

Effect of care in applying salt : It is known that salt exercises a preponderating influence upon cheese body and texture. The effect of lack of uniformity in salting and the time elapsing between salting the curd and hooping has been carefully investigated. These trials were carried out late in the season, and the mature cheese will not be ready for examination for some time.

*The effect of Pressure on Texture.*—This has been studied from three aspects—(a) The method of packing curd in hoops ; (b) rate of applying pressure ; and (c) examination of the cut surfaces of several cheeses from the same vat and press.

(a) Method of packing curd : It has been found in a trial carried out for a week that when a cheese-hoop is packed with curd added in small quantities at a time, followed by careful ramming, the cheese does not develop slit openness to such an extent as when the curd is added in large quantities, followed by less careful ramming. There appear to be no differences in mechanical openness.

(b) Rate of applying pressure : No distinct difference in texture has been observed when the rapid application of pressure has been compared with more gradual application.

These two experiments have been repeated later in the season in co-operative trials arranged with Messrs. Veale and Udy. The results of the latter trials have not yet come to hand.

(c) Examinations of cheese from the same vat and press : An examination of the uniformity in texture of cheeses from the same vat and press has been made by studying the cut surfaces of the several cheeses made from the same vats of curd and pressed in the one press on fifty-one different days. On the average, little difference in slit openness and less in mechanical openness was observed. Of the fifty-one days' make examined, all cheeses had the same texture on forty-two days, while there were differences observed in one or more cheese on the other nine days. It appears that texture is not governed only by pressure in the cheese-hoop. Pressure will not effectively bind together curd which has a tendency to produce openness, but it apparently may modify the degree of openness.

Arrangements have been made to study this question more closely by recording pressure on individual cheese and at different points in the same cheese in different types of presses during the forthcoming season.

*The relation of Curing Conditions to Texture.*—The curing of cheese is recognized to be as important as its manufacture. It affects flavour, body, and texture. There is no reason for believing that it has any bearing on mechanical openness, but there are grounds for considering that it affects slit openness and opening of cheese-surfaces after cutting.

In its freshly made state cheese is tough and indigestible. As it matures, moisture is lost and complex chemical changes take place which gradually make it somewhat plastic and very digestible. Most moisture is lost in the first few days, the rate of loss thereafter gradually diminishing. Similarly, chemical changes take place most rapidly in the first few days, and, although they continue till the cheese is ripe, their rate decreases. It is important to consider both of these conditions in a study of the effect of curing on texture.

Slit openness first became acute in all experimental produce made towards the middle of the season, and the following investigations were thereafter undertaken.

(a) Effect of rate of evaporation of moisture : On the theory that rapid evaporation of moisture might be more instrumental in producing slits than changes in condition of the cheese brought about by chemical influence, on seven days in early December four cheeses from one vat were subjected to the following conditions : One cheese of each day's make was placed in a casein-drier and air at atmospheric temperature blown over it for four hours daily for fourteen days ; a second cheese was kept in a very damp room at ordinary atmospheric temperature ; a third was held in cold storage at 50°–55° F. ; and the fourth was held in the normal curing-room at approximately 60° F. Contrary to expectations, the cheese exposed to the driest conditions—viz., casein-drier—proved no more open than that in the moist room. The other two cheeses were better in texture, and, though much alike, a slight advantage lay on the average with the cheese cured at low temperature. The temperature of the casein-drier and the very damp room were slightly higher than that in the normal curing-room. Repetition of this experiment on a large scale is projected. This suggests that temperature and chemical changes are more important than evaporation.

(b) Effect of protecting cheese surfaces : With a view to controlling the rate of loss of moisture in another way, on twenty successive days four cheeses from one vat were waxed at different ages with the object of reducing evaporation—viz. (1) After drying the surface rapidly in a casein-drier for one day ; (2) at seven days old ; (3) at ten days old ; (4) fourteen days old. A fifth cheese from the same vat was not waxed at all. All of these cheeses have yet to be examined.

(c) Study of changes in the dimensions of cheese during curing : The changes that take place in the dimensions of a cheese after it is taken from the press have been examined with a view to getting some idea of the stresses involved. Both export and medium cheeses have been measured daily for the first fourteen days and thereafter monthly. It appears that changes in dimensions take place rapidly in the first three days. Thereafter they continue at a reduced rate. The vertical height of the cheese diminishes. The horizontal diameter diminishes at the top and bottom edges, but increases over the remainder of the diameter of the cheese, the greatest swelling taking place at the centre. The vertical depth at the centre becomes greater than the vertical depth at the sides. Thus there are set up strains which may tend to cause ruptures throughout the cheese.

(d) Effect of change in temperature : It is well known that heat causes substances to expand and cold causes them to contract. Before applying this to the problem in hand it is necessary to know how quickly heat travels in a cheese. This was investigated, with the following results : there is a comparatively slow adjustment of the temperature of the body of a cheese to the changes in surrounding-air temperature. Such a change very rapidly induces a temperature gradient within the body of the cheese, which rises to a maximum in about nine hours and then gradually diminishes. The time required for development of a uniform temperature (within 1° F.) over the whole cheese varied to some