

# THE DAIRYMEN'S ASSOCIATION

OF THE PROVINCE OF QUEBEC.

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BULLETIN No 8.

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## ADVICE TO PATRONS,

OF

CREAMERIES AND CHEESERIES ON THE CARE TO BE  
TAKEN OF THE MILK.

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For all information required apply to

**MR. EMILE CASTEL,**

Secretary of the Dairymen's Association,

ST. HYACINTHE, P. Q.

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## TO THE AGRICULTURAL PUBLIC.

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Every farmer, who is studious of his own interests, and every maker of cheese and butter, should enrol themselves as members of the Dairymen's Association. All that is required to that end, is to send a dollar to the Secretary of the Association.

It is of the greatest importance that the subscription of all members be paid in the first months of the year, in order to entitle them to receive "gratis" the regular delivery of the "Journal of Agriculture," and the report and bulletins of the Dairy department at Ottawa.

The members of the Association for 1898 are entitled to :

1. The annual report of the Association, a volume of about 250 pages, now being printed.

2. The "Journal of Agriculture" of the Province of Quebec, for one year, from the 1st July 1898, two pages of which are reserved for the Dairymen's Association.

"Many members of the Association have complained too late of the want of punctuality in the delivery of the Journal in 1897. The delivery of the Journal is made direct from the printing office. Any delay or omission in this delivery should be notified by post-card to the Secretary of the Association in the week following the date at which the Journal is generally delivered. All complaints that proved correct, will be thankfully received."

3. The Report and Bulletins of the Dominion Dairy Commissioner;

4. The advice to patrons on the care of milk;

5. Gratuitous admission to the St. Hyacinthe Dairy-School;

6. The advantages offered for the formation of Cheesery and Creamery Syndicates;

7. On sending 50 cents to the Secretary, a bound copy of "Cheddar Cheese making," a French edition peculiar to the Province of Quebec, the original English edition of which sells in the States for a dollar.

**A MOST IMPORTANT NOTE.** — "The question of recruiting Life Members of the Association has been discussed lately in the Board of Directors."

"When sending your subscription for 1898 to the Secretary, you are requested to inform him if it is probable that you will be disposed at once or shortly to subscribe ten dollars to become a life-member of the Association enjoying all your life the privileges of the Association, and taking part in its work."

**TIMES ARE HARD:** Some may perhaps be inclined to save the dollar they usually subscribe to the Association; a false economy, for every one knows that the dollar subscribed to the Association is an investment that pays a heavy rate of interest.

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Farmers, Makers, Proprietors, Managers of Factories, and Sellers, do not hesitate then to send in your subscription for this year as usual, and recognize by your approval the efforts made by the Association in the defence of your interests.

EMILE CASTEL,

Sec. Dairy Ass.

ST-HYACINTHE.

1st May 1898.

## To the Patrons of Cheeseries and Creameries.

Read this circular carefully : pay great attention to its advice, and you will benefit thereby. If you send him good milk, the maker will turn out better products, will get greater yields, and return more money for the milk sent in.

The Directors of the Dairymen's Association of the Province of Quebec, earnestly beg the Managers of Factories to cause these instructions to be placed upon their list of rules, and to pronounce them obligatory on all their patrons.

### ON THE VESSELS IN USE.

**Washing.**—All vessels and utensils that are used to keep milk in, or are used in milking, whether cans, pails, strainers, dippers, or others, must every day be washed in warm water, rinsed in cold, scalded and thoroughly dried with clean cloths, or put to drain in the open air in a place free from dust and bad smells.

**Scouring.**—Moreover, they should be scoured out at least twice or thrice a week, with a weak brine or lye, or, preferably, with a weak solution of carbonate (washing soda) of soda. Lye and soda possess the property of dissolving all fatty matters in the vessels and cloths : besides, they prevent the fermentation of matters that may have escaped the eye of the good wife. Salt has the same effect, though in a less degree.

**The seams and solderings of the Vessels** must be carefully looked to in cleaning ; it is to these places that matters stick, and begin first to ferment and then to rot.

The can in which the butter milk or whey is carried back to the farm demands special attention that will be described hereafter.

**Tin—Tinning.**—Never use any other metal than tin in the dairy, as it is the only metal that has no qualities improper for that use. If your vessels lose their tin, entirely or even in part put them aside. Of course, earthen ware is not excluded.

