

results are not likely to be noticed, and, as stated, treatment is often very unsatisfactory.

Suppuration, or the formation of abscesses containing pus, often appears as a sequel to mammitis. There may be one or more abscesses, and they vary in size and situation. Sometimes they appear immediately beneath the skin. In other cases they are more deep seated, as in the connective tissue which separates the glands or in the glandular tissue, while in rare cases they are formed in the connective tissue between the udder and the abdominal walls. Suppuration usually commences from the eighth to the twelfth day. It is marked by an increase in the symptoms of mammitis, the temperature, swelling and pain becoming more marked. If the abscess in process of formation is superficial, the pain, swelling and redness are greatest at a certain point; there the skin is at first a bright red, but changes to a violet hue, and at the same time this part becomes more prominent and circumscribed. Fluctuation can soon be detected by careful manipulation, and if the abscess be not lanced it will soon burst and allow escape of pus. Then the febrile symptoms diminish (unless other abscesses are forming) and the general symptoms improve; the swelling in the gland subsides, and pain diminishes; pus escapes from the opening for two or three weeks, finally ceases and the wound heals. Recovery has taken place, and nothing abnormal remains save perhaps a small mass of indurated gland where the abscess has been, and the results are not generally very injurious or serious. This favorable termination, however, does not occur when the abscess or abscesses are developed in the inter-glandular tissue, or in that between the udder and the abdominal walls. Here the pus is deep-seated and burrows or spreads where the resistance is least; in this way it leads to the formation of sinuses or tubes, sloughing off the skin over a large and wide surface, isolating masses of the gland—thus destroying or severing their relations with neighboring parts, and causing their mortification and total

destruction. This mammary suppuration is always very serious, as, under the most favorable circumstances, it generally ends in the animal losing more or less of the gland; while in some cases it causes death from the violence of the inflammation and intensity of the pain, through exhaustion from long-continued and profuse suppuration, or from blood-poisoning from absorption of pus. When the abscess or abscesses are situated between the interstitial or lobular connective tissue, the case is no better, but perhaps worse. Owing to the nature and disposition of the tissues, which resist distension, the pain caused by the inflammation is most acute; while the process of suppuration destroys a greater or less number of the cells, and the pus being deep-seated is held long before it reaches the surface of the gland, causing great destruction of tissue in doing so. Sometimes the interstitial abscess opens into a milk sinus and its contents partly escape by the teat during milking. The pus is then mixed with the serum of the milk which may also contain clots, and shreds of glandular tissue, the fluid having an ammoniacal odor. The pain is less, but does not cease, and it is generally necessary to make an external opening to allow more free and complete evacuation of the matter. There is generally more destruction of tissue and healing is difficult and tedious, particularly in cases where pus escapes in the milk. Not infrequently there are many abscesses, in other cases one abscess succeeds another, owing to the presence of dead tissue in the mass of the gland. Even when the abscess opens externally, and the other quarters yield milk, the pus is, of course, liable to pass into it and render it unfit for use. Hence, during the whole of the suppurative period, the services of the cow as a milk producer are practically lost. Such milk usually has a grayish color and often a peculiar odor. What is known as a "cold abscess" is sometimes met with. It is due to the spontaneous softening of a chronic tumor or induration—the softening being due to fatty degeneration of the enlargement. The tumor loses

its hardness, and the softening process gradually extends; the skin covering the mass becomes pulpy and thin, and often the tumor opens spontaneously and externally, a thick, yellowish kind of pus escapes; while in other cases it evacuates itself into one of the milk sinuses.

**Treatment.**—Local treatment consists in locating the abscess or abscesses, and so soon as fluctuation can be detected by manipulation, lancing them and then flushing out the cavities two or three times daily with an antiseptic, as a three or four-per-cent. solution of carbolic acid, or one of the coal-tar antiseptics. In most cases the application of hot poultices tends to hasten the formation of pus and also eases pain. Constitutional treatment consists in keeping up the animal's strength by feeding well, and, if necessary, by drenching with boiled flax seed or gruel. The appetite can be increased by giving a heaped tablespoonful three times daily of equal parts powdered gentian, ginger, nuxvomica and bicarbonate of soda. In an endeavor to prevent blood poisoning, it is good practice to give internal antiseptics, as six drams hyposulphite of soda, or forty to sixty drops of carbolic acid in a pint of cold water, as a drench, three times daily.

