THE DAIRY.

Factory Boilers and Their Care.

During the cheese and butter making season everything is hustle and bustle with the average factoryman. There is no time for anything else but to do the necessary work. When the flow of milk was at its highest, some found themselves handicapped on account of not having boilers large enough to furnish sufficient steam to do their work, so during the slack time this winter changes will be made. Small boilers will be discarded, displaced by larger ones. Some new factories will be built, and boilers will be needed for these. Hence, a few hints regarding the selection, setting and care of the boiler, coupled with the construction of the arch and chimney, so as to get the best results from the economic viewpoint, should be matters of great importance to the cheese and butter manufacturer.

When selecting a boiler, get one of sufficient capacity to furnish all the steam required, without forcing the fire under it. A boiler cannot be forced beyond its capacity without injuring it. There would also be a waste of time and fuel forcing a steam boiler.

In setting a boiler, the place most convenient should be considered. Mistakes have been made by placing the boiler too far from the work required of it. Some are set below the floor-level, which makes it very unhandy. It is better to have the boiler set close to the place where the most steam is used; it will require less pipe, which means less steam-condensing, and can be looked after by fewer steps.

A good substantial foundation for the arch or furnace should be provided. The arch is really a part of the boiler, and unless it is properly built, good results cannot be obtained.

It is best to get a plan for building an arch from some reliable boilermaker; then have the masonry work done by an expert. Provide good fire-brick for lining, and have them laid with fire-clay. Make the side walls of the arch thick with good common brick. This will make it more substantial, and retain the heat longer, thus lessening the cost of fuel. Where coal is being used for fuel, the chimney should be built of brick; a metal chimney will not last long. The area should be at least one-fifth greater than the combined area of all the flues. The height depends largely upon its location; the higher, the better.

Boilers newly set should not have fire put under them until the mortar of the brickwork has had time to harden naturally. When fire is started, heat very slowly, and let the steam go through all the pipes before any pressure is put on them.

Before lighting the fire in the morning, care should be taken to see that the boiler has sufficient water in it. The glass gauge in the water column cannot always be depended on at sight; therefore, it is best to open the tap at the bottom of the glass to make sure that the pipes leading to or from it are not stopped with mud or scale. See that the safety valve is in working order. This is the most important valve in connection with the boiler. Every boiler should have a blow-off pipe at the bottom. In addition to this, it should have a surface blow-off, or some "summing" apparatus. The blow-off at the bottom should be opened enough each day to let any lime or mud that might have accumulated escape. If this is not done, there is danger of the pipe being filled with dirt, thus excluding the water from the pipe. Then there is a danger of it becoming hot and bursting, causing a great deal of trouble.

If the pipe from the pump or ejector which feeds the water into the boiler be attached so that the water will be fed in through the blow-off pipe, this danger will be largely overcome.

As there are also more or less steam pipes about the factory that need repairing, it is quite necessary that the maker should know how to do his own pipe-fitting.

For ordinary work, the tools required are: Pipe tongs, cutter, vise, and stock and dies. With these at hand, any pipes or joints that may be leaking can be quickly repaired, and it will save the expense of sending for a steam-fitter. Steam escaping from bad joints or leaking valves makes a disagreeable noise, and is money evaporating into the air. The engine-bed or foundation should be solid. If possible, have the engine in a room separate from the boiler, as there is always more or less ashes and dust from the furnace and flues. This makes it difficult to keep clean; any sand or grit lodging on the slides help to wear them out sooner than would otherwise be the case. Some of the chief points about the engine to be observed are: See that it is kept clean, well oiled, and properly packed to prevent steam from leaking.

Before starting the engine, open the taps of the cylinder to let the water out, turn the fly-wheel over once, then open the throttle valve gradually until the engine gets in full motion.

Norfolk Co., Ont. GEO. TRAVIS.

Dairy Temperament.

A PARTICULARLY PITHY AND SPICY ARTICLE BY MR. RICE.

