BUTTER & BUTTER-MAKING.

A LECTURE

Delivered to the Bath and West of England and Southern Counties Society, in connection with the establishment of a Dairy School at Oxford, April 6th, 1889.

BY

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MY subject is one that needs no apology for its introduction; for reading as I did the other day, that in 1887 no less than 12 millions of money were spent in this country on butter and butter-substitutes imported from abroad, this vast sum accordingly going altogether out of the country where it ought to have been spent, it behoves us surely to ask ourselves the reason why, and what are the means of stopping this exodus of capital in the future. At the risk even of offending my hearers, I do not hesitate to say that the principal reason is that we are behindhand, and that other countries are pushing on ahead while we are lagging in the rear. Denmark, Holland, and Germany, are all steadily advancing by the light which scientific investigation brings to bear upon practical experience. We, however, foster neither the one nor the other, but are behindhand in our practical and behindhand in our scientific knowledge, and consequently in that union of the two by which successful progress can alone be achieved and maintained.

What do we see as we look around? In every country district a different kind of butter; in every village even, is to be found almost every variety—good, bad, and indifferent; no approach whatever to uniformity either of manipulation or of product, a rigid adherence to old fashions and notions, everyone thinking that he knows all about butter-making, and that there is nothing more to learn; and so they go on too often, churning away each in his own particular way, sometimes half an hour, sometimes an hour and a half or even longer,

until by some chance, lucky or otherwise, the butter comes, but they know not how or why. Meanwhile the trade is fast slipping away into the hands of foreigners. Then too, what do we find in the towns? The town consumer, tired of getting one day one kind of butter and another day another, and possessed with the natural idea that if one kind be good, all the others, so different from it, must be bad, clamours to be supplied with an article that does not vary. The butter-merchant knowing he cannot depend upon a regular and adequate supply of a uniform article from home sources, turns to foreign ones, where he knows he can find butter manufactured upon one system, and that the best. In countries such as Denmark for example, not only are there travelling Teachers, but also scientific men continuously engaged in investigation on dairy matters, and travelling Inspectors appointed, by whom the trade interests of the country are carefully watched. At the present time the Danish Government have, resident in our own country, a chemist for this express purpose; and their Agricultural Society has, in addition to its general Consulting Chemist, another who is separately and specially devoted to the dairy industry. How different all this is from what we find in England! Again, if we turn to our Agricultural Journals and papers, we find that the prominent writers on the scientific aspects of dairying are Germans; whilst among our own countrymen there are but few names of note. Is it strange, therefore, that combination succeeds while our independent and isolated action fails?

Beyond our Shows with their butter-making contests, themselves (it must be said) of somewhat doubtful value, our agricultural societies do comparatively little for, and give but little encouragement to, the progress of dairying. Under the name of *butter*—for people will still have butter, however indifferently it may be made—we continue to purchase at a high price what is not nearly so well manufactured as many of those *butter-substitutes* which we so loudly condemn and legislate about. Certain it is that farmers do not as a class take the pride in butter-making that they should, but are content to blunder on so long as they can find a market for what they can produce. Now comes the question,—How is an improvement to be effected? There is need, I think, of two things, better practice and truer science. The first of these the Bath and West of England Society are endeavouring to supply, and to carry into the country homes the principles of sound practice. From other parts of the country already visited by the Society we hear of good that has been done, notably in the West of England and perhaps especially in Devonshire, where the well-known zeal of Sir Thomas Acland has supplemented the ordinary course of instruction given, by a series of demonstrations in the homes

of the people themselves. May equal benefit follow the Society's attempts in Oxford! I spoke of a second need, the aid of Science, but I will not now enlarge further than by saying how necessary is the cultivation of those methods of exactness and accuracy, and of those habits of observation and investigation which a scientific training affords.

One thing more is essential both for successful learning and successful teaching, and that is, that we must not forget there is still something to learn. The best teacher is he who is ever ready to learn, not to dogmatise but to test; the best learner, he who comes with a mind prepared to learn, conscious that he does not know everything. I may next be allowed to give a caution. It is only one part of the work which a Dairy School such as this can accomplish, and it may even be doubtful if, after all, it is proceeding in the best way; but still it is a step in the right direction. You must not however expect too much from it; butter-making is not learnt in a day, and anyone who thinks that he may attend a single course and then know all about butter-making will find he has made a great mistake. One can at best only learn those principles which have been enjoined by good practice, and the exercise of that careful attention which leads to the simplification of work and the better understanding of the processes which take place; in short how to act under special and varying circumstances. This much the Bath and West of England Society can lay claim to, and the Oxford Local Committee, it seems to me, has done well in co-operating, and so stirring up local interest in this subject, one truly of national importance and closely affecting the prosperity of the whole agricultural community.