**Gangrene.**—Mammitis sometimes terminates in gangrene or mortification of a part of the udder. If the whole udder be involved, it in most cases causes death. When the affected area is circumscribed, the part becomes cold and dark colored, gradually becomes detached from the healthy tissue, and usually the quarter or quarters affected drop off.

Treatment should be directed to keeping the parts clean and encouraging detachment of the involved portion by breaking down the tissues connecting the dead and healthy tissue, but this must not be done too early else blood vessels that are still active may be broken and dangerous hemorrhage result.

## Finding a Market for Our Milk.

### I.—THE CHEESE MARKET.

In 1916 there were 1,813 cheese factories in Canada that produced a total of 192,968,597 pounds of cheese, which, at the average price of 18 cents, possessed a total value of \$35,512,622. In 1917 there were 1,900 factories which produced 194,904,336 pounds of cheese worth \$41,180,623 at 21 cents per pound, while in 1918 there was a decrease of 15 in the number of factories and a total production of 174,881,957 pounds worth 22½ cents per pound, or a total of \$39,457,358. In 1917 the 1,900 factories were supplied with 1,727,171,366 pounds of milk by 67,030 patrons, while 38,344 other patrons supplied milk to 549 combined cheese and butter factories. Of the total cheese production of Canada, Ontario and Quebec furnish 97 per cent., while the Maritime provinces furnish somewhat more than half of the remaining 3 per cent. For the year 1900 the factory production of cheese in Canada is given as 220,883,269 pounds, while in 1904 Canada exported 233,980,716 pounds worth \$24,184,566. In 1917 our exports of cheese amounted to 180,733,426 pounds worth \$36,721,136 and in 1919, although the figures for production are not yet collected, our exports of cheese amounted to \$36,336,000. As noted above, Ontario and Quebec produce the milk of Canadian cheese. There were in 1917 a total of 923 cheese factories in Ontario utilizing 1,276,571,512 pounds of milk, while in Quebec 895 cheese factories received 409,243,347 pounds of milk. The production and value of cheese in these two Provinces for the years 1916-17-18 is shown in the accompanying table, while the production of cheese in Ontario during the year 1919 is estimated by the Ontario Department of Agriculture to be only 102,700,000 pounds valued at 27 cents per pound, or a total of \$27,729,000.

| Year | Ontario            |             | Quebec             |             |
|------|--------------------|-------------|--------------------|-------------|
|      | Production<br>lbs. | Value<br>\$ | Production<br>lbs. | Value<br>\$ |
| 1916 | 126,015,870        | 23,312,935  | 61,906,750         | 11,245,104  |
| 1917 | 121,173,086        | 25,771,944  | 67,835,017         | 14,172,273  |
| 1918 | 107,886,724        | 24,356,019  | 62,070,162         | 13,976,866  |

The figures given above indicate that the 1918 production was something over 20,000,000 pounds less cheese over the whole of Canada than in 1917, and that practically two-thirds of this decrease occurred in the Province of Ontario. In spite of the fact that there was an increase in the 1917 production of cheese in Canada over 1916, the figures for Ontario show a decrease of 5,000,000 pounds, or the equivalent of the total production for one year of twenty-five 100-ton factories. Values, however, have increased to a very marked extent so that in spite of a decrease in Ontario of 18,000,000 pounds in two years, the total value of cheese produced actually increased by \$1,000,000. If the estimates of the Ontario Department of Agriculture for 1919 are correct, the decrease in production has amounted to over 23,000,000 pounds in three years, while the increase in total value is nearly \$1,500,000.

The figures given also indicate that cheese factories in Quebec are considerably smaller than the Ontario factories, and, according to a statement made by the General Cheese Inspector for the Province of Quebec,

*Readers of this Department of "The Farmer's Advocate" are asked to carefully read the accompanying article, which is the first of a series that will appear in connection with the problem of marketing milk. The information for these articles was secured by an editor of "The Farmer's Advocate," who made many visits to various parts of Ontario at considerable cost in time and money. The opinions expressed we believe to be sound and constructive. The subject itself is big enough to warrant careful study by every dairy reader.*

seventy factories went out of business in that Province last year, most of them small ones. In the Province of Ontario there are more than five times the number of factories east of Toronto that there are in the Western portion of the Province, but the latter have a larger average make per factory. In 1918 there were 787 factories in Eastern Ontario, as compared with 120 cheese factories and 18 combined factories in Western Ontario. The total production of cheese in Eastern Ontario for the season May to November, 1918, was 79,787,605 pounds, as compared with 19,038,788 pounds of cheese manufactured in Western Ontario for the same year. During this year there were only 8,041 cheese patrons in Western Ontario, as compared with 28,908 in Eastern Ontario. Northern Ontario had 24 factories supplied by 578 patrons, who delivered 8,545,663 pounds of milk for the manufacture of 837,414 pounds of cheese.