## ON MILK.

1. **Milking.**—The greatest possible cleanliness must be observed in milking; the hands must be clean and the udder of the cow should be washed before beginning, then wiped carefully, and the hands also treated in the same way (see further on, p. 11, Appendix No. II); never dip the fingers into the milk when milking. Every vessel is to be washed, as above described, before each milking. Never, *never* use wooden pails.

2. **Straining.**—During the milking, as soon as a pail is filled, the milk must *of necessity* be strained, either into another pail, or into the cans or vessels in which it is to be aerated and cooled.

An ordinary strainer may be used, if well washed; but, as it is the custom to decant the milk from the pail into the can, we advise the use of a special strainer made of stout unbleached cheese cloth, laid in double or triple folds on a hoop a trifle larger than the can's mouth: arranging the cheese-cloth in such a way that it can easily be detached from the hoop; it should be washed in warm water, rinsed in cold, and scalded after each milking, and frequently passed through lye or brine. Such a strainer cost but a few cents, and does its work well and quickly. We may add, as a matter our own experience leads us to lay great stress upon, that *it is a most hurtful prejudice and mistake to think that milk ought not to be strained.*

3. **Aeration.**—When the cows are all milked and their product strained, the milk is to be *aerated*, exposing it to the air for some minutes before *cooling*. If you allow cooling to precede aeration, the milk will retain the animal smell of the cow, more or less. A long-handled dipper is a useful tool for stirring and aerating milk; or *aerators* made for the purpose, may be still more handy.

There are on the market *aerators* of different kinds, and it has been found that their cost has been repaid by one year's use.

4. **Cooling.**—Next comes the cooling of the milk. The usual practice is to put the can into cold water, with or without ice; the milk is kept stirred with the dipper, and the water is changed until the milk has become as cold as water fresh-drawn from the well, i. e. about 50° to 60°.

The sooner milk is cooled after it is drawn from the cow, the better ; it is absolutely necessary for the night's milk, especially in hot weather.

5. **Keeping.**—As in the milking, the aerating, and the cooling, so in the case of the keeping : the milk should be kept during the night in a place free from dust, mosquitoes, putrid smells, and rain. Never put the cover of the can on it, but use thin, clean muslin ; the cover should not be adjusted till just as the milk is leaving for the factory.

6. **Mixing or separating the milkings.**—Treat the morning and the evening milk exactly alike. On no account, mix the two until the latter has been aerated and cooled. This is a matter of such great importance, that it would be better, aye, far better, to have two or more cans to carry the milkings separately.

7. **Hauling to the factory.**—The drivers ought to be at the factory by 7 o'clock, especially in summer, and never later than 8. Now that the crowd of little factories is recognized as one of the nuisances infesting the dairy trade, the Dairymen's Association points out to the patrons that the cartage of milk may be done by contract, and that with a saving of money. It is successfully carried out in the best factories in Ontario, and in some of the leading factories of this Province.

8. **Whey.**—It is a very hazardous thing, the carrying home of the whey in the milk-can ; but as it is difficult to do otherwise, we give the precautions to be taken to prevent the milk from being tainted thereby.

As soon as the can reaches the farm, empty it at once, wash it in warm water, *scald* it after rinsing it in cold water, and then set to drain, on its side, that it may be well aired. Scour it out every day, or at least every other day. Should you be tempted to think all this useless, just take a couple of mouthfulls of the whey and you will change your opinion. This advice is of universal application, but is more especially needed in those parts where the whey is kept at the factory in wooden vats. *Every factory should have its whey-vats lined with tin, and the maker should see that*

*they are washed out daily.* The Dairymen's Association, at its Waterloo meeting, passed a resolution to this effect.

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### IMPORTANT REMARKS.

1. **Sick cows.**—Milk from sick or feverish cows should never be sent to the factory; and the milk from newly calved cows should be kept at home until it will boil without curdling.

“M. de Freudenreich, in a well written opuscle on milk microbes, tells us that when cows are suffering from inflammation of the udder (mammitis or mastitis), there is developed in their milk a microbe that has the effect of making the cheese huff during its ripening.

“This fully accounts for a fact, as yet unexplained, that in spring, even in well kept factories and with skilled makers, a good many *huffing* cheeses are found.

“Patrons, that have still cows to calve in May and June, ought to take great care not to send to the factory any milk from cows suffering, even slightly, from inflammation of the udder.

2. **Cows in season.**—Milk from cows seeking the bull should be milked in special pails, strained, aerated and cooled apart, and the last processes should be continued longer and more strenuously. Unless you follow our advice in these points, this milk will be very dangerous to the rest of the patrons milk when mixed with it.

