

Saskatchewan's current production of 18,000 acres — high for that province — has increased in response to the needs of the new industry. "Pea milling is new," says Dr. C. G. Youngs, head of the biotechnology group at PRL, "not just to Saskatchewan or Canada — but it is a first in the world, resulting directly from our local research and development."

The growth of a methodology for the separation of pea flour into starch and protein fractions has expanded the range of possibilities for utilization of pea products and led to an increase in PRL's collaboration with the University of Saskatchewan and local Prairie industries. Several possible food products using pea protein have been developed by PRL and the College of Home Economics. Laminated in sheets, it gives a meat-like product, or crumbled, it acts as an extender for meats. The protein concentrate is being used by Saskatoon bakeries to produce breads that qualify as good or excellent protein sources.

Interest shown by outside agencies has culminated in the construction by ProStar Mills, Saskatoon, of a \$2 mil-

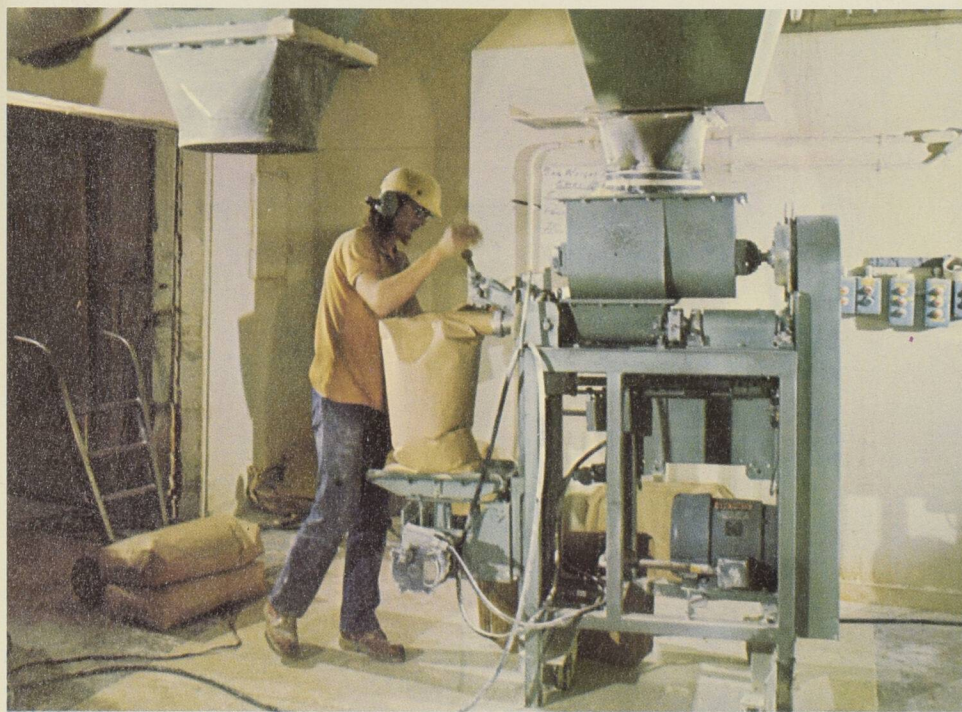
lion plant to process pea flour — another example of the direct transfer of technology from NRC to industry. Based on PRL's laboratory-scale model and a pilot plant follow-up study, the mill is now in operation producing pea



Bruce Kane, PIB/DIP

Dr. C. G. Youngs adds seasoning to pea chips.

Le Dr C. G. Youngs assaisonne les croustilles de pois.



John McAulay, NRC/CNRC

The first commercial pilot plant for processing pea flour located at Nipawin, Saskatchewan. The plant was built by Newfield Seeds Limited on the basis of the model developed at PRL. The experience gained in this operation was essential to the construction of the much larger pea processing plant at Saskatoon, Saskatchewan.

La première usine pilote commerciale pour le traitement de la farine de pois est située à Nipawin, dans la Saskatchewan; elle a été construite par la compagnie Newfield Seeds Limited en s'inspirant du modèle mis au point par le LRP. L'expérience tirée de cette installation a été d'une valeur inestimable pour la construction d'une usine beaucoup plus grande pour le traitement de la farine de pois à Saskatoon, dans la Saskatchewan.

protein concentrate for use as an ingredient in a variety of human foods and livestock rations. ProStar has contracted over 30,000 acres of pea production this spring for the plant.

One of the more interesting products that will come from pea flour is the "pea chip" which the manufacturers hope, in today's snacking society, will compete with the potato chip. With four times the protein content of potato chips, pea chips provide a nutritional source of protein. "Our need at present," says Dr. Youngs, "is to increase the scale of operation — but not everything scales up without a hitch when one goes from small laboratory equipment to large industrial equipment." For example, one problem is that the standard potato chip fryer cannot be used because pea chips have a very short fry time — five to 15 seconds compared with three to five minutes for potato chips. Therefore a means of rapid fry has to be worked out. But trial marketing has begun and ProStar staff are working at PRL to produce the half-product and the deep frying is being carried out outside the laboratory. Under the name Pro-Chips, they are being sold in high schools in eastern Canada and by one grocery chain.

The pea starch appears to have certain unique properties and these are being exploited to develop applications for this material. Pea starch has found a special application in production of carbonless or pressure-sensitive papers, such as are used in cash registers. In addition, preliminary results of tests currently being carried out in western potash mines indicate that the starch can be used as one of the additives in ore refining. Other likely applications are as a component in adhesives for corrugated board production, and once hydrolyzed, as an adjunct in the brewing and distilling industries. Its stability under high temperature conditions, as practised for example in the canning of foodstuffs, also suggests specialized applications in the food processing industry. Finally, the hulls of peas may provide some of the fibre content required to supplement the North American diet which, increasingly, consists of highly refined foods.

Concludes Dr. Youngs: "the whole development is progressing very well at the moment, and I think that when the plant in Saskatoon is in full operation, it will create a great deal of interest around the world." □

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