint and far away and I decided it was a wildcat. Do you suppose it was her?"

DeWitt ground his teeth together and rubbed his hand but made no sound. Jack breathed heavily.

"You think it was a woman?" asked Billy hoarsely.

The prospector spoke hesitatingly. "If I'd been shore, I'd a gone on a hunt. But it was all kind of in my sleep. It was from way back in the mountain there."

"Thanks," said Billy, "we'll be on our way."

"It's four o'clock. Better stop and have some grub with me, then I'll go in and help you."

"No!" cried DeWitt, breaking his silence. "No!"

"What's the young lady's financier?" said Billy, nodding toward John.

"She?" said the prospector sympathetically.

Billy lifted his reins.

"Thanks, we'll be getting along, I guess. Just as much obliged to you. We'll water here in your sprin."

They moved on in the direction whither the prospector had pointed. They rode in silence. Dawn came.

(Continued on page 12.)

The Makers' Corner

Butter and Cheese Makers are invited to send contributions to this department. Ask questions on matters relating to cheese making, and to suggest subjects for discussion.

Zufelt on Oleomargarine

"I BELIEVE that oleomargarine is here to stay," remarked Mr. L. A. Zufelt, Superintendent of the Elington Dairy School, in conversation with an editor of Farm and Dairy. "The question now is, how best can we control it? The United States has found the problem of control almost unsolvable, and all other countries have had difficulty in preventing oleomargarine being generally palmed off on the people as butter. There is an idea for controlling it which I believe might well be adopted. What we have a regulation prohibiting all who deal in butter from dealing in margarine and also prohibiting any concern from manufacturing both products?

"The big packers who are manufacturing oleomargarine," continued Mr. Zufelt, "also handle butter very extensively. In allowing both of these products to come under the same control, we run the risk of a dangerous monopoly. If, on the other hand, we insisted on separate manufacturers and refused to allow any wholesalers or retailers who deal in butter to handle margarine, we would bring the margarine under much better control."

Mr. Zufelt's suggestion is worthy of consideration. Or are the powers favoring the present arrangement powerful enough to prevent any change, no matter how desirable?

New Zealand Cheese Prices

CABILE advice from New Zealand announces that arrangements have been made on behalf of the Imperial Food authorities to take the exportable surplus of New Zealand cheese for the season of 1917-18

Buttermaker Fined

IN the police court at Mount Forest at Mr. G. L. Allan, police magistrate, on Thursday, Dec. 15th, a fine of \$10 and costs was imposed in each of two cases against the Wellington County Creamery of Arthur. The charges were for selling and keeping for sale buttermilk containing more than the legal percentage of water as provided by the Dairy Industry Act of 1914.

at 20c net per pound, free on board steamer, the factory to pay the first three months' storage and insurance and to receive 90% in 28 days. The factorias also make an allowance of 2½% on the marked weight of the cheese to cover shrinkage.

Quality Butter vs. Oleo.

THE day is passed, in this country and Canada, when poor quality dairy products can be protected by legal prohibition from legitimate competition with wholesome substitutes. The number of such substitutes successfully made from vegetable or animal oils or blends of both, so strictly cleansing, and the competition they offer to genuine butter can only be met on a quality basis. The creamery which sets its standard high, which insists on the delivery of only clean, well preserved cream, which pasteurizes all cream and which maintains plant and equipment in sanitary condition, need have no worries over the growing array of butter substitutes.—N. Y. Produce Review.



The Barn Can be Replaced —but Not the Farmer

AN ordinary barn is worth say about \$2,000. To his family the average farmer who is able to produce \$1,000 annually from his farm, is worth in mere money value alone, at age forty, fully ten times the value of a barn.

Unprotected against fire, the farmer seldom fails to insure the barn, which may never burn.

Helpless against the certainty of death, sooner or later—he too often fails to insure his life which he is sure to lose.

The farmer shows his practical wisdom by insuring his property against destruction by fire, for it is usually the case that there are few facilities for fighting fire in country places. Nothing could be more necessary than adequate fire protection.