We have reached a turning-point in the marketing in our dairy produce. Though the stream is but a little rivulet as yet, it is worth while, at this time, to consider what are the chances of its growing. The fear has been expressed that the American Government would soon put a stop to the shipment of cream by higher duties.

Judging by the present "row" the consumers are making, they have enough of "protection," when it applies to their food bill. Higher duties would benefit the farmers, but farmers never get any favors, or even justice, from Governments; they are like an unorganized mob—not able to strike so effectively—so the politicians do not fear them as much as they do the organized-labor people. The American milk producer, anyway, has not much to complain of these days, as those in New York State, at least, are getting $2.10 per 100 pounds for their milk, delivered at the nearest milk station on the railway. This goes over 400 miles to the cities, which serves, also, to show what a scarcity there is of milk, when it has to be gathered from such great distances. The consumers in the States are increasing much faster than the producers. The next point to consider is, are the producers increasing their output?

As a matter of fact, I do not consider the American people, as a nation, any more than Canadians, have what we might call the "dairy temperament," or, to be exact, they are not real dairymen. To make this more clear, as to what a dairyman is, or what one has to do to be entitled to the name of dairyman: if a man finds a bee tree and takes the honey we do not call him an apiarist. Why, then, should a man who robs a cow of her calf and takes her milk be called a dairyman? I don't think we should call anyone who does not get at least 6,000 pounds of milk yearly from his cows a dairyman. Several obtain much more than this, in fact. The greatest records ever made anywhere have been made in the United States and Canada, but they are the exception, rather than the rule. With such notable examples of what a good cow can do, it set many, especially business and professional people, wondering why others don't do the same. The reason is not that others are stupid or ignorant, in the general acceptance of the terms, but that they have not the dairy temperament. It is a hundred to one that those selfsame critics would do no better if they tried.

Line upon line has been printed about balanced rations, what to feed, etc., but how much has it helped? There is very little increase in yearly yield of the majority of herds. The 3,000-pound-per-year cow is still with us, and will remain for some time. Take two neighbors: one will send in as much milk in a year to a factory from 10 cows as another will from 20 cows. And this is not because one is a brainier or smarter man in ordinary affairs, but he has the dairy temperament; he is steadier and more regular in the care of his stock. How necessary this is, will be seen if we but consider what a cow has to contend with. Nature did not intend her to give but enough to feed her young. When a cow gives only 3,000 pounds of milk a year, it puts quite a tax upon her system; if we want twice this, three, four, even eight times this quantity, it is at once apparent we are making great demands upon her. All this increase must come through increased work of her jaws, stomach, lungs, etc.; we are really working the most delicate of machinery, which is easily put out of order when not managed right. This organization of hers is affected greatly by changes both of temperature and irregularity. When it gets very warm, 90 degrees or so, the digestion of her food makes her altogether too hot when doing enough for big yields of milk. For this reason, dairymen find it best to have large yielders freshen in the winter, when it is easier to keep an even temperature, and avoid the extremes of heat and cold alike. Many do this and get big yields; others do not, and cannot get big yields. It would be utterly impossible for a cow to make a large milk yield under conditions to which she is often subjected. When doing good work, the pores of her skin are opened up; sometimes, indeed, she sweats. Therefore, the dairyman finds it a great benefit to her to give her a good brushing, and keep her hair and skin in good condition. If she is turned out in the cold, and stands there, the cold chills her just as it would a horse that had been warmed up and left standing in the cold; her pores close up, and many such chills put her all out of condition. Then, if she is kept in a poorly-ventilated place, her lungs cannot do such effective work. It is really through her lungs the increase comes; so that, when fresh air of the proper temperature is not provided, we immediately decrease her power of production; besides, breathing the impure air will injure her lungs, if continued any length of time. The right temperature and pure air can both be had, and are provided by those who obtain large yields. Man, as a rule, studies his own comfort and convenience first, last, and all the time; such little things are beneath his attention; steadiness of purpose and daily routine is irksome to the great majority.

