cheese carrying excessive moisture, too lightly salted, too heavily salted, or held at low temperatures after making, does not mature normally.

Chemical tests have been carried out on the state of maturity of cheese used in this experiment. From the chemical point of view the results are very definite. They will be reported at the conclusion of the experiment in conjunction with the detailed results.

Butter Experiments.

During the 1929–30 season experiments were carried out with the manufacture of butter from cream to which starter was added. The highest degree of acidity in the cream was 0·17 per cent. Both fresh cream and neutralized cream were used. The results showed that when the butter was graded in London at three months old the starter butter made from fresh cream scored highest in fifteen churnings, the fresh-cream butter in eight churnings, and the scores were equal in fourteen churnings. At this age there was a little in favour of the starter butters when fresh cream was used. When these butters were held in New Zealand for six months, the starter butter scored highest in four churnings, the non-starter in five churnings, and equal in twenty-eight churnings. Thus after six months' storage period there was no material improvement from the use of starter. The butter made from neutralized cream scored differently. At three months old in London the starter butter scored highest in seven churnings, that without starter in six, and they were equal in twenty-four cases. After six months' storage in New Zealand, the starter butter was highest in three cases, the non-starter in three cases, and equal in thirty-one cases. Thus no advantage was derived from the addition of starter to neutralized cream.

In the season 1930–31 lots of butter were made from cream in which much higher degrees of acidity were developed. These ranged from 0·20 to 0·46 per cent. The detailed results have not yet been received from England, but cabled advice indicates that some of the starter butters developed "off" flavours and graded much lower than the fresh-cream butter. The results will be made public when available.

Experiments in Progress.

In the present season the following additional trials have been carried out, but all of the mature cheeses have not yet been examined: (*a*) Comparison of cheeses made from milk of high- and lower-fat content respectively; (*b*) comparison of cheeses made from standardized milk and low-fat-content milk respectively; (*c*) the pressing of cheese in different types of presses; and (*d*) determination of the pressure exerted on the cheese while in the cheese-press.

Publications issued.

(1) "The Influence of other Bacteria on the Production of Acid by Lactic Streptococci in Milk." By G. A. Cox and H. R. Whitehead.
(2) "The Reduction of Methylene Blue in Milk: The Influence of Light." By H. R. Whitehead.
(3) "The Methylene Blue Reductase Test." By H. R. Whitehead.
(4) "The Grading of Milk for Cheese-manufacture." By H. R. Whitehead.
(5) "The Influence of Bacilli of the Colon Group on Cheddar Cheese." By H. R. Whitehead.
(6) "A Note on the Direct Microscopic Count of Bacteria in Milk." By H. R. Whitehead.
(7) "The Estimation of Salt in Cheese." By F. H. McDowall and L. A. Whelan. (From the *Journal of Dairy Research*, June, 1931.)
(8) "Treatment and Disposal of Dairy Wastes." By F. H. McDowall. (Bulletin No. 27 of the Department of Scientific and Industrial Research.)
(9) "Temperature-change in Cheese and Butter." By F. H. McDowall. (From *New Zealand Journal of Science and Technology*, Vol. 12, No. 4, pp. 215–27, 1931.)

Co-operation with other Organizations.

The Institute has closely collaborated with the Dairy Division of the Department of Agriculture, the laboratory of the Taranaki Federation of Co-operative Dairy Factories, the laboratory of the New Zealand Co-operative Dairy Co., the Massey Agricultural College, the New Zealand Dairy-produce Board, and the other Branches of the Department of Scientific and Industrial Research. To all of these bodies thanks are expressed for their ready co-operation and valued assistance.

Finally, especial thanks are personally due to all members of the staff for their painstaking care in assiduously carrying out their work, and especially to Dr. McDowall and Messrs. Whitehead and Valentine for their valuable co-operation and advice at all times.

PLANT RESEARCH STATION.

Advisory Committee: Mr. W. D. Hunt (Chairman), Mr. G. H. Hewlett, Hon. Sir George Fowlds, Professor G. S. Peren, Dr. C. J. Reakes, Mr. Q. Donald, Mr. T. Rigg, Mr. W. Perry, Dr. F. W. Hilgendorf. Director of Research: Mr. A. H. Cockayne.

Herewith I submit a synopsis of the main features of the work of the Station during the year. I particularly wish to place on record appreciation of the excellent work performed by all members of the staff, resulting in a large volume of valuable data being secured, which must be of great value in developing agricultural progress.