

cow was produced at 8½ cents per pound and from the worst at about 19 cents. The best cow's milk, if sold at 4 cents per quart, would yield a profit of \$39.46 for the food consumed; if her butter were sold at 20 cents per pound, the profit would be \$47.30; and if her cheese were sold at 8.7 cents, she would yield \$21.18 of a return over and above the cost of food. To show the value of prepotency of pure-bred cows, it was shown that the daughter of the best cow produced butter before she was two years old at a cost of 9.1 cents per pound. In feeding, the individuality of the cows must be noted in order to avoid under or over feeding.

Wasteful Ways in Dairy Farming.—The Hon. W. D. Hoard, under this heading, talked straight to the patrons of cheese and butter factories who are indifferent to the details of their business. He has known a patron to get a return of \$9.96 per cow for the summer, and another to get \$30 per cow. We must get at least \$30 return from each cow or lose money by them. The \$9.96 is the wages of ignorance and shiftlessness. The Dairy School is for the purpose of educating men to make more profit out of their cows. He advised patrons to have a census taken of the cows and the acres it takes to feed them, and thus find out the cost of feeding them. Have it all put upon a blackboard, and then meet once a week from December to April to discuss their business, when they would soon find out where they are at. Commence to test cows and get rid of the poor, unprofitable ones. Keep good cows or none at all. Keep a good pure-bred sire. Study the feeding question, and look out for the best system of building barns, as it costs no more to build a well-planned barn than a poorly-planned one. Ignorance will cost more than knowledge. Summer soiling is more profitable than pasturing. Silage is the proper summer food. Summer silos should be built narrower than winter ones, as a greater depth must be removed each day in hot weather than in cold to keep the food sweet. Three cows fed on first-class heavy June-grass pasture required 3½ acres, while three others were soiled on the produce of 1½ acres. The 3½ acres of pasture gave 6,582 pounds of milk, producing 303 pounds of butter. The 1½ acres of soiling crop produced 7,173 pounds of milk, containing a corresponding quantity of butter. Many cows suffer more for want of food in summer than in winter. To lessen the wastes in the dairy, men must read more dairy literature. A man must become filled with dairy ideas before he can think dairy thoughts.

A Well-Managed Dairy Business.—Mr. E. D. Tilson, of Tilsonburg, who is known to conduct his dairy operations with intelligence, was asked to say a few words. He milks from 50 to 60 cows, mostly pure-bred and grade Holsteins, which are milked ten months of the year. His heifers are milked from twelve to fourteen months their first milking period. Each cow's milk is weighed at every milking, and tested with the Babcock tester once a week in order to know just what she is doing. The best cow gave 15,000 pounds of milk last year, testing 3.70 per cent. butter-fat, making 647 pounds of butter; the best 2 averaged 13,000; the best 5, 12,400; the best 10, 11,600; the best 25, 10,200; the best 30, 9,500; the best 40, 9,000; the best 45, 8,750; the best 50, 8,300; and the average for the whole 55 was 8,000 pounds. The average per cent. of fat for the herd was 3.5. Mr. Tilson feeds daily 50 pounds of ensilage, 6 of bran, 2 of pea meal, and 3 of corn and cob meal, at a cost of 14 cents per day. He endeavors to raise 20 heifers from the best cows each year, and feed off 20 of the worst cows. Cleanliness in the stable is observed in every particular. During winter the cows are turned out a short time each fine day. At the present time the herd is making an average of 13 cents per day profit per head.

The Curing Room.—Mr. T. B. Millar claimed that the proper temperature for the cheese-curing room should be from 60 to 65 degrees, with about 60 degrees of moisture as shown by the hygrometer. When the atmosphere becomes too dry the cheese cracks. When such occurs, the cheese should be washed with warm water, which will cause the cracks to close and the rind to form. Too much moisture will cause mould. In hot weather the windows should be opened at night to ventilate. When the room is too moist scatter lime on the floor, which will take some of it up. If a current of air can be kept in circulation among the cheese, and good light admitted, mould will not form on the cheese. Mouldy cheese should be washed with whey and then with water before being taken from the factory, when they will appear fresh. A good means of cooling the curing room in hot weather is to set around boxes of ice in different parts of the room near the ceiling.

