

## Winter garden

Once a day, Mike Peters trudges through the heavy snow outside Inco Ltd.'s South Mine in Sudbury, Ontario to a small nondescript building made out of translucent plastic.

After fumbling briefly with a frozen padlock, Mr. Peters opens a door and steps quickly into one of the most improbable winter environments northern Ontario has ever seen.

The air inside the building is warm and damp, smelling faintly of vegetable matter and hard-rock mining. Towering over Mr. Peters' head are twin rows of thriving tomato plants, two metres tall and heavy with fruit. In winter, these are the only vine-ripened tomatoes within 2 000 kilometres.

Mr. Peters, an agricultural technician with Inco's Ontario Division Agriculture Department, is standing in a unique greenhouse, heated almost entirely by the free waste heat that is generated in the company's south mine.

Several experts in Inco's Agriculture Department are convinced they have discovered a way to supply fresh salad vegetables to the Sudbury district year-round and to make money doing it. However, the company's top management remains reluctant to expand the scale of the current waste heat experiment.

Even greenhouse operators many kilometres to the south rarely attempt to grow "tender vegetables" like tomatoes in winter, because of the short winter days and soaring costs of heating fuel.

As a result, most of the tomatoes sold in Ontario supermarkets in winter are imported from the Carolinas or Florida. They are harvested green and ripened *en route*, which gives them a dry texture and sawdust taste. Not so for Inco's home-grown produce.

### Unique design

The experimental greenhouse at Inco is unique in at least one respect: rather than pumping the warm air directly from the mine into the greenhouse interior, it goes instead between the two walls that form the building's shell. Mine air is saturated with water — it has relative humidity of 99.99 per cent. If this air was vented directly into the greenhouse, condensation and plant disease problems could occur. The high humidity arises from naturally occurring ground water in the mine plus the water pumped into the mine to operate equipment and to sup-

press dust. Inco designers came up with the double-wall construction — an outer wall of rigid corrugated translucent glass fibre and an inner wall of eight-millimetre-thick clear polyethylene plastic — to avoid pumping the air directly into the interior.

A second novel feature of the experimental greenhouse is that it rests on a bed of rock which serves to filter out particulate matter contained in the mine's waste air. The bedrock also evens out any variations in air temperature.

The greenhouse is equipped with four electric baseboard heaters, but they are needed only on the darkest, coldest days, because the average temperature of the waste air from the mine is 13 degrees Celsius, just below the 15.6 to 16.7 that is the optimum temperature for tomato growth. Heat from the sun through the greenhouse walls is usually adequate to make up the difference.

## Company blows its own horn

For a few years back in the Forties and Fifties, trains did not sound like trains, with the result that cars, trucks, moose, and domestic animals kept colliding with them.



*Airchime president Bill Piercy tests model*

"The trouble was that when the railways replaced the steam locomotive with the diesel locomotive, there wasn't any steam to drive the steam whistle, so they had to use an air horn, and it sounded more like a truck," explains D.W. (Bill) Challenger, marketing manager of Airchime Manufacturing Co. Ltd. of Burnaby, British Columbia.

Today Airchime, of which Mr. Swanson is chairman, supplies air horns for Canadian railways and many railways in the United States. It also manufactures everything from the \$21 hand-held freight horns used by boaters, industries, and the man behind you at the hockey game to the EP 90, a 170-kilogram electric piston horn costing \$16 000 that clears the way for the world's giant supertankers.

"What Mr. Swanson did was to break down the steam whistle into its harmonic components," explains Mr. Challenger. "Then, with six air horns, he duplicated the chord you get with a steam whistle."

Modifications were required for the export market because the steam whistles used in other countries differed from the one used in Canada. The ones used in Europe, for instance, had a two-note chord.

Airchime exports about 75 per cent of its production and insures its foreign accounts receivable with export credit insurance from the Export Development Corporation.

In addition to their uses in railroading and shipping, Airchime whistles are widely used in industry to notify workers of such things as emergencies and the imminence of blasting operations.

Several years ago, an international convention decided that there should be different whistles for different-sized ships and Airchime follows the specifications of the convention in producing its whistles. Most Canadian Navy ships use Airchime whistles and a large portion of the US Navy is Airchime-equipped.

One of the problems of manufacturing horns for supertankers is finding a place to test them. Airchime has testing equipment in its Burnaby plant but for testing out in the open, it uses a site on logging company property in a remote section of Vancouver Island.

## Grain exporters approach record

Western grain exporters could break through the 30-million-tonne barrier for the first time this year if grain shipments continue at their current high rate.

So far this year, exporters have shipped 16.8 million tonnes of grain, up 8 per cent from the level a year earlier. If shipments continue at this pace, exports will total 31.8 million tonnes by the end of the crop year, July 31.

Last year, exporters shipped a record 29.4 million tonnes worth, an estimated \$5.75 billion.