All the above figures have been given that the reader may to some extent appreciate the extent to which the cheese market provides an outlet for the milk produced by Canadian dairy farmers. It does return at the very least one-third of the total value of the dairy products produced in Ontario, which in 1919 was estimated at \$80,000,000, but the available figures seem to indicate that the proportion of the total value represented by cheese is decreasing with the opening up of other markets for milk. The manufacture of cheese in Canada dates back to 1864 when the first factory was built at Norwich, in Oxford county. The first cheese was exported in 1866 and for the next forty years the cheese industry in Canada grew very rapidly. The factory system of cheese manufacture was brought to Canada from the United States where a small export trade with England had been under way since between 1820 and 1840. Prior to 1851, however, the cheese was all made on the farms by the old process of stirring the curd. At that time the export trade had developed so that it was found profitable to cater to it and the factory system was started so as to produce uniform cheese of greater weights and different quality. Even then, however, the factories used the old method of stirring the curd as practiced on the farms, but in 1867 the English Cheddar system was introduced and has since become universal because of the fact that it produces the closer bodied cheese demanded by the export trade. It was natural that the English Cheddar system should be adopted in North America because of the similarity of climatic conditions and because it was easier to get information as to the process of manufacture of this cheese than of the kinds produced by other European countries, such as the Camembert and Roquefort of France, the Swiss cheese of Switzerland, the Edam and

Gouda of Holland, the Gorgonzola of Italy and the Limburger of Germany.

Anyone who has been closely associated with the cheese industry for many years or who has studied its development during the last half century will be inclined to view, with more or less dismay, any signs indicating a decline in this mainstay of Canadian dairying. There is no doubt that until recent years at least the export cheese trade has been the pivot around which the whole dairy industry in Canada has swung. At the same time it must be remembered that the manufacture of cheese is only a means for the disposal of the milk produced on our farms and that as soon as cheese no longer offers the most profitable outlet for milk it will be the part of wisdom to take advantage of another market. What we need to keep in mind is the fact that the export, or the world's market is the market that practically determines the price of milk in Canada. The price of milk to the consumer in Toronto or Montreal is determined to a greater degree by the world's market for cheese than it is even by the cost of production.

But we cannot see that there need be any serious decline ahead for the cheese industry. Undoubtedly if it is not to decline further there will need to be some readjustments, but so far as this is concerned, the power to make them lies solely with the producer of milk, because the advantages will be altogether in his favor and no one else (unless it be the Government) can be expected to take the lead. It is quite probable, too, that the apparent decline may be explained in part at least by circumstances arising out of the war and which have been reflected in the cheese prices of the last two or three years. Great Britain is our natural export market to which we sent considerably more than twice as much cheese in 1917 as New Zealand. In 1919, however, the positions of the two Dominions were exactly reversed and Canada sent only about 72,000,000 pounds as compared with 138,829,936 pounds which Great Britain received from New Zealand. This is explained by the fact that during the war, in spite of the fact that Canada was much the nearest source of supply for Great Britain, we could not afford to sell our cheese as cheaply as New Zealand with the result that Britain bought the total output of New Zealand up to August, 1921. When the Armistice was signed New Zealand cheese, which had been piling up in the meantime, could be moved and the result was that Great Britain with cheaper cheese on her hands did not see her way clear to contract for more than 20,000 tons of Canadian cheese in 1919. She placed rigid control on the handling of cheese and fixed 36 cents as the maximum retail price to the British consumer, which meant that she could not afford to pay us more than 25 cents per pound f.o.b. steamer, Montreal. Canadian consumers were naturally dismayed at this low price, especially since prior to the time control was put on the dealers had created a wildly speculative market and had shot the price of cheese up to well above 30 cents with the result that they lost very heavily. Later in the season it seemed that there was a market for Canadian cheese in Belgium and the British market was forsaken for the newer one and cheese again went up to around 29 and 30 cents to the factory. This market, however, was short lived and most of the cheese actually landed in Antwerp (about 100,000 boxes) was afterwards bought by the British Ministry of Food for 25 cents per pound, while another 162,000 boxes remaining in store in Montreal and which had also been bought for the Belgian