3. **Milk kept for home use.**—If you need any milk for the house, pick out one cow and keep her milk by itself. This is to prevent any pretext for meddling with the milk in the can; that is no longer your property, after it has been aerated and cooled, but belongs to the factory.

4. **Frauds.**—Such dishonest, dishonorable practices as retaining the strippings, skimming or watering milk, though not general, are unfortunately frequent enough to need a word or two from us. They are regular *thefts*, and very *nasty* thefts; for he who practises them robs his friends, his neighbours, sometimes the whole parish, besides wounding the maker in his reputation.

5. **Observations on the side of the maker.**—When your maker finds faults with you, or refuses a can of milk, do not

take it ill. Ask him for advice ; do not make excuses, but try to do better in future. When you have been blamed in this way, read this circular over again with attention, and you will perceive that you have failed to observe some of the counsels it gives you ; follow its advice, and we guarantee that all shall go well. Were these counsels always attended to, an improvement would be found in all well managed factories.

**6. Feeding cows.**—That, to make money at the factory, milk must be delivered there, must not be forgotten. Cows must be well wintered, and well fed in summer. How can one expect to make a profit out of an animal that takes half the summer to recover the strength it lost in the winter, and which, from the month of July, has nothing but a bare, over-eaten pasture to feed on ? *Poor cow, poor milk !*

**Green crops** are a great help in the production of milk. We earnestly recommend every farmer who is desirous of increasing the profits of his dairy to sow in early spring :

1. For every 5 cows, half an arpent of a mixture of early oats, rye, and tares (half a bushel of each), sown in two lots, at a week's interval. This would be fit to cut for feed about the end of June.

2. For every 5 cows,  $\frac{1}{4}$  arpent of maize, to be cut as green fodder as soon as the former is done, and to finish the season. By cutting the corn 10 or 12 inches from the ground, above the first joint, it will grow again ; the surplus, if there is any, may be ensiled or kept as winter-fodder.

**Mashes.**—We recommend, as a very useful practice, in summer, the giving of 3 to 5 pounds of moulée or bran, or a mixture of both, to each cow daily. It should be given in the cowhouse, twice a day at milking time and in the form, of a thick mash.

Experienced farmers say that every pound of this mixture will increase the milk-yield by, at very least, a pound, and that is by no means its least advantage, for it will also improve the quality of the milk, and prolong perceptibly the period of lactation.

As a compensation for the additional labour necessitated by the use of green fodder and mashes, farmers will soon perceive that this mode of feeding, so beneficial to their cows, will enable them to reduce by one-half the extent of their pasture, and to afford a richer and more abundant supply of dung to those that remain.

We borrow from Professor Robertson, Dominion Dairy Commissioner, and from Mr. J. C. Chapais, his assistant, the substance of the two short appendices that follow.

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## APPENDIX I.

### EXTRACT FROM A BULLETIN BY PROF. ROBERTSON.

Progress. — “In dairying, success can only be obtained by keeping up with the march of improvement. When one rides a bicycle, he must keep going or tumble off; there is no middle term. And so with dairying: he who does not improve will have to get out. And so, to maintain our reputation, we must improve the quality and increase the quantity of our goods *per cow* and *per acre*, that is, we must draw from our cattle and from the land better, greater yields . . .” (and at a cheaper rate).

Condition of the Cows. — “Every farmer who is desirous of furnishing milk to a factory should strive to put his cows into the condition more suited to the production of milk of good quality. It is easy enough to keep milk sheltered from all things like to spoil it, but if it is of bad quality at starting, it can never be made good by any after treatment. Hence the importance of only keeping cows that are in sound health.

Wholesome food and plenty of it. — “Such cows should receive wholesome food in abundance: the quality of the food will show itself in the milk and the butter or cheese. It is a settled point that, if this condition is not complied with, the milk cannot be good in flavour, or capable of being kept for a long time.

Pure water. — “Only pure water, and lots of it, should be given to cow. Farmers, one meets who say that this is matter of no importance;—they evidently seem to think that, provided some liquid or other, the cows drink, the milk will not be affected!

“I have even met some who assert that cows prefer drinking certain things that are not good for them, and that can do them no good. True, many beasts like that are to be met with, but

“the beast (*bête*) is not always the best judge. (1) A sensible man is to be known by the thing he puts within reach of his cows.

