but is, however, a subject upon which much work needs to be done.

We have, in short, at the present time an insufficient knowledge of the ripening of cheese to enable us to control the process. We can, to a certain extent, avoid some types of abnormal ripening by the following simple method : If cheese ripens abnormally it will probably be due to the. milk from one or more patrons being impregnated with an unfavourable species of bacteria. By the use of a simple apparatus, samples of milk of each patron may be set by themselves and allowed to ferment spontaneously. After two days, an examination of the samples, a study of the odor, the taste, and the amount of gas produced, enables the cheese maker to judge somewhat accurately whether the milk is safe to put into his cheeses. If there is a superabundance of gas, or if very disagreeable odors are produced, the milk of the patron in question should be excluded from the cheeses.

Of course, it takes a day or two to apply this test, but this is a matter of no very great importance in the cheese factory, because the farm that is furnishing an improper species of bacteria one day will probably continue to do so for some time. A method of preventing the abnormal swelling of cheese has been suggested by Freudenreich, vig., the salting of the milk. When this trouble appears in a cheese factory, all the subsequent cheeses may be treated as follows : After the milk has curdled, about two-thirds of the whey is removed and salt is added to the rest to the extent of 3 per cent. The cheese is then made as usual, although a smaller quantity of salt must be put into it in the end. This use of salt has been found in some cases to be quite efficient in preventing the abnormal swelling. Another method of remedying the abnormal swelling, also based upon bacteriological knowledge, has sometimes been found to be useful. When the cheese begins to show signs of this abnormal production of gas it is at once cooled to a very low temperature, either by putting it into a cold cellar or, if the cheese is a large one, by the use of ice. This lowering of the temperature at once stops the fermentation which is going on, and if the cheese is kept at this temperature for some time, the milk sugar will gradually undergo such changes that when subsequently the temperature is increased the fermentation will not recommence. Beyond these facts, however, little of practical importance to

the cheese maker has as yet resulted from bacteriological study.

In guiding the milk producer to the best method of furnishing pure milk, in aiding the butter maker in obtaining a uniform and desirable flavor, and in helping the cheese maker to avoid some of his difficulties, dairy bacteriology has already done much. In the immediate future I foresee further practical results. To the dairy interest the bacteriologist holds out the hope of uniformity. The time is not far distant when the butter maker may always make good butter and the cheese maker may be able in all cases to obtain exactly the kind of ripening that he desires.

H. WESTON PARRY.

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THE COMBINATION COW.

That a specially bred cow is likely to be most suited for special dairy work, no one that has given the question careful attention would care to dispute. That such a cow is getting a firmer foothold now than she had years ago is open to serious question. A Shorthorn calf of pure breeding is worth to-day in Manitoba twice as much as a purely bred dairy calf of the same age, and if the price is a fair criterion of value, from the purchaser's standpoint, the day of special purpose cattle is yet a good way off in this country. The call for pure Shorthorn males is getting more pronounced than ever, and along with that call comes the question, "Is he of milking strain?" One reason for this is that grade Shorthorn calves from any decent cow are found free growers and good doers. Such calves are always in request; the dealers cannot get too many of them. But, except as veals, the male calves, from common cows by a dairy bull, are not wanted, and the every-day judgment of the every-day farmer is pretty well supported by those who give more close attention to the question of grade breeding. The Shorthorngrade leads everywhere as a beef steer. Amos Cruickshanks made it the business of his life as a preeder to produce a farmer's Shorthorn on which choice beef could be laid at the lowest possible cost, and was quite indifferent to milking qualities if he could only get the form he was after. But the old milking ancestry still keeps asserting itself and females will come strong in the tendency to make milk rather than beef out of the rations fed them. We breed with less careful methods