Agricultural Education.—Mr. Andrew Pattullo, M. P. P., Woodstock, delivered an eloquent and excellent address on the above subject. He said that the most potent agencies were the agricultural fairs, the dairy associations, the farmers' institutes, and the Agricultural College. The boys and girls must be started as though they were to remain on the farm, and not train them for something else. "As the twig is bent the tree is inclined." France provides us a good object lesson, as the primary education is along the line of agriculture, with the result that 75 per cent. of her population live on farms. Her financial standing is good, as her subjects have \$60,000,000 in the Government savings bank. She exports much, while England imports \$80,000,000 worth of food and other stuffs annually where such education is not given. Russia teaches agriculture in the Public schools, which

have gardens and plantations around them. We Canadians need less High school and more agricultural training. Agriculture should be a compulsory subject in both the Public and High schools. Seventy per cent. of our boys and girls live in rural districts, but too many leave it when they grow up. Our history might well deal with the lives of such men as Harrington, who lived for agriculture and added millions to the country. Our geography might dwell upon the soil and products of various parts of our country. Mr. Pattullo advocated the conversion of half of our High schools into elementary schools of agriculture, to be under the direction of the Provincial Minister of Agriculture. These schools would then act as feeders of our noble Agricultural university at Guelph. It is true that the State owes and provides everyone an opportunity of education; then why not have it of a sort that is most needed and most beneficial.

Professor C. C. James, Deputy Minister of Agriculture for Ontario, in an evening address referred in his usual eloquent and vigorous manner to some of the advances made in agriculture, especially dairying, within the last fifty years. Fifty years ago Canada was not a Dominion and we had not a mile of railroad in the (Ontario) Province; our telegraph system was fifty years ago about to commence; and reapers were just being used for the first time. It was not until 1867 that the first cheese factory was established in this country, and not until 1884 the first butter factory. Yet the dairy business has at the present time assumed very large proportions. The annual output of milk and its products amounts to about \$37,000,000, a very important industry. We have had a wonderful development of late years in connection with our towns and cities along manufacturing lines. The introduction of electricity, the telephone, the electric light, electric cars, and electric motors, all have followed each other in quick succession, with the effect that the attention of the citizens of this and other countries has been almost entirely directed to the great advance made along these lines, and we are apt to think at times that agriculture has not made such rapid progress, but such is not the case. After the introduction of the reaper came machine after machine, and now we have the modern cheese and butter factory with all its splendid equipment. In keeping with this we find men producing milk at low cost and disposing of it at much more profit than others who use their brains less. We hear of a gentleman who gets 12 cents per quart for milk by catering to a special class of customers, in Chicago, by conducting his business as intelligently as the most careful business man. Men succeed where others fail because they like their business, and they like it because they understand it. If men in other lines conducted their business with as little purpose and understanding as most agriculturists do, failure would surely be the result. More skill must be exercised in growing of crops and in the feeding of stock. We must understand the nature of the soil and the most suitable crop to grow. If we can by a better understanding increase our crops one bushel per acre it would add millions to our total wealth. The field of horticulture too opens up with great possibilities to those who will give it the necessary attention. Reference was made to the great advantage that would be derived from having our butter made in creameries instead of at home, so that the good price would be obtained for the whole output. In conclusion, Prof. James remarked that "all the goodness of a good egg can never make up for the badness of a bad egg." Success in cheesemaking, success in buttermaking, and the building up of this which is now our greatest industry depends upon keeping ever in mind, that all the goodness of a good cheese will never make up for all the badness of a bad cheese, and all goodness of a good pound of butter will never make up for all the badness of a bad pound.

Branding Bill.—The Hon. Thos. Ballantyne introduced a discussion upon the Branding Bill, setting forth the origin and advantages of having the word "Canadian," the day and month of manufacture branded upon all cheese shipped out of Canada. His claim was that we must treat Great Britain honestly if we are to hold her market. We have everything to gain and nothing to lose by being thoroughly honest, and we can gain nothing, and may lose a great deal, by sending one month's cheese for another. If July cheese has an undeserved bad reputation, the branding of the date of manufacture upon them would show the falseness of that impression. Those who opposed branding the date of manufacture upon the cheese claimed that our cheese is now bought on its merits and not on the date it was made. Prof. Robertson spoke in favor of registration as a means of tracing bad cheese to its source. After some discussion, the following resolution was carried by a large majority,—"That this meeting would recommend that the word 'CANADIAN' be branded upon each cheese and package of butter for export."

Winter Buttermaking was the subject of a paper by J. H. Monrad. Winter feed is cheaper than summer pasture, provided silage is used. Cows can best be dry during the hot, dry weather. A vacation of six weeks or two months is enough for a cow. Some cows should calve in fall and some in spring. We then have better chances of uniformity. In co-operative winter buttermaking the milk should be delivered every day if possible. If this cannot be done the cream should be gathered from local skimming stations. This affords an advantage in feeding the skim milk to calves and hogs.