It would be wide of my purpose to give a chemical lecture on the constituents of milk and their different properties, so I will merely state in brief that these consist of water, fat, nitrogenous matters, viz., casein and albumen; milk-sugar, and lastly mineral matters or "ash" of the milk, as it is termed, consisting largely of phosphate of lime. The proportions in which these exist are on an average as follows:—

Water - - -	87·0 per cent.
Fat - - -	3·5 „
Casein and Albumen	3·8 „
Milk-Sugar - -	5·0 „
Mineral Matter -	0·7 „

The fat is that with which we have principally here to deal, and I may say that, roughly speaking, a gallon of milk weighing about 10lbs. will contain about 5½ ozs. Butter Fat. Milk is not a homogeneous substance, but the fat occurs in it in the form of

globules which float about in the solution of other substances. From these it is easily separated, and in the simple process of setting the milk, the fat rises as cream, and may be removed, leaving the skim milk which contains the casein, milk-sugar, and the mineral salts, together with a small and varying proportion of unremoved fat. The cream, which contains more or less of the skim milk entangled with it, may, after removal, be churned into butter.

It is not my intenton to go here into the question of the nature of the globules, nor to enquire whether the theory of their being surrounded by envelopes be correct or not.

The specific gravity of whole milk is on an average 1·032, water at the same normal temperature being taken as 1. The fat globules, whilst separable, have a lesser specific gravity than the other constituents, and consequently when allowed to do so, rise. They are of different sizes and have different rates of rising, the larger ones rising quickest, the smaller ones slowest. Accordingly the cream obtained at different periods of setting will differ in composition and character. Further, the globules may vary in size according to the breed of the cow from which the milk is drawn. Their rising is also affected by external circumstances, such as the influence of heat and cold. Fat, chemically speaking, is a compound of Glycerine with certain fatty acids, some of them soluble, some insoluble; and the investigation of these and the proportions in which they severally occur in genuine butter, is a matter of extreme interest, while their identification and separation from animal fats still presents considerable difficulty to the analytical chemist. The variations which occur, there is reason to know, are very much more marked than was previously supposed to be the case, and the occurrence of abnormal results in butters known to be genuine is engaging at present the active attention of many scientific men. As the richness of a milk in butter-fat determines the amount of butter which can be produced from it, it is frequently sought to distinguish between one milk and another, as to their relative richness, by some ready method such as putting a certain quantity of milk into a tube and allowing the cream to rise, and then reading off the quantity. All such methods, however, are at best but indications, and often fallacious ones, for so much depends upon the size and number of the globules, and whether they are closely aggregated or loosely packed. This will vary according to the breed of the cow, and even in individual cows, as also from external circumstances, such as heat and cold.

If we want to get good butter, of course we must start with good milk. The general composition of milk I have already given; the variations which it exhibits are dependent more upon the amount of

fat contained than upon anything else. The main causes for the variations are—the breed of the cows, their age, the time that has lapsed since calving, the time of day at which the milk is taken, and lastly the *food* of the animals. Into these points I do not intend to enter further than to say that the food of dairy animals is a most important matter, and one that has an intimate relation to the profitable production of butter. Of late much more attention has been given to this, one of the scientific aspects of dairying, than formerly; though here again it is from abroad that the advance has come. Mr. Lloyd, the chemist of the British Dairy Farmers' Association a short time ago, in a lecture delivered at a similar gathering to this, viz. at the Exeter Dairy School of the Bath and West of England Society, took up this special subject in an interesting and useful way, and therefore I would not go over the ground again. In a table included in the paper, the following is given as a suitable daily diet for a cow-in-milk weighing, say, 1,000 lbs. :—

Dry Matter - - -	24·0 lbs.
Albuminoids - - -	2·5 lbs.
Carbo-hydrates - -	12·5 lbs.
Fat - - - -	0·4 lb.

