Professor Soper is also Chemical Adviser on Munitions, and Chairman of the Chemical Panel of the Defence Scientific Advisory Committee.

Many urgent problems in connection with the supply, overseas transport, and storage of foodstuffs, and the provision of substitutes for imported industrial materials now unavailable or in short supply, are receiving attention.

STAFF.

I desire to record the praiseworthy way in which members of the staff have carried out increased duties and responsibilities arising from the war effort.

E. MARSDEN, Secretary.

REPORTS OF RESEARCH COMMITTEES OF THE COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH.

DAIRY RESEARCH INSTITUTE.

Dairy Research Management Committee.—Mr. A. Morton (Chairman), Professor H. G. Denham, Messrs. T. C. Brash, A. H. Cockayne, G. A. Duncan, H. E. Johnston, A. Linton, C. A. Marchant, A. J. Murdoch, J. Murray, G. M. Valentine; Director, Professor W. Riddet; Secretary, F. R. Callaghan.

The Committee held five meetings during the year at which the work of the Institute, which was mostly on a war basis, was under periodical review.

Cheese.—The problem of phage control has necessitated a large amount of close fundamental study during the year, and marked progress has been made towards starter-room design which will maintain aseptic conditions within the room. Improved design of filters have played a large part in overcoming starter problems, though a different and often very elusive problem seems to appear at every factory.

Trials relating to bitterness in cheese flavour gave results which indicated that such was not attributable to the salt used.

In addition to the control secured over mould in cheese-stores through control of ventilation and humidity, trials of ultra-violet lamps indicated that a further measure of control could be secured, as mould failed to appear in surfaces exposed to radiation.

Investigations on the control of cheese-mites in unrefrigerated stores by the use of ammonia gas are proceeding.

Butter.—A concentrated effort was made during the greater part of the year on the investigatory work necessary for the production of dried butterfat on a commercial scale. Dr. F. H. McDowall's original investigations indicated satisfactory methods for converting whey butter and non-export grades of factory butter to dried butterfat, and details of what was achieved are given in the subsequent section, "Food Preservation and Transport."

Dried Milk.—Investigations have centred on methods of packaging dried, skim, and whole milk to permit of both long transport and long storage.

Dairy Husbandry.—Records are being kept of the influence of pastures and supplementary fodder on the solids-not-fat content of milk, which has an important bearing on cheese quality in the autumn months.

FOOD PRESERVATION AND TRANSPORT ADVISORY COMMITTEE.

Personnel.—Professor H. G. Denham (Chairman), Dr. J. C. Andrews, Mr. A. H. Cockayne, Mr. G. A. Duncan, Mr. F. W. Grainger, Dr. E. Marsden, Mr. G. M. Pottinger, Professor W. Riddet, and Mr. F. J. A. Brogan (Secretary).

A Committee constituted as above was set up during the year by direction of the Hon. the Minister of Scientific and Industrial Research and the Hon. the Minister of Agriculture and Marketing, with the following order of reference:—

(1) To consider and report on proposals for the modification of foodstuffs for export and transport under war conditions:
(2) To initiate and co-ordinate any experimental work or investigations arising from (1), and to make recommendations thereon.

The Government made a special grant to the Committee for developmental work under its direction, which up to the present has been chiefly concerned with the production of dry butterfat and dried meat.

The following is a summary of the Committee's work during the period under review:—

Dry Butterfat.—Prior to the establishment of the Committee, experimental work by the Dairy Research Institute had shown that pure dry butterfat could be successfully extracted from butter on a commercial scale by a process involving treatment of the melted butter (preferably unsalted) in a dairy separator to remove the bulk of the water and curd, followed by a further drying of the separated fat in a vacreator. The cooled fat is then run into tins and sealed for storage. The fat so prepared retains all the nutritive qualities of the original butterfat, occupies less shipping-space and weight, and can be transported overseas in unrefrigerated space without deterioration. Conversion into dry butterfat also offered a ready solution to the problem of the utilization of surplus whey and second-grade butters, which under war conditions could not be marketed locally or shipped overseas. The fat extracted from these butters could be safely stored as a valuable reserve foodstuff, for which it was anticipated that markets would ultimately be available both locally and overseas.

Utilization; Experiments arranged by the Dairy Research Institute in collaboration with local food-manufacturers and the Home Science School of Otago University showed that dry butterfat was very suitable for the manufacture of ice-cream, cakes, biscuits, and confectionery, and reports from Great Britain indicated that it would find ready acceptability.

Contracts with Great Britain: Following very favourable reports on experimental shipments to Great Britain, a contract was received by the Export Marketing Department for a trial shipment of 600 tons of dry butterfat prepared from creamery, second-grade, and whey butters in equal proportions, and the Committee arranged for this contract to be executed at the Dairy Research Institute butter-factory.