For the sake of their precious loved ones who otherwise would be left helpless on the unreckonable loss of the breadwinner, nearly 60,000 persons are joined together for mutual protection in the Mutual Life of Canada.

When so great a number of persons are banded together for mutual benefit, the result is that policyholders in the Mutual Life of Canada enjoy the lowest rates for protection, while

maintaining the maximum of strength and security.

The Mutual Life of Canada is under the severest government supervision, and in this does not differ from any other legal reserve life company. The premiums cannot be increased but are often greatly decreased on account of the generous dividends which are paid exclusively to policyholders.

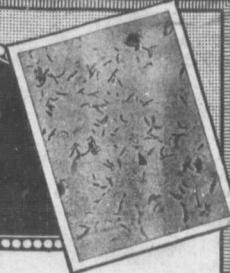
The Mutual has paid in dividends to its participating policyholders \$4,249,554.26.

Every farmer should have this splendid protection in the Mutual. In the event of his death, money will be needed to meet the mortgage, to replace his thought and labor with hired help—and to provide protection.

*Without the slightest obligation on your part we will send full information about our participating policies.
Write for booklet entitled "Ideal Policies."*

**The Mutual Life
Assurance Company of Canada
Waterloo, Ontario**

The Farmers' Friends and His Foes



Friendly Bacteria (magnified 1,000 diameters) which fix nitrogen in the soil for the use of plants. They make millions of dollars for farmers.

The Farmers' Friends---and His Foes

Bacteria, though the smallest of these are most important of all. Upon their activities depend the farmer's livelihood, his profits, in fact life itself. Some bacteria are true friends, but others are bitter foes. It means dollars in every man's pocket to understand the action of these tiny organisms.

Bacteria are really plants—but so small as to be seen only with a microscope. There are many different kinds but the great majority are beneficial. Some, however, are harmful, as those causing decay of food, and most of the infectious diseases of animals and plants. It is the act of wisdom to encourage the development of beneficial bacteria and to prevent the growth of the harmful ones so far as is possible.

Bacteria and the Soil. One ounce of cultivated soil contains billions of living bacteria. It is their function to prepare plant food that is in the soil for the use of growing plants. Without their action there would be little food in the soil could not develop into profitable crops.

Nitrogen in the form of nitrates is a necessary part of plant food and the nitrates are among the most important of these. Certain species of bacteria provide this important plant food by fixing the nitrogen present in the air which later is transformed to nitrates. Therefore their activities should be encouraged by the farmer by keeping the soil well drained, so that it will be dry, porous and thoroughly aerated; secondly by applying the fertilizer, any adding the condition of lime. The nitrogen-fixing bacteria will not grow where acidity is present and they require a thoroughly aerated soil.

Legume Bacteria. One species of nitrogen-fixing bacteria is found in the roots of many of our plants, causing the production of nodules on the roots of clovers, peas, beans, vetches, etc., in which the bacteria live. These nodules are a raised and valuable fertilizer to be thrown in green for good measure. If the necessary kinds of bacteria are not in the soil they should be put there by inoculating the seed. Bacteriological cultures for treating legume seed may be obtained from the Bacteriological Laboratory of the Ontario Agricultural College at Guelph. Each culture is enough for one bushel of seed.

Bacteria and the Water Supply. Some species of bacteria are normally present in natural waters and their presence is not injurious to those drinking them. But if they are present in excess they may be present as a result of the contamination of the water from surface drainage and seepage. These contaminating organisms are able to lead to serious results—typhoid fever, in particular, in drinking the water. Care should thus be taken to prevent all surface or seepage contamination of the water supply. Samples of the water should be tested on application to the Bacteriological Laboratory of the Ontario Agricultural College. If the water is proven to be impure, simple directions will be given for the cheap improvement of wells.

Apparently Healthy—
But Really Diseased



Bacteria and Milk. All the changes that normally take place in milk after it is drawn are due to the action of the bacteria that get into the milk during the milking operations and subsequent handling.

The bacteria get into the milk from contaminated materials such as hands, bits of dust, hay, straw, hair, manure, flies and such like materials that drop into the milk while straining does not remove bacteria. These bacteria are responsible for the milk souring and putrefying.

