

Swiss Cheese Making.

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Swiss cheese making is the title of the subject assigned to me by your worthy secretary. A book perhaps could be written if we were to go into every particular detail of the manufacturing process of Swiss cheese. I am, however, only going to touch upon some of the effective wants and needs which we are today contemplating, and how these may be overcome.

Let us first consider of what value this foreign cheese industry is to our state. It means that southwestern Wisconsin is chiefly depending upon this industry; its yearly production consists of over 20,000,000 lbs. or \$2,000,000 worth of foreign cheese. Our cheese finds a constant market, and an Ideal Drum Swiss cheese is desired by the dealers and shows evidence that we are in need of a Fancy Swiss cheese, since there are annually over 85,000 cwt. Fancy Swiss cheese imported.

This cheese is of a fancy brand, but if we were to trace it back to its manufacturing point, we would find a cheese factory with a valuation of from \$10,000 to \$15,000, equipped with all the modern improvements. It is evident that many of our best cheese makers cannot manage their work in a satisfactory manner, due to the ineffective and poorly constructed buildings. After three years of study and inspection of the foreign cheese section, convinces me of the lack of equipment, and the necessity of putting forth every energy to improve conditions in this line of our industry. It is my desire to impress upon your minds this particular branch of cheese making.

The foreign cheese, including Swiss, Block, Brick and Limburger, is known as a sweet curd cheese, entirely depending upon the condition of the milk. The milk for a Swiss cheese dares not exceed over 12 per cent acidity in order not to destroy that characteristic nature of developing

the eye or holes in a Swiss cheese due to breaking down of milk sugar. The milk for Brick and Limburger cheese may contain a higher per cent of lactic ferment, but if over-ripe milk is used for either Swiss, Brick or Limburger, it will cause, when cured, a pin hole cheese in Swiss, and a sour cheese in Brick and Limburger, due to the large amount of moisture contained. A gassy milk is beyond control for either kind in our present method of manufacturing, yet many of the faults of our cheese may be traced back to poorly equipped factories and factory equipment.

It will be seen, therefore, that the lack of a Fancy Swiss cheese lies greatly in our poorly constructed factories. It has been shown that in the modern constructed factories where skillful methods can be employed, a very rare Fancy Quality is manufactured.

However, many faults I have observed are due to the maker who has not yet become master of the art. The manufacturer of Swiss cheese requires skill, judgment, yes years of practical experience, for an ideal Swiss cheese has many details, and is made up very defective under different temperatures in the curing process,—I mean to say it is so under our present conditions; we have no guide to go by as you Cheddar cheesemakers have. Many of these defects could be overcome by the use of the rennet and acid tests, to determine the ripeness of the milk, thus doing away with the home made rennet which is so uniform in its strength. The application of these tests would aid us in making a more uniform cheese, and if we can determine the point to which our milk should be ripened, a commercial rennet extract can be used.

This particular point of getting ways and means of controlling the ripeness of the milk and strength of the rennet at the time of setting the milk, would undoubtedly be a great aid to us.

The application of scientific tests along these lines has, in the manufacture of Cheddar cheese, worked wonders, and I am at a loss to see why the results would not be the same in our branch of manufacturing. But I think I am safe to say that it is evident that the question of ripening the milk

for Swiss cheese, will in time, belong to the past. It is evident that we are depending upon lactic ferment; the skilled judgment which is the secret of our maker, to obtain a uniform quality of cheese, will then be overcome. This would be a guide to the beginner and would not require years of practical experience to become master of this particular point. I do not mean that the milk for a Swiss cheese must be ripened to a comparative point as the milk for a Cheddar cheese, but it is evident that a large per cent of the Swiss cheese which is made in this state is classed as No. 2 cheese for the very reason that the milk from which these particular cheese were made did not contain sufficient lactic ferment to produce the proper fermentation necessary to develop the eye, or hole. The milk for a Swiss cheese is hauled two miles and immediately after drawn from the cows. This will not allow the lactic fermentation to develop to a high point; but it is evident that the ripeness of the milk in a period of six months will be influenced by the temperature of the atmosphere. I earnestly trust that this particular point will be considered by the authority of our station, and an experiment carried out in the regular factory plants, say one factory and location on high land, and one in low lands, where a record of each making should be carried out by the aid of a rennet test and acidity test, whereby each cheese could be compared by the record of manufacturing, and its final results.

I am much pleased to state that the condition of our factories are much improved, and strong efforts are being made to overcome that architectural plan of a Swiss cheese factory which was constructed so extravagantly of four posts and a roof. Let it be understood that we are not living in the time of our grandfathers; our circumstances today demand us to keep step with the times. The financial standing of our patrons today are not such that they can not comply with the state laws in maintaining a sanitary factory that would assure them higher returns of their product.

The map, showing the distribution of creameries and cheese factories will serve to show you that the cheese factories in our section have not only been drilled in one way, but

sowed down in full measure. These types of cheese factories are, with few exceptions practically of the same type, consisting of only from one to two curing rooms, which are in length 20 feet too short and in width 6 feet too narrow. It will not until then be under the Swiss cheese maker's control to guide the fermentation process of a Swiss cheese when three curing rooms are provided. Say, one room for salt brine tank and young cheese, second fermentation room with controlling heat temperature, third, storage room of somewhat natural lower temperature. This would greatly be appreciated by the skillful Swiss cheese maker which would give him control of the fermentation process, where at the present construction of a Swiss cheese factory of only from one to two curing rooms the cheese maker and the cheese is at the mercy of the surrounding temperature. Under natural condition the fermentations in a Swiss cheese varies greatly and can only be controlled where the cheese is placed under different temperature.

Let us hope that this particular point may be considered as many other improvements which has been accomplished by the co-operative efforts of the Dairy and Food commission and by those who have this industry at heart.