the Nutritive Ratio of such a diet being 1 : 5·4. It is to be regretted that so little opportunity is given in this country to the scientific man, as compared with what has been done abroad, to determine by actual experiment these questions of remunerative feeding, and to compare them with, and check them by, the actual practice of well-known stock-keepers. Much is said as to the influence of particular foods upon the quality of the milk and of the butter produced. Linseed cake, for instance, it is known, is not, at all events if used to any great extent, productive of a good, but rather of an oily butter; whilst turnips or swedes, given in too great excess, impart their flavour to butter. Brewers' grains whilst increasing the flow of milk, are not so suitable for butter purposes. Against silage there is still a prejudice with many as to its making butter taste, but this I believe to be due more to want of care and cleanliness, than to the silage itself as a feeding material.

Cleanliness with respect to milk, butter, or anything in the dairy, is an absolute necessity, and unless insisted upon no amount of teaching or training will succeed. It should begin, I think with the oow-sheds, where everything should be kept as sweet and clean as possible and the buildings be properly ventilated for the healthiness and well-being of the animals. I have been in many cow-sheds which almost turn one against the idea of drinking the milk given by the cows in them. Too many people chance what may happen in

stuffy and ill-ventilated cow-sheds; and if anything goes wrong it will quickly travel through the whole herd. I do not say that a cow-shed should be merely or mainly a show place, but I do like to see it well littered and clean—the animals as well as the stalls. When one sees, as is frequently the case, the quantity of manure which is wasted in cow-sheds, and especially the quantity of liquid manure allowed to pass away, sinking more frequently into the surrounding earth than into anything else, one cannot help feeling that much might be effected in the way of better economy here, to say nothing of the prevention of the bad smells produced through imperfect littering. Sometimes a goat is another adjunct, though I am rather sceptical as to what purpose its presence may serve beyond contributing still further to the already powerful smell! The next direction in which cleanliness must be exercised is in the thorough purification of all pails and dairy utensils. Impurities may arise from mechanical and chemical sources, which may cause milk rapidly to change, and also impart to it and to the butter tastes and smells which will injure the quality. The air contains, it is known, an infinite number of ferments which float about in it like fine dust, and which though we cannot see them, are capable of producing changes in milk and similar substances. To show that this is the case we may take a flask of milk, and after boiling it, close the mouth with cotton-wool, so that all air entering in would be as it were *filtered*. The ferments would in this way be arrested and the milk will keep fresh; but if the plug of cotton-wool be removed, souring will soon set in. It is impossible of course to keep these ferments altogether out of milk, and hence milk will not keep indefinitely; but all visible dirt and all ferments such as those proceeding from the presence of manure-heaps, of silage, and of other odorous matters, should, and can be got rid of by thorough washing. The activity of most of these ferments proceeds favourably at a temperature of about 95 deg. Fahr.; but a heat much higher and more nearly approaching that of boiling water will, as a rule destroy them, so, similarly, will much lower temperatures. On this account the best plan is to wash all pails and utensils first with cold water, in order to remove everything adhering mechanically, then by scalding them with hot water to assist the destruction spoken of, finally rinsing again with cold water. If the utensils must be clean, so surely must be the hands of the milkers, and the teats of the cows. If a man, for instance, goes straight away from feeding cows with silage to milking them, without taking the trouble to wash his hands, no amount of after-care in making the butter will be of any avail.

The milk when drawn from the cow being warm, viz. about 90 deg. Fahr. the first thing is to strain it and refrigerate it, whereby all mechan-

ical impurities are removed and the lowering of the milk to a temperature of about 60 deg. Fahr. is effected; thus the animal odours are removed and the action of ferments checked. Seeing it is at a temperature such as that of the freshly drawn milk that ferments are most active, their removal or the checking of their growth at this stage is most essential. The milk is next removed to the dairy and there set or separated. The position of the dairy is very important. It should be cool, well ventilated, the dust kept out, and plenty of fresh air allowed to enter. It should not be near anything of a strong-smelling nature, such as manure-heaps or silage, nor should it be allowed to serve the purposes of a general larder, or have meat or such things hung in it. A dairy must be scrupulously clean; a tiled, stone, or cemented floor is the best, and there should be no cracks in the flooring, nor boards, nor anything which is likely to harbour smells or which cannot be got at easily and cleaned. Some people make the mistake of supposing that it is requisite to have the floor always wet, thinking that in warm weather it keeps the dairy cool by means of the evaporation of the water. Now this is altogether wrong; what is needed is thorough ventilation with a plentiful inflow of fresh air, and a *dry*, not a moist, atmosphere. It is under conditions of dampness that the harbouring of ferments is encouraged. There is no necessity whatever to have a dairy heated.

