

transporting, and preserving meat. For years, the National Research Council of Canada has worked in close co-operation with Canadian railways and packing plants to ensure that the consumer gets a top-quality product.

#### PROJECT FOR CPR

Recently, the Canadian Pacific Railway sought the assistance of the Council in solving a problem causing the formation of slime on some carcasses of fresh beef during the four- to six-day transportation period from Western Canada to markets in Eastern Canada. Two NRC scientists, C.P. Lentz, Head of the Food Technology Section of the Division of Biology, and his associate, Dr. D.S. Clark, initiated a detailed study of the problem.

Slime is caused by certain kinds of bacteria that are normally present on the surface of fresh beef and grow rapidly even at the freezing-point of water. These cold-resistant, or *psychrotolerant*, bacteria, do not constitute a health hazard, but in large numbers they produce slime and cause an objectionable odor, as well as a change in the color of the meat.

A high relative humidity is required in refrigerated railway box-cars to minimize weight loss and drying. However, high humidity encourages the growth of these micro-organisms, creating slime formation during transportation.

#### FINDINGS

Results of the laboratory tests, showed that shelf-life – the time required after inoculation for development of noticeable off-odor and slime – was extended markedly by carbon-dioxide gas, depending on concentration and temperature.

“Twenty per cent carbon-dioxide gas markedly inhibits the growth of bacteria that cause formation of slime on fresh beef stored at a high humidity, provided that the gas is applied before the organisms have become adjusted to environmental conditions,” Dr. Clark says. “A 10 percent concentration of the gas also inhibits the growth of bacteria, but only significantly at temperatures below five degrees Centigrade.”

The extension in the shelf-life of fresh beef resulting from the use of a 20 percent concentration of the gas at the inoculation level used in this study – 11 days at five degrees Centigrade and four days at 10 degrees Centigrade – will certainly be significant in terms of West-East transportation across Canada,” Dr. Clark says.

Results of the work were put to use almost immediately by the Canadian Pacific Railway. After preliminary road trials to confirm the laboratory results and to devise a practical method of control, CPR fitted out about 40 refrigerated trailers to provide a 20 percent concentration of carbon dioxide. T.C. MacNabb of Canadian Pacific’s research department in Montreal, says these units are in continuing use and giving excellent results in the shipment of fresh beef.

#### ICAO EMERGENCY SESSION

The International Civil Aviation Organization has convened an extraordinary 15-day session of its assembly, to begin on June 16 at its headquarters in Montreal. The assembly of states will be concerned with the development of adequate security rules and measures to protect air-travellers, civil-aviation personnel and civil aircraft from illegal acts endangering the safe and orderly progress of international civil air transport.

Invitations are being sent not only to members of ICAO but also to international organizations and other interested parties concerned with the safety of international civil aviation who are asked to attend as observers.

The action was taken by the 27-member Council, the governing body of ICAO, as a result of official requests from ten contracting states – Austria, Belgium, Britain, Denmark, the Federal Republic of Germany, the Netherlands, Norway, Spain, Sweden and Switzerland. The full 119-nation assembly of ICAO is usually convened every three years to review the work of the Organization and to direct its attention to matters for the following three-year period under the guidance of the Council. An extraordinary assembly was convened on only one other occasion since ICAO was formed in 1947.

#### FIGHTING ROADSIDE POLLUTION

Farmers may be able to combat roadside lead-pollution from cars, trucks and buses by fighting back with fertilizers, lime and organic matter from the soil.

Scientists at the Canada Department of Agriculture have confirmed earlier research reports that exhaust from cars, trucks and buses is polluting roadside soils with an extra dose of lead. The specialists at the Soil Research Institute have also established that roadside plants absorb some of this lead – in some cases at levels considered excessive. They have learned, however, that the plant uptake of lead can be reduced by: raising the soil pH to make it less acidic (by adding lime); adding phosphate to tie up the lead into harmless compounds the plants can’t absorb; and by adding soil organic matter which also ties up the lead in unusable compounds.

The experiments were conducted by Dr. A.J. MacLean, Dr. R.L. Halstead and Dr. B.J. Finn of the Soil Research Institute, who, when they took samples of plants and soil from both sides of a busy city street in Ottawa, found that both the plants and soil closer to the road contained more lead.

Other researchers have reported that lead concentration is higher in urban soil than in rural soil and plants.

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Queen Elizabeth will formally open the second Arctic and Northern Boy Scout Jamboree at Churchill Manitoba, on July 10.