

imposing addition to it. Besides all these, there are the improvements to the grounds, in themselves a most noteworthy feature of the generally enhanced appearance of the place.

The enlarged grandstand has seating capacity for over 8,000 persons, and the turnstile arrangements having been fitted at the rear greatly facilitate the ingress and egress of visitors.

Besides \$14,500 in cash prizes, there will be an added list of special prizes, including 27 gold medals, besides silver and bronze medals, which are justly distributed (chiefly as herd prizes) among the various breeds of horses and cattle, while the other departments, such as horticulture, dairy, fine arts, etc., receive a share of these trophies.

The dates of this, the ninth annual Central Canadian Fair, are September 17th to 26th; entries to close on the 14th of Sept. A copy of the prize list and other information can be obtained from Secretary E. McMahon, Ottawa.

DAIRY.

Weeding the Dairy Herd.

BY F. J. S.

Individual selection is not a matter that has received much attention at the hands of our dairymen, yet none affects, pecuniarily, our dairy interests more than this; it is indeed the basis of prosperity. Most of our herds are a make-up of local conditions, of what our fathers left us, of biased judgment, or of the whims of other men. Little, very little, careful, intelligent, tending-to-profit selection is done in Canadian herds to-day. We seem not to realize that the making or marring of our possible success lies originally and chiefly here. To bring the cost of production as far below the market value of the product as possible should be the chief aim, and this must be done, not wholly, but mainly, by well-considered, well-matured means of individual selection. Our American brothers are talking and writing and printing much of one-month yields, of herd outputs for two, three, six months, of the increase of herd outputs to large dimensions, which usually cover, at most, a few months of a single season, but all these are, almost without exception, given without any corresponding data as to cost of production. We are told, for instance, that a certain herd gives 300 pounds of butter per cow, but are left wholly in the dark as to the difference, if any, between the cost of the product and its market value, without which all such information (?) is practically useless. Herd-weeding, as we see it in its dollars and cents aspect, includes, first, the establishment of a carefully ascertained standard, above which is profit, below which is loss; secondly, the accurate determination of the productive powers of each individual of the herd; thirdly, prompt removal from the herd of all animals that do not reach, or pass, this standard; and, fourthly, the replenishing of the herd, chiefly by well-raised calves from the thus ascertained best cows, or occasionally by purchased additions.

What this standard is must be left to the individual dairyman to say, since it must of necessity vary with circumstances. It will, however, be such a product as will, sold at customary prices, overtop the cost of that product in feed and labor, whether the product sold be milk, cream, butter, cheese, skim milk or buttermilk.

The accurate determination of the productive capacity of the individuals of the herd, while not child's play, is within our grasp, but not by guess work. We have no method sufficiently cheap and accurate of judging of the merits of the individuals of a dairy herd outside of the Babcock milk tester and the weigh scales. Let us see. It is patent to all that quantity, alone considered, is not a safe guide, since milk contains largely varying quantities of fat. Not only so, but some cows give large quantities of milk, but milk for short periods; while others give less quantity per day, but milk eleven months out of every twelve. Neither is color of milk a safe guide. Frequently the writer has tested samples of milk when the lighter colored milks contained more fat than the higher colored or yellow milks; and while the reverse is also common, these cases quoted are quite often enough met to make the old rule wholly unreliable. The other day we tested a rather white-looking milk that showed eight per cent. of butter-fat. Two considerations forbid the use of the churn as a basis for herd-weeding: First, it is often not well handled, the churning being very imperfectly done, much butter being left in the buttermilk; secondly, it is too much labor, where one has more than one or two cows, to set the milk and churn the cream separately, of each individual often enough to get a reliable working knowledge of the herd. Using the churn once a year is less than useless. It is to the Babcock milk tester and the weigh scales that we must look for assistance in this matter.

Milk-testing is inexpensive. A four-bottle machine, complete, may be had for five or six dollars. This is large enough for any ordinary farm herd, and equally as reliable as the larger machines. One machine would do four or five farmers as well as one, which would make the cost a mere trifle. Twenty-five cents' worth of sulphuric acid would probably cover the entire cost per annum for running expenses. The work is not very difficult to learn. As to the method of testing, we would say that the testing of one sample, while it may be a partial guide, is not sufficient upon which to base judgment. A number of single tests are inadvisable and subject to inaccuracy. We would recommend that fourteen samples be taken, one at each milking for seven consecutive days, handled as a composite sample, as is done in our factories, and a test be taken of this and record this sampling and testing to be done once

each month during the whole year or season of each cow. We append a diagram of such work:—

"CINDERELLA."