When milk is set, the cream, as explained, owing to its lesser specific gravity, rises to the surface. Anything which increases the difference of densities of the cream and the skim milk hastens the process of separation. Thus cooling will effect this, and in a measure heating does so likewise; as a matter of fact cream is found to rise best under the influence of a falling temperature. It is on this principle that mechanical devices such as the "Jersey" and other "Creamers" are constructed, the milk being first heated up, and then suddenly cooled. A different plan is the mechanical separator, the separation being the result of centrifugal action. Here again it is found that by warming the milk before passing it through the machine, the separation is more complete. When we come to compare the different methods, what a mass of conflicting ideas we meet with! We have the shallow pan and the deep setting, the "Cooley," the "Jersey Creamer," and numerous other candidates for recognition. Then there are a number of mechanical separators, differing somewhat in their working, but all based on the same principle; while lastly there are the advocates of the Devonshire scalding system. In this latter, about the details and practice of which Sir Thos. Acland can tell you very much more than I can, the milk after setting is warmed in pans put on hot plates raised nearly to boiling point, and the cream

subsequently removed. In this way is obtained a cream thicker than any other and held in high favour. For production of Devonshire cream and its sale as such, the system is an admirable one, and this I think is the best purpose to put it to. The butter produced from the cream in this method, though held in local favour, I cannot say I think compares favourably with that of other systems. The boiling causes the small amount of albumen to coagulate, the fat is not so fully separated, and consequently the skim milk is as a rule richer. Through the kindness of Sir Thos. Acland I have had the opportunity of trying some experiments in connection with the working of this system as compared with others, and I hope I shall shortly be able to speak more definitely about them. We might spend a whole day in discussing the merits of each of the different systems; but I would rather point out to you the need there is of more absolute and careful enquiry than has yet been made. What, for instance, is the value of estimating the results merely by the weight of the produce alone, when we do not know whether one sample of butter contains more water than another, and the keeping qualities, the flavour, the grain and other points are not taken as well into consideration? In general, we may say that, on the large scale, mechanical separating will be mainly used, and on a small scale, setting of some kind or other. The mechanical separators certainly remove from the milk a larger quantity of fat than any other system. Dr. Vieth of the Aylesbury Dairy Company gives, as the result of a years' working, an average of less than 0·3 per cent. of fat remaining in the skim milk obtained from the Separator. But it is by no means certain that all that is removed is equally good for butter-making. Might not *better* butter be made by less perfect separation? And is all the fat which is capable of being removed alike valuable for churning purposes? These are suggestions which may be thrown out for further investigation. The difficulty of disposing of skim milk to some extent stands in the way of the more extended use of mechanical separators, but prejudice, I am sure, has had much to do with this, for skim milk I believe to be a thoroughly good food which ought, considering its low price, to be utilised very much more than it is. The fat certainly has been removed, but it contains all the nitrogenous and the bone-forming matters of the original milk, and must therefore form a very nutritious food. For stock purposes where fattening is required, doubtless less perfect separation would leave a skim milk more valuable for the purpose, and it may be a question still whether the most profitable end will not be reached by a less perfect separation, resulting in the production of a better quality of butter and the leaving of a skim milk richer and more fattening for stock. I do not

