

the product has been excellent, which fact, he believed, was a tribute to the instruction staff. What we must now strive for is the ability to produce cheaply an article of good quality. He felt justified in holding out to the farmers of this country the prospect of higher ruling prices for food products, notwithstanding the vast areas of new land being opened up. A higher range of prices will tend to send more people back to the land.

When in Europe, last summer, he was on the lookout for suggestions and ideas that might be of use to us here in Canada. He did find some conditions we might do well to copy, but, on the whole, he thought agriculture was on as high a plane in Canada as anywhere. It is true some countries of Europe are making their acres yield more than ours, but nowhere did he find implements to compete with those used by Ontario farmers. We may have overdone it a little in spreading out. There is room for improvement in the direction about that. The plan has some advantages, but employing more labor, but these changes will come. He hoped that before long our conditions will typify the best, and that our sons will soon be more ready to dwell in the homes of their fathers.

DAIRY CONDITIONS IMPROVING IN WESTERN ONTARIO.

Last season will be remembered as a successful one for the patrons, high prices prevailing, although the make was somewhat light in some sections owing to poor pastures, said Frank Hens, in presenting his first annual report as Chief Dairy Instructor and Sanitary Inspector in Western Ontario. It is to be hoped that milk producers will make preparation for summer silage or soiling crops for 1903. The makers have not all realized the profits they should, owing to short makes and too low prices for manufacturing.

The change in the system of dairy instruction, making all the instructors sanitary inspectors, and extending their services to all factories free of charge, has worked well, and the work was accomplished with one less instructor than last year.

SANITARY CONDITIONS IMPROVED.

More improvements have been brought about this year in the sanitary conditions of the factories, particularly in the matter of whey tanks, drains, floors, equipment, and inside and outside appearances. On the whole, the factories were never in better condition, though some are not up to what they should be, but improvements have been promised in these. The staff have tried to use judgment and common sense in dealing with sanitary conditions, believing that improvements could be brought about through time. They have tried not to abuse the position in which they were placed. He had written, and in a number of cases visited, several factories where the sanitary conditions were extremely bad, and in every case but one the necessary improvements were made, without further trouble. The instructors visited a number of patrons, giving instruction regarding the care of milk. Improvements were made where asked, especially in the matter of new cans to take the place of old and rusty ones.

DISCOURAGING ADULTERATION.

Early in the season, Mr. I. L. Farrington was appointed as a special officer to deal with cases of milk adulteration. Sixty patrons were prosecuted. All but one practically pleaded guilty to the charge, and were fined \$5 to \$35 by police magistrates. This is having a good effect. No settlements out of court were allowed. As one consequence of his appointment, the instructors were able to spend less time testing milk, and could pay more attention to visiting patrons and improving milk supply.

PASTEURIZING WHEY.

Once more he took the opportunity of strongly urging the heating of whey in the tanks to 165 degrees, for the reasons repeatedly set forth in these columns. The cost is only about 50 cents per ton of cheese, or 50 cents to \$1.00 for each patron—a mere trifle considering the benefits derived by the patrons in superior feeding value of the whey, saving of milk cans, superior quality of cheese, and otherwise.

IMPROVEMENTS ON FARMS AND IN FACTORIES.

Co-operation on the part of patrons was shown last season by the purchase of 1,688 new milk cans, and the repair of 298. One hundred and eighty-two factories in Western Ontario are using pasteurized culture, 189 factories are using the acidimeter, 19 factories only are paying by test, 12 factories have cool-curing rooms, 31 buildings were painted inside or out, 60 factories made general repairs, 16 put in new floors, 24 repaired the floors, 23 put in new whey tanks, 4 were built entirely new, 9 were entirely remodelled, 2 put in drains, 6 drilled wells, 7 put in cool-curing rooms, 23 put in new vats, 11 put in new curd mills, 12 put in new curd knives, 24 put in new hoops, 12 put in new presses, 12 put in new agitators, 15 put in new sinks and racks; 63 factories got new pumps, repaired boilers, got new scales, put in new engines and boilers, got new weigh cans, hot water barrels, etc. Total expenditure for improvements in factories in 1902, including new buildings, was \$37,882.00, or \$7,132.00 more than last year.

MANY SPEAKERS REQUESTED FOR ANNUAL MEETINGS.

