GREEN-VEGETABLE BUG

This bug has become a serious vegetable pest in the North Island and its control by parasites has been undertaken. A survey of the position resulted in Paihia (Bay of Islands) being selected as the most suitable place for the work to be carried out. Supplies of egg parasite (*Microphanurus basalis*) were secured from Australia and successfully reared and distributed. There are several generations of the parasite each year. From the 300 to 400 parasites imported, supplies totalling 23,900 were built up and distributed over a wide area where the bug occurs—North Auckland Peninsula, Bay of Plenty, and New Plymouth district. The biology and ecology of the bug and the parasite were also studied.

GENERAL

A great many specimens were handled for identification, various Departments, public bodies, farmers, and private individuals were given advice on insect-control, and several papers on the year's work have been prepared for publication.

(See also Cawthron Institute investigations.)

FATS RESEARCH LABORATORY

Director: Dr. F. B. Shorland

BUTTERFAT INVESTIGATIONS

From the lengthy triplicate ester fractionation analysis of two-monthly samples of butterfat there is gradually emerging a detailed picture which shows, *inter alia*, (*a*) that the most marked differences occur in the C_{18} unsaturated acids as between May (29·6 mols. per cent.) and November (22·1 mols. per cent.); (*b*) that, subject to normal climatic conditions, the fatty-acid composition of butterfat of any given month will exhibit no marked changes for the corresponding month of another year; and (*c*) that there is absence of correlation between the fatty-acid composition and the physical properties, which suggests that a complete explanation of the properties of butterfat requires a knowledge of glyceride structure. As a basis for glyceride structure, however, it is first necessary to know accurately the fatty-acid composition as well as the properties of fully saturated glycerides; progress has been made in these studies.

Investigations on the nature of the unsaponifiable matter of butterfat have led to the isolation of pure crystalline β-carotene. In addition, four other compounds were separated, and are in the process of being identified. In collaboration with the Nutrition Research Department of the Medical School, University of Otago, unsaponifiable extracts are being prepared by different methods to investigate further the nature of the vitamin D activity, which from previous work may be several times greater when measured on the whole fat as when measured on the unsaponifiable matter.

INVESTIGATIONS ON TALLOW

An improved method of stearic-acid manufacture based on short-path vacuum distillation of the crude fatty acids has been developed. A pilot plant is being constructed by the Chemical Engineering Section of the Dominion Laboratory to demonstrate the advantages of the method, which reduces the loss of tallow fatty acids from 15 per cent. to 3 per cent.

FISH-OIL INVESTIGATIONS

Contrary to the prevailing opinion, the removal of free fatty acids by alkali refining was found to increase the vitamin A potency of fish-liver oils approximately in proportion to their free fatty acid content. Papers dealing with the results of this work have been