say this *is* the case, but it is a question still to be decided by careful enquiry. The cream, after separation by one or other of the methods enumerated, is ready to be churned, and according to the quantity or the circumstances, it is either churned at once or set aside until the butter-making day comes round. And here in considering churning I must introduce another caution, and it is one against the rule-of-thumb practice too frequently found not only in our dairies but also, I fear, in our dairy schools and institutions, and that is, to suppose that all milk will behave alike. The butter-maker can make no greater mistake than to suppose that all the milk he has to deal with is alike and contains one and the same percentage of cream, or that it is even every day alike, or that it does not alter with the differences of temperature and weather. Consequently his practice must not be always the same, but he must study all these points and according to them modify his practice. It is by attention to these points that success is gained, and here it is that judgment is most needed. The skill of the butter-maker consists in the knowledge of the conditions under which he works, and the character of the cream with which he has to deal, and on his being able to vary his action accordingly. The cream from the milk of certain cows will vary greatly, and even that from one cow may alter the nature of the whole lot. Thus it is well known that the cream from the milk of a fresh cow will churn more easily than that from one going dry. Then again it must make all the difference whether the cream is entirely fresh, or whether it is fresh cream and ripened cream mixed, or the whole ripened, and to what extent. But how comparatively little attention is paid to this, everything being made subservient to the general convenience of the moment! This is, I think, a great fault of our shows –and, I must add, of our dairy schools. Cream is given to the candidates or pupils, of the previous history of which they know nothing, nor are they likely to learn from what breed or breeds of cows it has come, when it was set or separated, how much of it is fresh and how much has been ripened, and under what surroundings; all these are points of immense importance in the thorough instruction of butter-makers, and as long as cream is simply given out and considered as being all alike, we shall not make that progress which we ought. When further, we come to examine the theories as to whether butter should be made from fresh cream or ripened cream, and as to what ripening consists of, and to what extent it should proceed, we touch on matters upon which there is comparatively little sound knowledge, for the simple reason that there has been too much theorising by those who merely profess, but who have not the necessary qualifications for putting the question to a thorough test.

It is generally held that when made from ripened cream the butter comes more readily, but there are equally those who maintain that to produce a keeping butter ripened cream must be used, and those who say that fresh cream is the better. What exactly the process of ripening is, is also in debate. By some it is spoken of as being a process of oxidation, by others as one of acidification—but these are really one and the same; others again tell us that cream should be ripened but without any souring taking place, and that the process should be stopped short of this; but oxidation, acidification, or souring are but different ways of expressing one and the same action, viz. that of the external air, with all its various ferments, upon the constituents of the milk or cream. Ripening of cream is indeed most frequently effected by the addition of a little sour cream to the fresh. On these points there is a large field for definite and careful enquiry, and this so far has not been fully done, nor the many theories put to exhaustive tests. As to the kinds of churns, I do not think that there is much practical difference; a greater desideratum is that they should be thoroughly cleaned and scalded with hot water and kept sweet and fresh. And now comes in that valuable and inexpensive instrument the *thermometer*, upon the use of which the scientist has for so long insisted, and which at last is begining to get some slight recognition in the homes of our practical dairy-farmers, though it is still in too many cases an absent friend. The empirical method which so many of our practical people adopt, and the way in which they assert that they know all about the temperature and whether the cream is too warm or too cold, is what no scientific man, though trained in habits of accuracy and observation, would think of adopting, nor would he for a moment support the judgment of his senses when so ready a means of absolutely determining the exact point was at his disposal and could be afforded by this simple instrument the thermometer. Is it not a fact that one may go into many a dairy and upon asking the question, how long the butter takes to come, the answer given will be that it takes sometimes half-an-hour, sometimes an hour and a half, or two hours or even longer, and is it not true that one may see people turning away vainly at the churn when a little regard to the matter of temperature and to warming or cooling the cream, according to circumstances, would have obviated any difficulty? Sometimes indeed a thermometer has been purchased, but it hangs covered with dust in some out-of-the-way or forgotten corner; at all events it is not in daily and constant use. The precise temperature at which cream should be churned cannot be fixed to a degree; but we may put it, within near limits, at 56 deg. to 58 deg. Fahr. in summer, and 60 deg. in winter. The temperature of the churn and of the

