

proven satisfactory in actual use. Already several vessels sailing from Canadian and United States ports have been so equipped.

Investigations on bacon have resulted in the adoption of a standard cure by Canadian packers, with the result that Canadian bacon is now held in high favour on the British market. It appears that the British prejudice against Canadian bacon, which was founded on the definitely bad curing practices used during the last war, has been overcome. This should help in holding the British market for Canadian bacon after the war. Standard canning procedures for pork and ham have also been adopted by the manufacturers as a result of investigations conducted with the object of developing a processing procedure which would improve both the keeping quality and the nutritive value of the product. Procedures for the dehydration of pork and other meats have been studied and experiments are under way to determine the storage life of the product. Testing panels have agreed that the product is as edible as fresh material. Modifications of the design of drier and of the drying procedure are being tested.

Dried egg powder has now become a prominent feature of British diet, and specifications for the control of quality in this commodity have been prepared for the Department of Agriculture which controls production in Canada. The division had already carried on a great deal of work in determining the best methods of processing and storage of dried eggs on an industrial basis. Studies designed to determine means of extending the storage life of shell eggs indicate that oil dipped eggs shipped in sealed lined bags keep reasonably well.

Japan's entry into the war cut off the source of agaragar which had been used as a jelling substance in the canning industry. The search for a promising substitute resulted in the choice of Irish moss, a form of seaweed. A laboratory method has been developed for processing this substance, and the properties of the product are being studied. Work is being continued to develop a commercial method of making a good jelling substance from this seaweed.

It was anticipated early that shortages of edible oils might develop, and investigations were put in train to find possible substitutes. As a natural outgrowth of the work on bacon, attempts have been made to improve the stability and other properties of lard as a suitable alternative for vegetable oil shortenings. Linseed oil is the only vegetable oil that Canada produces in quantity. The national research council is giving financial support to the Ontario research foundation in an experiment on the hydrogenation of linseed oil to produce an edible product. In addition, oils from various crops which might be grown in Canada and also oils from certain weed seeds are being studied with a view to their conversion to edible oil shortenings. The development of these crops is undertaken by the Department of Agriculture. The responsibility of investigating the processing of the oils is being undertaken by the national research council in its oil seeds laboratory at the university of Saskatchewan and in its laboratories at Ottawa.

Surveys have been made on the vitamin intake of Canadian troops at various depots, and the components of emergency rations used by the Canadian army have been examined to assess their caloric value and keeping quality. These projects were initiated at the request of the

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Department of National Defence. Advice has been given to the Department of Munitions and Supply on the actual value of foods offered for public sale.

As a result of metal shortages, a great deal of work has had to be done on the development of moisture resistant packages for dehydrated foods for export or for use by the armed forces. Packaging tests have also been made with compressed dried egg powder and dried milk.

The production of butylene glycol from wheat by fermentation is under active study. This chemical is an important raw material in the manufacture of butadiene, a precursor of synthetic rubber. Attention has been given to the possible use of butylene glycol as a substitute for war materials in short supply, as well as with a view to developing new industrial uses. A pilot plant has been constructed for the determination of data necessary for the design of a full-scale industrial plant. Members of the staff of the associate committee on grain research have assisted greatly in this work.

Promising native and exotic species of plants have been analyzed for rubber content and investigations carried on to determine the methods of extraction of natural rubber from these plants. Simple methods have been developed for removing rubber from Russian dandelion roots and from the leaves and seed pods of milkweed. The rubber obtained is passed to the division of chemistry which does the testing and compounding. This work is carried on with the active cooperation of the university of Toronto and the Dominion Department of Agriculture.

The division of chemistry has been engaged in a large amount of testing and development work. In the field of metals, work has been done on low alloy high-strength steels and aluminum alloys. The sea-water resistance of various coatings has been investigated and a study of means of preventing corrosion of different materials by chemicals has been made. Rubber products used by almost every branch of the armed forces have been investigated for production purposes or with the object of making improvements. These include surgeons' gloves, ground sheets, respirator components, crash and steel helmets and parts for artillery and tanks. In addition, rubber conservation problems and synthetic rubber processes have been under examination.

The wide use of textiles in the armed forces has led to a large amount of work in this field. Special problems investigated included methods of reducing the weathering of canvas duck, the thermal transmission of blankets, the colour analysis of certain textile products, and the characteristics of respirator pads. The development of fabrics impermeable to gas has been undertaken and suitable standards of quality for materials of this nature drawn up. The water-proofing, mildew-proofing, and flame-proofing of cotton textiles have also been studied. Tests have been made on many materials including felt, silk gauze, silk thread, braid, vulcanizing cloth, box cloth and various types of uniform materials. Work on the development of a suitable man-carrying parachute with nylon canopy, shroud lines, tapes and sewing thread, has been successful and this type of parachute has been adopted. Viscose rayon is now being successfully used as a substitute for silk in the manufacture of flare parachutes.