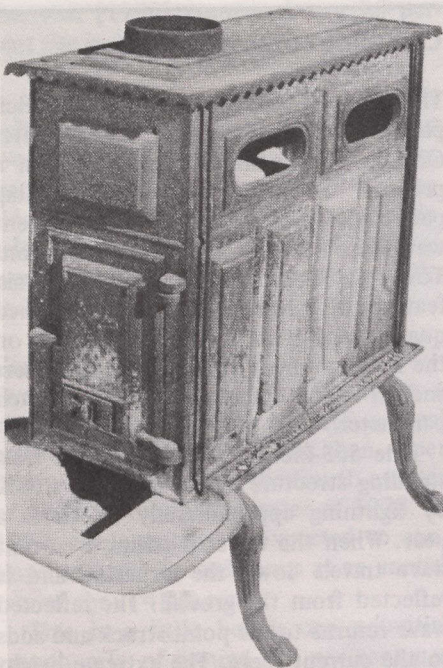


## Rekindling an old flame

Until the late 1880s wood was used to heat nearly all homes in Canada. Then came the age of the fossil fuels: coal, oil, then natural gas. Wood continued to be used for heating only in the rural areas, mainly in the Maritimes. Today, however, with conventional fuel prices rising, more and more people in Canada as elsewhere are considering and buying wood-burning stoves to heat their homes.

Heating technologies have been vastly improved in the past 20 years. The old stoves were not airtight, and hence even the "better" stoves sent about three-quarters of the heat value of their fuel-wood up the chimney. (In comparison, modern oil furnaces have efficiencies of 70 to 85 per cent.)

Since more air than was required for optimal burning got into the firebox of the old stoves, it was difficult to maintain a constant temperature. In addition, no provision was made for burning volatile gases which were lost as smoke. (To ignite these gases it is necessary to achieve temperatures over 590 degrees centigrade, and also to introduce pre-heated secondary air.) Few attempts were made to extract heat from the gases, so they went up the flue. All of these problems resulted in variable temperatures, fast-burning fires, high ash production, and the consump-



*An old-time cast-iron parlour or hall box-stove, manufactured between 1870-76 by Jones and Dowsley, Prescott, Ontario.*

tion of very large quantities of wood.

Modern wood stoves are virtually airtight. Joints are carefully sealed and loading doors are tightly fitted. This allows for good draft control, even temperatures, and long-burning fires. Many units have mechanical (bi-metal strip) thermostats that regulate the draft vent

so that the right amount of air is admitted to maintain a constant temperature.

The improvements increase the ratings of modern wood stoves to a range of 50 to 70 percent efficiency. The improved efficiencies have reduced by half the quantity of wood required to heat a given space. And as an added incentive, the modern stoves can burn for some eight to 20 hours on a load of wood, so tending a wood stove need no longer be a full-time occupation.

Wood heating technology is still progressing beyond airtight boxes to furnaces which use wood chips, loaded automatically — units that burn only a few cords of wood each winter.

## Efficiency testing

The increasing interest in wood energy has brought with it a variety of concerns on the part of government agencies and consumer groups. Both government and industry are studying stove efficiency and safety; the insurability and eligibility for mortgages of wood-heated homes; and the availability of wood fuel.

Scientists at the Department of Energy, Mines and Resources (EMR) are testing airtight boxstoves, combi-fires, sophisticated and conventional Franklins, circulating wood heaters, combined wood-oil furnaces, and add-on wood furnaces. They are varying the wood composition between wet and dry hardwood and softwood, and monitoring the fuel-burning process from beginning to end. The stoves being tested are set up on a weigh scale to measure precisely the burning rate of the wood.

They use a technique based on the "heat loss method" — measuring and recording on magnetic tape the gases and unburned hydrocarbons that escape up the chimney. By analyzing the composition of the fuel as it is modified throughout the burning process, the amount of heat loss is calculated.

## Insurance considerations

Many groups besides the Federal Government are taking an increasing interest in wood energy. They include provincial government departments with responsibilities related to housing and energy, the Canadian Wood Energy Institute (CWEI), the Canadian Standards Association (CSA), the Insurance Bureau of Canada, and the Insurers' Advisory Organization of Canada.

The CWEI has been in existence a little

## How safe are wood-burners?

Provincial building codes, says Judy Connolly of Central Mortgage and Housing Corporation (CMHC), are unclear in most cases. The National Building Code (published by the National Research Council) — which is the federally recommended code — does lay down certain criteria covering the use of solid fuels for heating. But it is virtually unchanged since it was first written in coal-burning days, and it is not related specifically to heating with wood. So far these installation standards have only been incorporated in the Nova Scotia, Prince Edward Island and revised Ontario building codes. In the Prairie provinces, burning wood is not a practical consideration, except in remote northern locations, since wood is not abundantly available.

CMHC has prepared a detailed technical brochure, *Heating with Wood — Safely*, which illustrates how the different units work, what precautions must be taken before and during installation, and describing safe operation and maintenance.

The Insurance Bureau of Canada inspectors can assess whether particular buildings or even whole communities can be safely heated with wood. But their advice is summed up in these words: "Buy an approved device and have it safely and professionally installed." The Bureau also recommends consulting an insurance agent before going ahead. Insurance companies say they have to satisfy themselves as to the age of the house, type of unit, and installation, before agreeing to underwrite a policy on a home where the principal source of heat is wood. And when having a wood-burner installed, the home-owner may expect to pay a premium 20 to 50 per cent higher than he would to insure an oil-heated home.