

nary riping-rooms, no effort is made to control the temperature, and, in consequence, its fluctuations in these rooms are almost the same as out of doors. The reports furnished us by the pupils of our dairy-school of the most striking features of the present conditions of their factories, contain the following information for the month of July, 1897. In the best factories, those that have cellars and sub-earth ducts for the ventilation of their ripening-rooms, the fluctuations of temperature were about 10 degree F., 65 degree being the maximum; the temperature in one ripening-room, fairly ventilated, where no precautions had been taken to lower the temperature, varied from 20 degree to 30 degree F. In the majority of the rooms, no attempt at isolation has been made, and the temperature rises to almost the same degree as that of the exterior air. Not only in this maximum too high for ripening cheese (104 degree F. was observed in one factory, and in many more, upwards of 90 degree), but the sudden changes of temperature are still more dangerous.

The effect of such high temperatures is very injurious to the quality of cheese, which loses in value not only by the melting and exuding of the fat, but also by the damage caused to both texture and aroma by these abnormal heats. In the following diagram the variations of temperature, taken in a badly built ripening-room, are shown in comparison with those taken in the cheese-cellar of our dairy-school. The line B.B. shows the fluctuations of temperature that too often take place in our ripening-rooms; the more the pernicious effect of these high temperatures is decided, the darker are the lines that represent it. It is worth remarking, that the ripening cheeses were never in a proper temperature, except for a small fraction of the three days occupied in the investigation. This diagram represents the real conditions observed in September, 1897. There is no doubt that, if these observations had been made in the summer, the cheese would never once have been found to be in a temperature really favourable to its ripening. As opposed to the line B.B., the line A.A. represents the condition of temperature which reigned during the same length of time in our own cheese-cellar. The effects of

perfect isolation opposing itself to the fluctuations of temperature are thus graphically demonstrated.

We can then divide the variations of temperature generally occurring into three zones, more or less well defined. 1. Variation of temperature, invariably injurious, starting from the maximum limit, which may be reached at 100 degree F., falling thence to as low as 75 degree, according to the kind of cheese made. 2. An intermediate zone, starting from the above minimum limit down to the point where no injurious effect is noted. This zone, that may be called "hazardous," varies from 75 degree to 65 degree F. 3. A lower zone, at which favourable results are always arrived, embraces the lower temperatures up to 65 degree F. Naturally, the cheese cannot ripen in the neighbourhood of the freezing point, but we have, in our experiments, succeeded admirably with cheese ripened in a temperature of about 40 degrees F. The chief objection at so low a temperature is the time it takes to finish off cheese. People say that very low temperatures, especially at the beginning of the ripening, are injurious to the aroma, and impart a bitter taste to the cheese. It is for this reason not considered safe to put cheese at once into cold-storage.

To settle the conditions of good ripening, the Madison Station undertook a series of 5 experiments, in each of which from 3 to 5 cheeses of normal size were made, with mixed milk, under exactly the same conditions of making. It was not until the cheeses were taken out of the press, that they were put to ripen under different conditions. At regular intervals, the cheeses were examined as to quality, and analyzed both chemically and biologically. We shall not enter into the details of these analyses, but limit ourselves to giving the results as to the commercial value put upon the cheese maintained at different temperatures. The difference of the temperatures to which these cheeses were exposed, made them ripen more or less rapidly, so that it would be necessarily unfair to compare them directly with one another by judging them all on the same day. If they are judged very soon, the cheeses kept in cold compartments would be too green to please