A large number of applications for speakers to attend the annual factory meetings during January, February and March are coming in. At many of these meetings the patrons pass resolutions agreeing to pay the maker 50 cents per ton of cheese for pasteurizing the whey. At some of the meetings they also cheerfully raised the price for making cheese. District meetings were held during November and December in the different groups. Some of these were exceptionally well attended. Resolutions were passed at all these meetings against receiving milk rejected at neighboring factories.

WESTERN ONTARIO CHEESE STANDS HIGH.

Geo. H. Barr, formerly Chief Dairy Instructor in Western Ontario, now of the Dominion Dairy and Cold-storage Commission's staff, in which capacity he has been for the past season employed as official referee at Montreal, to decide disputes between buyers and sellers as to grade, warmly commended the quality of Western Ontario cheese, though pointing out that there was still room for improvement in reducing the number of seconds. In creamery butter, while comparing well with Townships butter in body, grain and color, the Western Ontario product was not equal to the Quebec makes in flavor, but the cream-gathered creamery butter in Western Ontario was equal to the cream-gathered creamery in Quebec. One good practice in the Quebec creameries was the designation of each churning. He agrees with Mr. Ruddick that our butter competitors in the Old Country markets will be Siberia and Ireland. He saw some Siberian butter in Montreal last summer, which, for color, body and grain, was equal to anything he had seen in Montreal last season. The flavor was not good, but allowance must be made for the distance it had come.

To keep up our position, we will require the very best skill and care in putting up our butter. He strongly appealed to the dairymen of Western Ontario not to build any more small factories. Most of the cheese he was called upon to examine in Montreal were from the small factories of Eastern Ontario. He took occasion to correct an erroneous impression of his Picton speech conveyed to the Montreal and Toronto press. For an exact report of what he did say there, see "The Farmer's Advocate" of January 16th, page 86.

LEEKY MILK.

He concluded with a recipe he had heard from a Quebec maker for leeky milk. This maker had occasion to reject a patron's milk several times for this cause, and afterwards noticed that his milk varied considerably in quantity from day to day. Meeting the patron, he inquired the cause. "Well," said the dairyman, "I concluded that some cows eat leeks and some don't. So, each time, before milking, I go around in front of each one and smell her breath. If it is all right, the milk is sent; if not, it is kept at home."

FACTORY-SEWAGE EXPERIMENTS.

In the absence of Dr. Hodgetts, who was billed to discuss the experiments he had been carrying on with factory sewage, Superintendent of Farmers' Institutes, G. A. Putnam, briefly reported that, at the request of the Department of Agriculture, Dr. Hodgetts, as Medical Health Officer, had undertaken to put in a couple of experimental plants for the disposal of factory sewage, one in the East, and one in the West. The one in the East was not installed according to contract, and was not tried. The one in the West was at Innerkip, and it worked to the Doctor's entire satisfaction. He wants to try it longer, however, before pronouncing.

MERE BUTTERMILKERS VS. CREAMERY SUPERINTENDENTS.

There are something like 10,000 buttermilkers and cheesemakers in the United States, said Ed. H. Webster, Chief of the Dairy Division, Washington. The demand that can be created for dairy products depends upon the quality. An evil of the butter business in the Republic is that the buyers will not discriminate as they should in paying for cream according to quality. Another evil is the large, centralized creamery. Where the cream requires more than 24 hours to reach the creamery, it is too long a shipment. One fruit of the centralizing system, as it has developed across the line, is that there are a large number of men buying cream over the counter in stores and shops of all kinds, even blacksmith shops; and if Smith won't take the cream, Brown will. The effects on quality of cream delivered and butter made can be imagined. The successful creameries are those in which the maker can come in touch with the patrons. His personality is an important factor. It is unfortunate that the term buttermilk has come into use to designate the creameryman's employment. The term is entirely inadequate to describe his work. While he must be an expert buttermilk-maker, the creamery superintendent of the future will also require to be a business man, must be tactful, and must be given enough assistance to do his work right. By the expenditure of \$25 or \$30 a month for an extra apprentice, many a creamery could enable its creameryman in charge to save from \$300 to \$400 a month more. Would it not be a good investment?