Date.	Lbs. of milk.	Per cent.	Lbs. of fat.	Price rec'd.	Value of product.
	Morn.	Eve.			
June 1...	15	17			
June 2...	13	16			
June 3...	13	15			
June 4...	14	14			
June 5...	13	12			
June 6...	14	15			
June 7...	15	14			
Total...	200	3.5	7.0	20.3	\$1.40

This does not entail much labor. In a herd of ten cows, four hours' work per month will suffice. It is simple and systematic and reliable. If good work is done in skimming and churning, one pound of fat in milk will make one and one-sixth pounds of butter. In the above diagram the milk must be weighed regularly and the weight recorded. From the results of the week's weighing and testing a reasonably accurate judgment and calculation may be made for that month. At the close of the year, if 2,000 lbs. of butter has been made (ten cows should do this easily), it is then no longer an enigma as to where it came from: herd selection has been initiated, and should be continued, on a rational, accurate, and conclusive basis.

Hints on Buying a Tester.—Learn how to use and operate one before you buy—you will be able to buy more intelligently. Buy a four, eight or twelve bottle machine, according to the work intended to be done. Interest two or three of your neighbors in the idea, and thus lighten the cost. Secure one whose centrifuge is geared at least ten revolutions to one of the handle. Low gears are objectionable for different reasons. First, it is hard on the machine when the handle has to be turned very fast; secondly, they are difficult to turn and preserve a steady, uniform speed; thirdly, it is harder work to turn them. Belt testers are quiet-running, but rather unreliable; there is likelihood of the belt slipping.

See that the cups on the centrifuge are hung properly, that they swing up horizontally, and that they are strongly made. Look well to the apparatus accompanying the machine, and see that the pipette, test bottles, etc., are from some reliable maker. Insist on the replacing of all incorrect pieces by correct ones. Do not buy a machine that has no cover; they are more dangerous, and temperature is not so easily controlled.

It is not necessary to pay more than three or four cents a pound for sulphuric acid, even in small quantities. Do not buy any milk-testing apparatus merely because it is cheap. If you are prepared to do careful work and believe that a milk tester is a valuable aid to successful dairying, buy one; if not, then do not buy one. They are not intended as toys for children, but as dollars and cents to would-be intelligent men.

Keeping Dairy Cows for Profit.

D. N. M'INTYRE, BRUCE CO., ONT.

The present depressed condition of the prices of almost all farm products has brought us face to face with two great questions: 1st. How can we produce the greatest quantity of food from the least ground at the least cost? 2nd. What shall we do with the food? Some say, by their actions, sell it, but these themselves are being sold out. By all means let us feed what we grow, and let the cows form the base of our operations. I do not advocate that we should buy expensive cattle. Let us select from the cows we have those that give the fullest pail, having at the same time due respect to the symmetry of the animal. She should be rangy, of good size, capable, when properly fed, of giving a large quantity of milk and raising a calf that when raised and fattened will suit the taste of the most aristocratic Englishman; and let us not forget that the value of the calf and the feed has a direct bearing on the value of the cow. There is not much use at the present time of advocating breeding either of acute milkers or heifers, because our people are not yet educated to feed them properly. Let us make the best use of what we have, improving them as we go along. The climatic conditions of our country are such that our cattle are exposed to a great deal of cold and rainy weather in the fall, while our winters are so long that we do not care to house them before it is really necessary, for it means both extra work and extra feed. Again in the spring they are kept in the stable until the grass is good, the weather warm, and the conditions favorable to animals' comfort.