cream should be ascertained before churning, by means of the thermometer. and in the case of both should be either raised or lowered to the required temperature before churning is commenced. This is easily accomplished by pouring warm or cold water into the churn and inserting into the cream-pail a tin in which hot or cold water, whichever is requisite, can be put, and then stirring the cream about. In warm weather the temperature is apt to rise a little during churning and in cold weather to fall; hence a rather higher temperature is desirable in winter than in summer. The temperature of the cream during churning should be noted from time to time, and if above or below what is proper, it may be warmed or cooled by adding a little hot or cold water. Much is said as to the rate of churning, and great diversity of practice is shown by the different candidates at our butter-making competitions. There are some who say that churning quickly is absolutely destructive of good butter and that violent agitation of the cream spoils the grain. Others will say just the reverse. Indeed there appear to be no very clear notions as to the rate of revolutions, and when the personal element has to enter into consideration as it must in a matter of this kind, it is manifestly hard to regulate exactly the rate, or to insist upon the continued maintaining of a particular speed. It would appear from experience that 40 to 45 revolutions per minute is about a good speed and certainly there should be as much regularity as possible. During the churning the ventilating peg should be frequently removed in order to allow the exit of the vapours which are formed whilst churning. The churn should be frequently examined, either by opening it, or through the glass plate with which many churns are provided, in order to see when the butter commences to come; this is also to some extent indicated by the sound. One thing, however, is very clear, viz., that the instant the butter comes, churning should be stopped; for nothing is so productive of what is termed "soft" butter as over-churning. The butter at this stage should exhibit a *grained* appearance. The next process, that of washing the butter is commenced by withdrawing the plug and drawing off the butter-milk, placing over the plug-hole a piece of muslin or a strainer of some kind to catch any bits of butter which may be carried along with the butter-milk. The plug is now replaced and a plentiful supply of cold water is added to the churn, which is then revolved gently a few times. The water is drawn off again, more added, and the process repeated until no more butter milk comes off and the water remains quite clear. The result of not thoroughly removing the butter-milk would be that some quantity of curd would be left, which would produce decomposition and a butter that would not keep well. This

is the best time for salting the butter, and the salting should be done by making a brine and adding it to the contents of the churn, filtering it through a hair sieve and so retaining any visible impurities. When salting is done, it should be done uniformly and not casually, in order that the butter produced may be always of the same degree of saltness. Thus the quantity of cream taken should always be noted, and a proportionate amount of salt added—so much salt for so much cream—the brine not being merely added haphazard, one day of one strength and another of another. The butter has next to be transferred from the churn, and this, it cannot be too strongly urged, should never be done by the hand; the hands indeed should not be allowed to touch the butter at all from beginning to end. We still hear, and formerly we heard very much more, of people having *cool hands* for butter-making; but it is much better not to use the hand at all, but to employ instead what are called butter or "Scotch" hands. The butter after removal from the churn is to be thoroughly worked in the "butter-worker" until all the extraneous water is pressed out of it. It is well then that it should be placed in the hardening box, after which it is ready for making up for sale, an art in which considerable skill can be shown, and in which again the hands should never be allowed to come in contact with the butter. Much depends from the popular point of view on the appearance of butter offered for sale, and care in this should not be neglected. The *colouring* of butter is, I think, an altogether needless operation, which good, well-made butter does not require. As I have said before, in comparing different butters and ways of butter-making, there are many points to consider besides the actual weight produced, and it is right that attention should be paid to the grain of butter, the flavour, and the keeping qualities as well. It is, however, only by a rigid adherence to such points as I have indicated, and by this attention backed up by continual practice and observation, that one can hope to become a successful butter-maker and capable of dealing with those variations which are sure to occur from time to time. These points, though well known to many, cannot be too often repeated and impressed.

Now I trust that no one who has attended the course of instruction given here, or who is thinking of doing so, will go away with the idea that after attending such a course all has been done that is needed, and that they can thereby become perfect, or even nearly so, in the art of butter-making. The present is perhaps one of the easiest times of the year for butter-making; at others, especially in the hot summer months—if we are favoured with any—a very different set of circumstances may be prevalent, and the student may find himself or herself at a loss. In a few months both the quality

and the quantity of milk yielded by dairy cattle will alter, and the modifications in practice which I have hinted at will have to be brought to bear on the altered circumstances. But the principles remain the same throughout. In conclusion, I must urge again the need of definite experiment in place of theorising, and the advantage of scientific investigation into the principles which regulate sound practice. It is a regret to me to think that there is, at the present time, in this country, no Research Dairy where experiments can be conducted scientifically with the accuracy and observation so essential to successful enquiry. A knowledge of chemistry, I am aware, cannot, and is not meant to, take the place of practical knowledge; it will not by itself teach butter-making, but it will teach the why and the wherefore of our best methods, and any advance that is to take place in our practice will, I think, proceed from this side. To this and to co-operation in the practical direction we must look, as our foreign competitors have done, for advance in the dairy industry—an industry so naturally belonging to this, our native country.

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