SOCIETY OF AGRICULTURAL BACTERIOLOGISTS

THE Annual Conference of the Society of Agricultural Bacteriologists, held at the Midland Agricultural College during September 12–13, covered a wide range of subjects. The papers may be classified, somewhat arbitrarily, into those concerned with dairying and those with other fields.

Instances of the economic importance of the sulphate-reducing bacteria included the formation of the black colour in the mud of certain districts, the evolution of hydrogen sulphide in sewage, and the discoloration of paper pulp. The role of these bacteria in the underground microbiological corrosion of metals was considered in some detail. Another paper described how the principle of the activated sludge process may be applied to an aerated culture of nitrogen-fixing bacteria so as to build up continuously a stock of bacterial protein from carbohydrate and atmospheric nitrogen.

Media containing thallium salts have been found to yield excellent results in the diagnosis of streptococcal mastitis and in the isolation of lactic streptococci from milk and fæcal streptococci from water samples.

Papers of considerable interest to water bacteriologists dealt with investigations on the bacterial flora of lakes and streams. In lakes during the winter months, when the waters are in circulation, the counts of bacteria tend to be much the same at different depths, while during the summer, when the waters are stratified in two layers, counts in the upper layer are of a higher order than those in the lower layer. where they tend towards a low constant value. Coliform bacteria in relatively pure lakes and streams, though smaller in numbers than those in waters subject to pollution, show unexpectedly a higher proportion of the fæcal type.

Items of general interest included recommendations for economy in the war-time use of peptone for bacteriological media, and the role of statistics in the planning of experiments and in computing the error of the plate count.

In the field of dairy bacteriology, there were several papers on the methylene blue and the resazurin tests for bacterial quality of milk. A high correlation has been observed between the plate count and the methylene blue test and between the reduction of methylene blue and the reduction of resazurin to the vivid pink stage. Two causes of anomalous results in these tests are: (*a*) the growth of cryophilic bacteria during storage of milk samples in the refrigerator; and (*b*) the decrease, during storage, in the reducing power of milk containing large numbers of leucocytes. For pasteurized milk a reduction time of six hours or less in the test at 15·5° C. has been found to indicate either contamination by coliform bacteria or poor keeping quality.

The phosphatase test, applied to milk pasteurized in bottles, has revealed the fact that in one of three commercial plants examined a high proportion of samples had probably been underheated. The acid-producing bacteria which predominated in the freshly pasteurized milk were rapidly supplanted by alkali-forming types and played little or no part in spoilage during storage. Heat-resistant cocci which survived pasteurization appeared to consist largely of *Micrococcus luteus* and were not derived from the cow's udder.

Several papers were concerned with the bacteriology of starters and cheese. Infection of starters with bacteriophage is found to be an important cause of general slowness in cheese-making in Great Britain, even though mixed starter cultures are customary, but the incidence of the trouble may be reduced by observing certain precautions and by adopting a 'vitality' test as a measure of control.

Studies in cheese ripening have disclosed the fact that lacto bacilli may assist flavour through the liberation of an intracellular lipase on autolysis of the cells, while some light has been thrown on the sources of the carbon dioxide evolved from cheese during storage in cargo. In Cheddar cheese the gas results from bacterial action, but in Stilton it is mainly correlated with the growth of the mould.

Problems in disinfection received attention from several workers. For hypochlorites to be effective in the treatment of dairy utensils, the latter must be scrupulously clean, free from corrosion and open seams, and must be agitated or scrubbed during treatment. A technique was outlined for routine disinfection in the cowshed to combat, *inter alia*, the spread of mastitis streptococci.

An item of interest to the dairy industry was the demonstration of a portable apparatus, depending in principle on measurement of *p*H value, for rapidly testing the quality of the incoming milk at a creamery.

THE FORTIFICATION OF FOODS

THE diet of man now contains a variety of foods very different from those consumed by his prehistoric ancestors. Cooking, which may wash out or destroy mineral constituents and vitamins, has long been practised, while more modern processes such as the decortication of cereals, and the extraction and refining of oils and fats, may lead, according to the results of animal experiments and clinical evidence of human disease, to dietary deficiencies. Recent advances in methods of analysis of foods and in our knowledge of man's need for some of the vitamins and essential minerals have enabled us to estimate the dietary significance of these more modern methods of preparing foods. Now that a number of synthetic vitamins or vitamin concentrates are available it is possible in some cases to fortify foodstuffs so as to increase man's intake of these essential dietary factors to the level which modern investigations have shown to be desirable.

The great interest attached to this problem of fortification was reflected by the very large attendance at a joint meeting of the Society of Public Analysts

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