Among the faults of some present-day American buttermilkers, he stated that many of them were wasting large quantities of butter-fat entrusted to their care. The man who purloined from the creamery's bank account hundreds of dollars a month would be immediately dismissed, yet some of them are losing the creamery hundreds of dollars a month in 25-cent pieces by wasting butter-fat. If an accurate daily account of their work were kept, they would be immediately discharged. He knew one case where a creamery was losing \$1,600 a month because the maker didn't know where his fat was going. Another fault was the loose system, or absence of any system, of keeping track of the output and other accounts. The buttermilkers need higher qualifications. The grade of work in the dairy schools must be raised, first, by better men coming in, and bringing better qualifications with them when they do come; and, secondly, by a broader training in the schools, with a view to fitting them for positions as creamery superintendents, instead of mere buttermilkers.

OTHER FEATURES.

Some excellent papers were read by Western Ontario dairymen and instructors, and a splendid address was delivered by Prof. Dean, of the O. A. C. Some of these will be quoted in full or extenso in subsequent issues. The final evening programme included a stereopticon address by Mr. Webster, together with addresses by Col. Munro, President G. C. Creelman, of the O. A. C.; G. A. Putnam, Superintendent of Farmers' Institutes and Director of Dairy Instruction; and Prof. R. Harcourt, of the Ontario Agricultural College.

A NEW TEST FOR CASEIN.

In the American dairy press there has recently been some prominence given to a new test for casein in milk, discovered by Prof. E. B. Hart, successor to Dr. Babcock, as Active Chemist, of the Wisconsin Experiment Station. At the Western Dairymen's Convention, a description of this test was given by J. H. Lund, an ex-student of the O. A. C., now studying in Wisconsin. Prof. Dean urged that Canadian dairymen give particular attention to this new test, which he hoped would prove serviceable in more accurately determining the value of milk for cheesemaking. Mr. Lund, in a few prefatory remarks, recalled the numerous tests of practical value to dairying which have been discovered in recent years. In 1890 came the Babcock test, and about the same time came the Harris rennet test. In 1895 we had the Wisconsin curd test. In 1903 the acidimeter came into use in Ontario cheese factories, while 1907 saw the introduction of three tests for moisture in butter and cheese.

THE ADVANTAGES OF A TEST FOR CASEIN.

The advantages claimed for a practical casein test are that it will enable cheese factories to pay for milk more nearly according to its actual cheesemaking value. While the value of milk for buttermaking depends exclusively upon the percentage of butter-fat in the milk, analyses of cheese show that it contains not only 33 per cent. of butter-fat, but some 26 per cent. of casein compounds, along with 34 per cent. of water. While practically all of the albumen and sugar of milk are lost in the whey, 92 per cent. of the fat and 96 per cent. of the casein are retained in the cheese.

The subject of payment for milk at cheese factories is not by any means a new one. In 1891, Dr. Robertson advocated paying for milk on the basis of its percentage of butter-fat. While this method was not ideal, it was an improvement on the pooling system. Subsequent experiments at the O. A. C. led to the conclusion that a more equitable system was to pay for it on the basis of the percentage of fat plus 2, allowing two to represent the value of the casein in the milk, there being at that time no practicable test for the percentage of casein. Investigation shows, however, that the casein contained in the milk varies considerably, though not in proportion to the variation in fat content. Thus, in testing the product of 15,000 cows in New York State herds, it was found that the percentage of casein varied from 1.93 to 3 per cent., the average being 2.46 per cent. The fat in these cows' milk varied from 3.04 per cent., up to 4.6 per cent., the average being 3.75 per cent. Again, taking the results from a week's test of the milk of 12 patrons of the Wisconsin College creamery, they found that the relation of casein to fat varied from the proportions 60:100 up to 70:100. In one case, of two cows, whose milk each tested 4 per cent. fat, there was shown to be a difference in casein content of .4 per cent., and the relative cheesemaking values of these samples is apparent from the fact that 100 pounds of the sample of milk lower in casein content would make but 10.42 pounds of cheese, while 100 pounds of the milk higher in casein content would make 11.42 pounds of cheese. Comparing some individual cows, they found the relation of the casein to the fat varied from 46:100 up to 73:100, representing a great difference in cheesemaking values. It seems reasonable to suppose that, by breeding and selection, it would be possible, to get a strain of cows giving milk with a higher relation of casein to fat content, though, of course, the greater and more immediate benefit of the test, if generally adopted, would be the payment to each man of the precise amount which his milk was worth for cheesemaking purposes.