Temperamentally, most people on this continent seem about like the climate—changeable. The cow, making her milk through the delicate organism that she does, wants a very watchful caretaker to protect her from sudden changes. If we had June weather all the milking period, she would be able to care for herself, and many more would get large milk yields, but not all, even then, because they would not milk her regularly. They would want to lie in bed longer Sunday morning, or stay at the circus later some night. There are many who would not even milk her regularly.

And, to get the best results, it is necessary to give her good care for two or three years to develop her lungs and digestive organs. This takes time and patience. So that this dairy temperament might be defined as the devotion of a mother, the faithfulness of a nurse, and the tenacity of a political-office seeker (or porous plaster).

Temperamentally, the people of this continent, or the great majority, are not so constituted as to get great results from dairy cows, and the milk yield must continue low. If milk produce was very high in price, and other things lower, then there would be greater development, because we do like the almighty dollars; but other things are high in price, also. To those who can and do give the cow the best care, there will be big money, as the demand for dairy produce will continue to increase faster than the production. Duty or no duty, the American people will want more of our product yearly, and it is very probable that Denmark and Holland may be shipping their produce to the States soon, as the people in those countries have the dairy temperament, and to this is due their large average production. It is not characteristic of this continent, and history shows us that the temperament of a people does not change much. Anyone who has the temperament to make a success with the dairy cow soon finds his operations restricted on account of not getting the right help; even a poor milker is sufficient to discount his efforts. Milking is generally the last job, and the sooner it is over, the sooner the day is done. And cows are not often milked right; a half cup of milk is not much in itself, but it means success or failure. Failure to take it from the cow not only causes her to shrink, but may bring on an attack of garget, which is caused by poor milkers, with well-fed cows. Very often the temperament of people is well illustrated by the railway brakeman: There is seemingly no trouble to get men for this job, and yet the risk of losing life or limb is great, hours irregular, with but little chance of promotion (except to the other world). Human nature craves changes and excitement, to a greater or less extent, and the dairy cow does not want excitement or change.

She is capable of wonderful things if handled right, and man is through her able to produce more food for the human race than by any other animal, but man must do his share. A man can travel much faster (when he knows how to use it) on a bicycle than he can walk, yet the only power is his legs, the same as before. He is using a machine to advantage, but he must be on the lookout for stones and snags, and keep a steady balance, else he will come to grief. When he falls off a few times, it takes the pleasure off also. There is profit and pleasure in a large-yielding cow to those that will use her right, and not get careless and fall off. There is pleasure in riding a tandem "bike," if the other fellow does his share; but if he does not, and a fall is the result, there is no pleasure to it (unless, perhaps, he gets hurt the worst). Something the same with a cow: one has to suffer for the misdeeds of another; the trouble is that the wrong man is sure to suffer. The success of the dairymen in Holland and Denmark is due to their temperament; steady and industrious, with mostly small farms and herds, which receive the first attention of their owners. Climate is more equitable, and necessity impels. Land is worth $300 or $400 per acre, or, if rented, very high. It is "root hog, or die." A balanced man is of even greater importance to the cow than a balanced ration. Great success in dairying is only to be obtained by those who have or will cultivate the dairy temperament.

GEO. RICE.

About the ideal thing in cream vats has been installed in the creamery department at the Ontario Agricultural College. It is a Canadian invention, and is called "The Century Cooler and Cream Vat," patented in 1907 by Z. S. Lawrence, West Shefford, Que. It is in the form of a large upright, cylindrical tank, with water circulation around the outside of it, and also under the upper basin, into which the cream flows first. It has a holding capacity of about 3,000 pounds, and about 2,000 pounds of cream per hour can be run over it. Running at that rate, by the time the creameryman is through washing up the cream taken direct from the pasteurizer will be down to within 2 per cent. of the water used. The essential feature is an internal apparatus for keeping the cream whirling constantly against the cold-water reservoir around the outside.