“I have examined by the microscope certain samples of milk, in which I found *microbes*, germs of disease, which must have entered into the body of the cow with the water it had drunk. The bad quality of such milk can be palliated in cheese-making, but it is impossible to give to the cheese that delicate flavour which would have been obtained, had the cows drunk only pure and sound water;—besides, such cheese will not keep well. Once more: No cheese of the finest quality unless the milk is perfect.

Salt,—“Another very important point: give your cows frequent supplies of salt; no fear of their taking too much: that only happens when they do not always get it regularly.

“The following experiments, made in 1881, proves the importance of salting the cows. Eleven cows were divided into four lots, only two of which had access to salt; they were all in the same pasture. The lots that had no salt, lost in 2 days  $17\frac{1}{2}$  per cent of quantity of milk they had been giving. The first lot hardly showed any change. Twelve days afterwards: a third lot was deprived of its salts; results: a reduction of  $14\frac{1}{2}$  per cent in the yield. And during the whole of this time, the lot that had continued in the receipt of the salt, never fell off in yields at all! The consumption of salt by this lot was 4 ounces a day. As regards to quality of milk, the change was quite as remarkable. The milk from the unsalted cows soured on an average, 24 hours sooner than the milk from the salted lot.

“It is not enough to salt cows once a week. Some farmers salt their cows on Sunday afternoon; that is hardly better for the cows than for the man. Salt them every day.

Bad smells.—‘Keep your cows far away from places infested with bad smells. If you only knew how sensitive cows are to such things. It is within my knowledge that the milk of a certain patron was refused because it, the product of 25 cows, had an abominable smell. This poor farmer could not discover

(1) A pun evidently intended: *bête* means, in French, an animal: but it also means a fool. — E. J. F.

“the cause of this defect; I inspected his farm from one end to  
“the other, and at last found in a bush, whither the cows fre-  
“quently resorted, the carcass of a horse that had been chucked  
“there in the spring. This carcass was buried at once, and  
“equally at once, the milk became as good as the milk of the other  
“patrons of the factory.

“If the cows are kept housed, see that the cowhouse is well  
“ventilated.

Kind treatment.—“Never ill-treat your cows; unkindness to  
“them will invariably affect your profits; you will get less milk,  
“which will be the cows vengeance. If you have a dog that is  
“given to drive the cows hard, *kill him at once*, he is costing you  
“more than a cow in keep.”



## APPENDIX II.

**Why must strict cleanliness be observed in milking.**

BY J. C. CHAPAIS.

We never cease repeating to all dairymen that, without cleanliness, it is impossible to make good butter or good cheese. This cleanliness must be observed throughout, from the act of milking to the exposure for sale of the article manufactured; but, if there be one special juncture at which the milk producer must put in practice the laws of the most scrupulous cleanliness, it is during the moment of milking. How often has one said, how often written, that the hands must be washed, the pails well cleansed, and above all the udder of the cow brushed or washed, the instant before beginning to milk; and yet, in spite of all these counsels, how many still set to milking with filthy hands into badly washed wooden pails, or into tin-pails scalded with *cold* water, and do not care if the cows udder be foul, leaving hair, scurf, or even morsels of mud or dung, at liberty to fall into the milk.

Now, I am about to show these negligent ones how great an injury they are inflicting on themselves, on the patrons of the same cheesery they supply, as well as to the unlucky maker who, but too often, loses his reputation by dealing with the foul milk they take to his factory.

In 1895, experiments were carried out, at the experiment station of North Dakota, that proved that, when the udder and sides of the cow are not cleansed before milking, a great number of bacteria, microbes and bacilli, germs of several kinds, fall into the milk. To demonstrate this, under the udder of a cow, about to be milked in the cowhouse, was exposed for 15 seconds, above the pail which was to receive the milk, a sterilised gelatine plate, three inches and a half in diameter, prepared expressly for this experiment. Seven separate trials proved that there fell on each gelatine plate thus exposed an average of 844 germs in one minute, those germs being of eleven different species. If 844 a minute is the average on the gelatine plate, this will be equal to 6890 in the

same space of time on the surface of a milk-pail ten inches in diameter : and, allowing five minutes as the time occupied in a milking, there will have fallen 34,450 germs into that one milking. As soon as a germ falls into the gelatine plate it begins to develop itself and forms a colony visible to the naked eye, in a day or thereabouts, as may be seen in figure 1, on which eleven distinct species of germs are visible.