Proper care should be taken to thoroughly wash and scald the milk pails and other vessels and to keep out of the milk all particles of contamination. Full directions will be supplied free upon request.

Bacteria Cause Infectious Diseases. Tuberculosis, anthrax, symptomatic anthrax, infection abortion and hog cholera are some of the worst diseases of cattle. Each one is caused by a different species of bacteria. Most of these diseases of plants are also caused by bacteria. Together these diseases cause an enormous loss annually to the farmer and other persons. Proper and prevent methods might be quite largely prevented.

Two of these most serious bacterial diseases, for example:

The Dreaded "White Plague." Tuberculosis in cattle is a very serious disease of cattle and poultry. Estimates tend to show that it causes more loss than any other disease. It is the most costly disease of cattle when it invades the health, reduces the meat, fat and longevity of the cattle, and amongst many flocks of sheep where it diminishes the egg production and causes many difficulties in reducing the birds frequently to skin and bone.

It is very desirable that every farmer who has a herd should have his herd tested for tuberculosis. This will enable him to see if he is affected with the disease and so prevent the disease from spreading to the healthy stock. So long as the disease is in the herd it means a steady drain on the returns from the herd. The best way to control tuberculosis in the herd then to eliminate it. Tuberculosis testing followed by the isolation or sale of infected animals is the most satisfactory way to control the spread of the disease.

When the disease is found present in a number of animals the best thing to do is to kill off the flock, disinfect the premises and start anew with healthy stock. Sick and dead birds are examined free at the Bacteriological Department, Ontario Agricultural College.

Infectious Abortion of Cattle. This is a widespread disease resulting in heavy losses to the cattle breeder. It is caused by *Bacillus Abortus*, which is often found in the uterine discharges of cows and there causes an inflammation which results in the expulsion of a dead foetus, or in premature birth. The membranes of the placental membranes or afterbirth fail to come away normally, thus necessitating their artificial removal or death from toxic poisoning will ensue. There are usually no marked symptoms of the trouble until abortion takes place, the general health of the animal not being affected. The abortus bacillus is present in the large numbers in the placental fluids and in the discharges from the vulva after abortion. Consequently, the foetus, fetus membranes and afterbirth are usually passed deeply in quicklime and an immediate thorough disinfection of everything with which they come in contact is necessary. The cow after abortion should be kept in a stall free from draughts until all discharges from the vulva have ceased. The external genitalia, thighs and udder should be washed daily with soap and water. Care should be taken that the hands and clothes of the attendant should not get contaminated with the disease. The disease is easily transmitted to other cattle. Attempts are being made to produce a serum or vaccine that shall prevent abortion following its use on pregnant animals.

PREVENTION BETTER THAN CURE.

It pays to be forehanded in this regard. It is cheaper to prevent than to cure. The natural enemies of all these destructive bacteria are cleanliness, dry, fresh air and sunlight. Bright, dry and decent houses for both men and animals for preventing disease. Artificial disinfectants, as any of the coal tar products, are very valuable also. Research is part to provide the best possible environment for the animal, which is beneficial—which work without pay in the farmer's interest.

It Does Not Require a Course in Bacteriology to do this. By following a few simple directions, supplied by a competent bacteriologist to meet the requirements of his farm, the average farmer can aid his bacterial friends and combat his bacterial foes. Such information will be supplied in the free charge to any Ontario farmer requesting it. A pamphlet is available for Ontario farmers, giving general information upon the subject.

It is a wise assistance regarding your special problems which give full particulars. If your crop yields are not satisfactory, or if your stock is not healthy, or if you want to know about better methods, stables, etc. Write the Office of the Commissioner, Ontario Department of Agriculture, Parliament Buildings, Toronto.

An Advanced Case
of Tuberculosis.



Ontario Department of Agriculture

Parliament Buildings Toronto
Sir W.M. H. HEARST, DR. G. C. CREELMAN,
Minister of Agriculture Com. of Agriculture.



Tuberculosis can be proven by the test only. It costs more to keep this disease in the herd than to eradicate it. Even in this weak and thin condition the cow was a heavy milker—but she contaminated others.