

assemblage on the future of our dairy work ; but I am perplexed because the subject assigned to me looms up in such forbidding proportions. But, while I cannot hope to master my subject, I hope to at least throw on a few shavings for the present, trusting to some here—and by the discussion which I hope will follow—to provide more light and heat by piling on the more solid wood. The subject of this paper is practical cheese-making.

It is important that all who venture in this business start right, and I hope before I have done to at any rate enable them to keep clear of many of the sunken rocks on which so many have been wrecked. I do not purpose to present myself vainly and egotistically to the public as one who has learned all there is to know about the manufacture of dairy-produce, but only as one who is willing to give his somewhat varied and practical experience conscientiously. I am one who believes that one head cannot contain it all, and that there is much yet to be learned upon the subject, and that this may be the more speedily done, I record my views, hoping that by a comparison of the experience of others our aims may be sooner attained. Perhaps, like many others, I am following some hard-beaten track of our ancestors, when some other route would bring me quicker and more directly to the end we are all seeking. I purpose treating the subject in as clear a manner and in as brief a form as possible, consistent with the many ramifications of the business, so that all who may be engaged in the work may understand.

Milk is the raw material upon which the cheese-maker is first called upon to exert his skill, and that being so it ought to receive our first consideration. For the purpose of this paper, however, it is not necessary, although many may think it highly desirable, to enter at greater length than I possibly can help into this part of the business ; so in the meantime I leave minute details for some other hand or for a future occasion, only touching on such facts regarding the raw material as have a practical bearing, as we pursue the process of cheese-making. However, let me say that the first and the last requisite in the manufacture of first-class cheese is first-class milk. For instance, we cannot make a rich cheese from poor milk, nor the finest flavoured products from tainted milk. Now, this fact proves conclusively that milk is more controllable as to its richness and condition through the special breed, individuality, and treatment of the cow, than in the treatment of the milk after it is drawn from the cow. For this reason I am in hearty accord with every attempt aiming at the education of the milk-producer, and, through him, the education of the cow. Then, after the improvement of the cow by breeding, feeding, and education, it ought to be the aim and duty of the milk-producer to so treat his milk that its value may be improved and not depreciated. Now, how to improve the value of the milk after it is drawn from the cow, is the next question for our consideration. If the milk is already wholesome and rich—or whether or not—a farmer can improve its value only by improving its quality and condition, in flavour and digestibility. This he can only do by changing the substance of the raw material so that a more merchantable product can be made from it. Now, to greatly assist to do this, my experience goes in the direction of strongly advocating the thorough aëration of all milk for cheese-making, and that immediately after milking and straining. I am positive that if milk is allowed to stand and cool in a large body without first being thoroughly aërated, it will not coagulate by the action of the rennet nearly so perfectly. I believe that if thorough aëration of the milk for cheese-making purposes was generally practiced, that a pound of cheese would be made from one-eighth to one-quarter of a pound less milk, and that of better quality. Thorough aëration will also materially improve the keeping-qualities of the milk, and of the cheese made from it, and I believe would reduce to a mere bagatelle the amount of what is termed “gassy milk,” too common at most factories. I believe that much of the so-called “gassy milk,” delivered at factories, and which is such a serious bar to the manufacture of a fine product, is principally due to dirt, and to the new milk being kept in a large body without being first thoroughly exposed to the air, causing it to retain its heat for too long, and thus keeping the milk in the best condition for the growth and action of the germs of fermentation. This is forcibly illustrated from the fact that factory-men experience very little or no difficulty with “gassy milk” in cold weather, the trouble arising principally during the hot weather. If milk is kept in a large body, in, say, factory-cans, and left undisturbed just as drawn from the cow, it will, in my opinion, through the speedy growth of the germs of fermentation, invariably turn out “gassy,” and be a source of trouble and annoyance at the factory. Therefore, I would ask the cheese-makers and factory proprietors to insist upon the suppliers aërating milk, as being a much better preparation for preservation than the common practice of dumping it into a large can and leaving it undisturbed, or by cooling it to a low temperature, lower than the surrounding atmosphere, by means of cold water. In allowing milk-suppliers to keep their milk overnight, teach them to set it in small quantities rather than in a large body in one vessel. This will clear away many of the difficulties which invariably beset the maker in the manufacture of uniformly-fine goods. It is well known that there exists a value in milk not wholly due to the percentage of solids it contains, but due to its peculiar flavour and conditions regarding quality, resulting from the feed and treatment of the cow, and the treatment of the milk after it is drawn from the cow. For this reason it is very difficult, although needful, to establish an equitable basis for the payment of milk at cheese-factories according to its real value for manufacturing purposes. It is, however, the greatest injustice to pay the same price for milk containing 3 per cent. of butter-fat as for milk containing 4 per cent. of butter-fat. For if 3-per-cent. milk yields a given amount of cheese, then milk containing 4 per cent. of butter-fat will yield more cheese, and the patron supplying it ought to be paid accordingly. But more of this anon. Let us now consider briefly the main points in the treatment of the milk and curd, necessary for the production of the finest goods. In the manufacture of cheese there are, in addition to milk, other natural agents used, which working together bring about that change which milk undergoes in its conversion into cheese, by being changed from a liquid into a solid form. These are heat, rennet, salt, and the atmosphere, which must all work together in the fabrication of a first-class cheese, and the successful maker is he who knows how to treat his raw material and curd so as to arrange a healthful balance between them from first to last.