It has been the general custom to have the cows come in the spring, the object being to have a heavy flow of milk during the summer months, and by the end of December allowing them to go dry for the next four or five months, during which time they would be boarded as cheaply as possible. I wish to say, in passing, that too many of our stables are boarding-houses from which the occupants emerge in the spring without having paid either principal or interest on what they have consumed. It is a well-known fact that exposure to cold, wet weather very quickly reduces the flow of milk, and that when there is a decrease in the flow it is very difficult to again raise it to what it was. This is exactly what happens in the fall of the year; hence we conclude to try another scheme, which is to have the cows come in shortly after they are stabled in the fall, say from the middle of November to the end of the year. When well fed, the cows maintain a good flow of milk all winter, and when let out to grass about the middle of May

there is no abatement. They milk almost as well as if they came in in the spring, until the cold weather comes in the fall, when they require to go dry for about six or, at the most, seven weeks. These cows, however, must be liberally fed during the winter—not simply kept alive (or boarded). And here is the vital question. These animals have to be kept alive anyway, which takes so much food—say one feed of hay or corn, two feeds of straw, and a half bushel of turnips. How much more is it necessary to feed in order to have and give a fair flow of milk? If eight pounds of meal be added to the above ration, and an extra feed of corn or mangolds substituted for the turnips, there will be no trouble about the milk. Thus, for the extra eight pounds of meal there will be a product of sixteen cents' worth of milk, and the next fall the calves will be worth five dollars each more than the ordinary spring calves. This also solves the problem of stock raising in districts where cheese factories abound. The whole tendency of the present time is along the lines of the factory system, both for the manufacturer of butter and cheese. These factories only run from five to six months of the year. The proprietors require interest on the investment capital and the makers require salary enough to keep them a full year. Were these factories running ten months in a year the proprietors would require very little more profit and the makers very little more salary, the cost of manufacturing would be reduced, and the farmers would receive dividend from their cows almost all the year. Why, then, should we farmers not go into winter dairying as a body; keep more cows and feed them better? It is a common saying among dairymen that no cow should be kept that will not give 6,000 pounds of milk in a year when properly fed; and I consider that this does not place the minimum limit of what we should expect any too high. It has been already stated that cows should not be dry for a longer period than seven weeks. This leaves 316 days, which, at an average of 20 pounds per day, or ten pounds (half a pail) each milking, gives 6,320 pounds of milk per year. Suppose on an average it takes 28 pounds of milk to make a pound of butter, this would make 225 pounds; or suppose it requires 10½ pounds of milk to be the average for a pound of cheese, 6,320 pounds would make 602 pounds. I am well aware of the fact that this is probably one-third more than the present average, yet I am satisfied that, providing the cows are handled along the lines indicated in this paper, the foregoing results can be realized.

The Production of Camembert Cheese.

The popular small cheeses made in France and Germany, but used everywhere, being largely exported from these countries, are divided into two classes—one is used within a few days after the making, the other being cured for later consumption. It is plain that the latter description of cheese is more suitable for extensive manufacture, on this account, than the older kind, known as fromage frais, and, on account of the greatly improved quality, the cured ones are known as fromage fin. This term is fully justified by the most careful process of curing, by which the sharper ammoniacal taste and odor are got rid of, and a soft, rich, buttery consistence and a pronounced and pleasant flavor are given by the slow and careful curing. It is a noteworthy fact that this method of curing, which has been in use for more than a century and has been slowly evolved by gradual experience, is based on the most correct scientific principles. A typical cheese of the cured kind is the Camembert, so called from the place of its original manufacture, where it was first made, in the year 1791, by a dairyman named Peynel. The manufacture now amounts to several millions of cheeses annually, and employs the whole population of this district.

The method of manufacture of this popular cheese is exceedingly delicate and demands the greatest care in the most minute details, beginning with the milking of the cows—indeed before this, for the feeding and lodging of them are fully considered in respect of the avoiding of everything that might interfere with the perfect purity of the milk and the preservation of all the fine qualities of the pasture of this especially favored district. This extreme care accompanies all the work in the dairy until the milk is finally and carefully strained. The milk, having been drawn, is strained immediately and is set apart for three hours for the cream to rise. There is then a thin pellicle of cream on the milk, which is removed and churned into a very fine quality of butter. The milk, for the convenience of the special manipulation, is set in broad earthen jars, each holding five or six gallons, and as each has been skimmed it is set on a heater and warmed until the common, well-known pellicle or skin forms on the surface and wrinkles, or creeps, as it is called. The temperature at which this happens is somewhat over one hundred degrees. The rennet is then added, one tablespoonful to each jar of milk, in which there are twenty liters, equal to about twenty-one quarts. The rather high temperature of the milk when the rennet is added brings the curd quickly, and at the end of five or six hours each jar is set on a low bench, in a sloping direction, so as to bring the contents to the extreme edge, and the curd is then dipped out into the molds, which are of cylindrical shape.

These molds, made of pure tin, are twelve centimeters or four and three-quarters inches high and