Temperature is the all-important factor in winter buttermaking. It is therefore important that creameries be constructed so as to give the maker full control of the temperature. A strong claim was made for reliable commercial pure cultures in their ability to give uniform results. Pasteurization was recommended as a good means of getting rid of foreign flavors. While pasteurization is not a panacea for all evils, it is certainly a great promoter of uniformity.

Practical Buttermaking was taken up by Mr. J. B. Muir, of Avonbank factory, who has written a number of practical articles for the FARMER'S ADVOCATE. His paper was largely an epitome of what our readers have already seen from his pen. It consisted of a relating of his own practice and experience in successful winter buttermaking. The feed and care given the cows producing the milk, the condition of utensils and milk has much to do with the final product. Separation is done at from 90 to 95 degrees. Pay close attention to the separators and take a sample of the skim milk every 15 or 20 minutes to determine the quality of the work being done by the separators. Use a good, clean-flavored "starter" for ripening the cream. This is put in early so that correct flavors will become fixed and thus keep the field. Make the starter from fresh skim milk. Use about 10 per cent. of "starter" and ripen at 65 to 70 degrees of temperature. When the cream has become sour, cool quickly below 60. Mr. Muir churns at 53 degrees, which does exhaustive and first-class work. The cream should have from 30 to 35 per cent. of butter-fat to churn well at this low temperature. Allow the cream to stand at 50 to 52 degrees for two or three hours before churning, in order to harden the fat globules. Strain the cream into the churn. Use no color for the English market, and about half an ounce to 1,000 pounds of milk for home markets. Never fill the churn more than half full, and one-third full is better. See that the temperature does not become too high while churning. Churning should not be done in less than 45 minutes. Test the buttermilk daily to see that no loss of fat is being sustained. Wash, with water at 55 degrees, as little as possible so long as the buttermilk is removed. Use as much water as there was buttermilk. Revolve the churn for two minutes in washing, and drain off as quickly as possible. Allow the butter to drain for 20 minutes, then salt in the churn. Put on half the salt to be used, then tilt the churn one way and put on half of what is left, then tilt back the other way and put on the balance. Give the churn a few turns or mix in the salt with a wooden butter-fork. Allow it to stand in the churn or in tubs for two hours for the salt to dissolve. Use one ounce to one pound of butter for home markets, ½ ounce for British markets. Use fine, easily dissolved salt that has been kept in a clean, dry room free from bad odors. Work the butter just enough to rid it of surplus moisture and distribute the salt evenly. About 12 to 15 turns of the worker will be found sufficient, when the color should be uniform. When butter is salted on the worker more working is necessary. Put up the butter in pound prints or pack it in tubs or boxes.

Butter for the British Market.—Mr. Muir is this winter, together with some half dozen other factories, putting up butter for the Manchester (Eng.) market. The butter is shipped by the Hon. Thos. Ballantyne. The butter is of uniform quality, made without the addition of artificial coloring, and with ½ of an ounce of salt to a pound of butter. The package used is the 56-lb. square package made of ½ inch spruce wood. It is well made and painted inside with melted paraffine and lined with heavy parchment paper, as described by Prof. Robertson at the Creameries Convention reported in last issue.

During the discussion which followed Mr. Muir's paper, Mr. F. J. Sleightholm, principal of the Strathroy Dairy School, claimed that he was getting very close skimming at a temperature of 65 to 80 degrees.

Wise Stabling of Cows.—The Hon. Sydney Fisher gave a practical and highly valuable talk on this question. He recommended the admission of much sunlight, also whitewashing the stables annually. This can be easily and well done by means of a spray pump. Grow food for the cows, and do not make them live on whatever your old rotation will furnish. Study her needs and provide for them. Winter buttermaking must go hand in hand with summer cheesemaking. He advocated milking the cows ten months of the year.

Square Cheese.—There were on the platform two large square cheese—samples of a number being made at the Guelph Dairy School and sent to the London (Eng.) market to ascertain whether or not there is any advantage in sending square over round cheese.

The display of fine "Diamond Crystal" dairy salt made by the Windsor Salt Company was especially worthy of note; also an exhibit made by the T. T. Coleman Estate, of Seaford. The gang press, Babcock tester, and milk separator shown by the firm of Richardson & Webster, St. Mary's, were referred to by the committee on utensils as being a credit to the manufacturers from the standpoint of adaptability and construction.

Mr. J. H. Jull, of Brant Co., Ont., referring to improvement in the FARMER'S ADVOCATE, says: "I know how it would improve the farming methods of some farmers; that is, to take it and read it carefully and then act upon what they have learned."

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