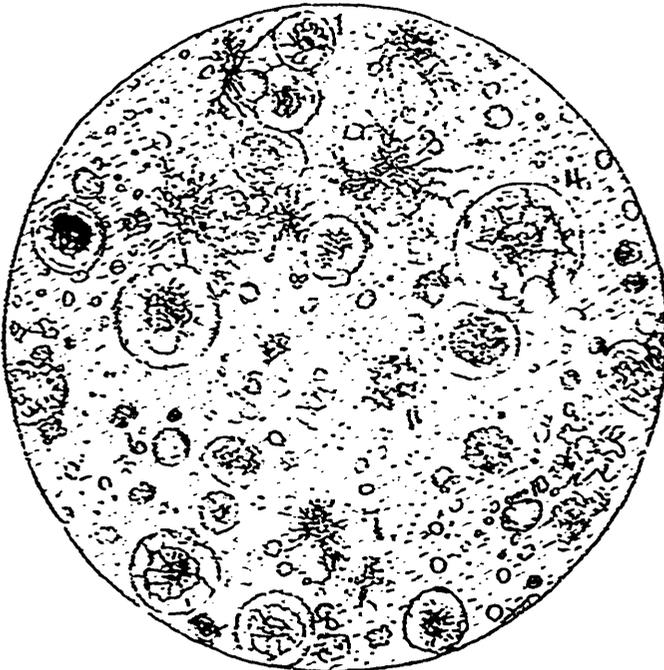
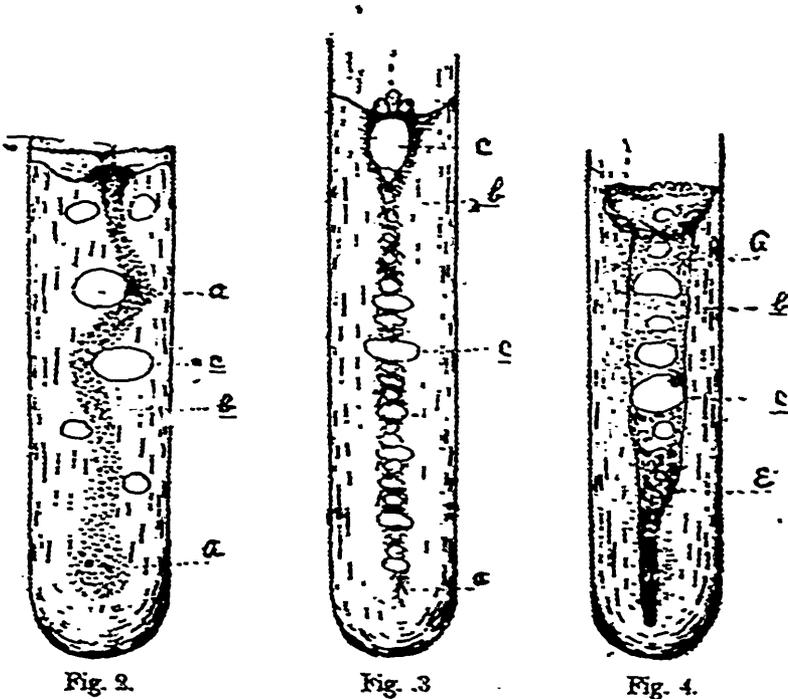


Fig. 1.

The experiment was repeated during the summer, as follows. First, a gelatine plate, sterilised as above, was exposed for half a minute, under the udder of a cow milked in the open air, the udder being left uncleaned. The result was that 70 colonies, composed of eleven different species of germs were developed on the plate. Subsequently, the same cow was subjected to the same test, after her sides and udder had been washed : the result was that only three colonies of two species of germs, were found on the plate.

Now, to convince those who think that to insist upon the

thorough cleaning of its udder and flanks before milking a cow, is a fantastic crutchet, let us see what a few of the germs shown on fig. 1 can effect in acting upon milk. Three of the species have been isolated and cultivated in glass tubes, enclosing solid nutrient gelatine, containing sugar. Engraving No. 2 represents a colony of one of these germs, a *bacillus brevis*, found in the air of cowhouses. Fig. 3 represents a fungus or champignon found in a can of unsterilised milk. Fig. 4 represents a *bacillus longus*, found on the flank of a cow, and which liquifies gelatine. *All three develop gas*. In these three engravings, "A" indicates the colony of germs, "B" the solid gelatine, and "C" the bubbles of gas formed by the germs.



This milk containing these three germs was then made into curd, as in regular cheese-making, but in several distinct lots or samples.

These, all of them, gave "floating curd", a curd filled with "pin-holes", that is, they produced "gassy curd", which gives a cheese known as "huffed." Fig. 5 shows a piece of curd full of "pin-holes". Several experiments were made, simultaneously, with

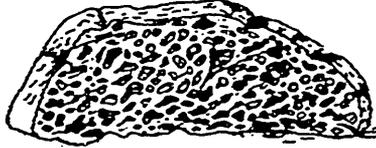


Fig. 5.

milk containing these germs, and every one of them gave a "gassy curd". When the milk was sterilised; or when, during the same milking, milk was taken after the udder and flanks of the cow had been cleansed, the *pin-holes* were not found in the curd, which then had the appearance of the piece in fig 6.

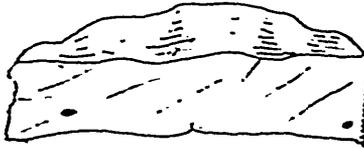


Fig. 6.

After such irrefragable proof of the injury caused to the quality of cheese by dirty milk, one would think that it would be quite unnecessary to repeat to our farmers that it is a matter that concern their dearest interests that no milk should be taken to the factory that is not pure and sound, since the quality, and consequently the selling price of the cheese depends so evidently on the quality and cleanliness of their milk.

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### PLANTS THAT AFFECTS THE HEALTH OF THE COW AND THE QUALITY OF THE MILK.

M. J. C. Chapais published, in "Le Journal d'Agriculture," for October, November, December, 1895, and January, and February 1896, a series of very important articles on the plants generally

hurtful to the dairy business, and whose bad effects are especially to be dreaded in season of draught.

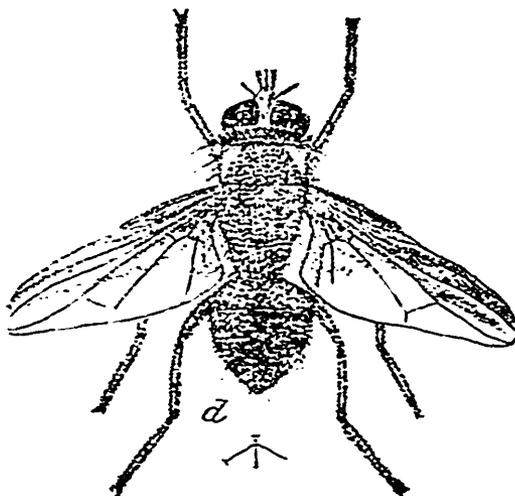
"In seasons, says he, in the same journal, April, 1896, such as the last, farmers are likely to have much more bad milk than in ordinary seasons. It was characterised by a general, prolonged draught throughout the province. In such dry seasons, pastures soon fail, grass becomes scarce, and, suffering as they are under the broiling rays of the sun, the poor famished cows devour anything they can get hold of. Thus it is that they are impelled by hunger to eat certain unwholesome plants, such, for instance, as the "crow's foot", the "wart-wort", and others, that at other times they will not touch; and it is this that brings about red, viscous, bitter milk, that turns sour and curdles prematurely. Such milk was, but too often, met with last year, and it caused many complaints at the factories. A list of these plants that injure the milk has been prepared and will be distributed among the syndicated factories early next season; this will enable both patrons and makers to trace out many of the causes, unknown up to the present, of the impairment of milk, causes that are altogether rare and seldom met with in the ordinary run of seasons".

This table will be sent free to all new subscribers to the Dairy-men's Association who ask for it, when sending in their subscription to the Secretary, which must be done not later than the 15th June 1898.

### THE HORN FLY.

The remedy that is about the best in the long run is "*petroleum emulsion*." It is thus made: coal-oil, 2 quarts; soap 2 ounces; rain-water, 1 quart. Boil the soap in the water till dissolved, and then pour the boiling solution into the coal-oil; with a syringe or a force-pump work up the mixture forcibly for five minutes, till it look creamy, velvety. If the emulsion is perfect, it will cling to the surface of glass without appearing oily. When cool, it forms a jelly, which must be diluted with 9 times its bulk of water, i. e. 27 quarts. The mixture will be much better made if the water is

added before the emulsion has got cold. The above proportions give 3 quarts of emulsion, and after this is added to 27 quarts of water, there will be, of course, 30 quarts of liquid. This can be either applied to the cattle with a sponge, or, which is better, with a force-pump, fitted with a spray nozzle.



6-98-5000,