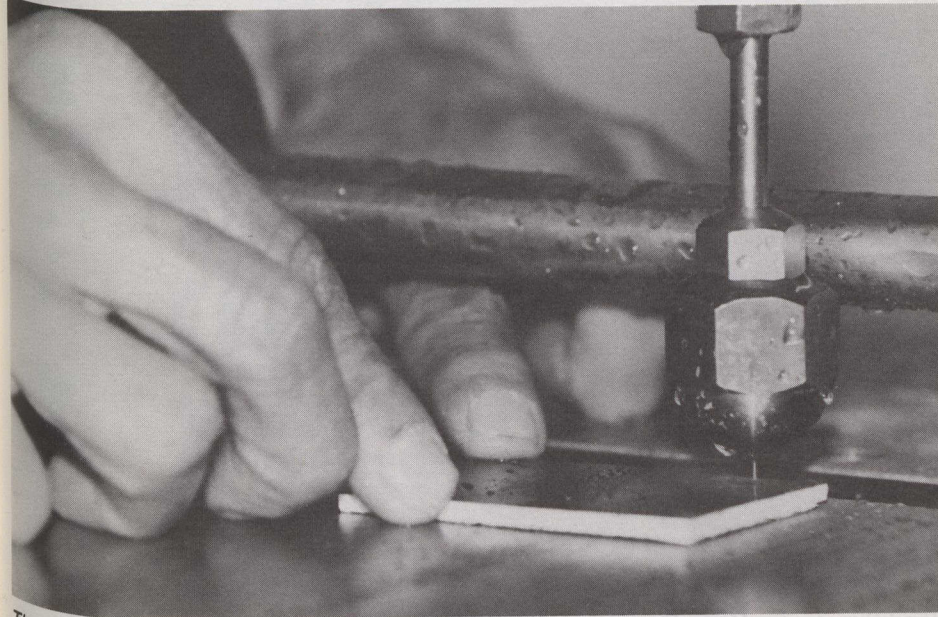


Water-knife a cut above the rest



The Citizen

The water-knife is based on the simple idea that pressure moves objects.

A surgeon performing a delicate operation prepares to cut through a section of bone. Instead of reaching for a saw, he uses what looks like a garden hose and directs a high-pressure jet of water at his target.

A worker in a shoe factory guides leather through a machine, where a pencil-thin jet of water cleanly slices it to the pattern desired.

Scientists at the National Research Council (NRC) in Ottawa are hoping that such events will soon become commonplace.

After working with high-pressure water jets for the past ten years, they have developed cutting methods that work on everything from ice to plastic to fur. An extra-strong blast of water will even bore through rock.

"The Romans were probably using this sort of technology 2 000 years ago," says Mohan Vijay of the NRC's gas dynamics laboratory.

"What we're doing is refining it into a cost-efficient tool that industry can use for all different types of cutting."

Pressure power

The water-knife or water-laser is based on nothing more sophisticated than the idea that pressure moves objects. When the garden hose is used to clean the driveway, for example, it is the water pressure that drives pebbles and dust along the asphalt.

Using a complex pumping system and fancy nozzles, Vijay works with much more powerful streams of water —

often rushing out at a pressure of about 9 000 kilograms per square centimetre — to cut or saw through different materials.

Blasted through a tiny opening in a nozzle, the water becomes a narrow, high-powered slice of liquid that cuts through its target "like a hot knife through butter".

Already, the NRC has been flooded with inquiries about how the water can be put to work.

HDRK Mining Research Corp., a creation of four major Canadian mining companies, recently announced that it will experiment with the technique for mining in the Canadian shield.

Attesting to the potential of the project, riddled chunks of rock, resembling Swiss cheese, litter Vijay's laboratory.

General Electric Co. Ltd.'s Cobourg plant now has robots cutting out car parts with thin jets of water. Bata Shoes Ltd. of Batawa, Ontario, is studying the feasibility of using high-precision water jets to cut the leather shapes used in shoe manufacturing.

Cuts through bone

Recently, University of Ottawa medical researchers tried some experiments using water jets to cut through bone. Preliminary studies showed that the normal Stryker saw used in osteotomy — bone surgery — can cause heat damage to the bone through friction. The water does not cause this problem.

The local researchers did not follow up on those preliminary findings, but West

Germany doctors are trying to fine-tune the bone-cutting technique. Results of their work are to be discussed at an international symposium on water-jet cutting in Ottawa in June.

One uniquely Canadian aspect of the research has been in ice-breaking. Vijay believes jets of water streaming from the bow of icebreakers could effectively carve a path through an iced-over shipping route such as the St. Lawrence Seaway.

Canadian tops in wheelchair race

André Viger, a 31-year-old Sherbrooke, Quebec, businessman became the first official winner of the wheelchair division of the Boston Marathon.

The winner of the women's wheelchair division was Sherry Ramsey of Arvada, Colorado. It was her second consecutive victory in the women's division in Boston.

In previous years, wheelchair participants have not had official sanction, but the Boston Athletic Association recently voted unanimously to establish a separate category.

Viger's time was well off the world record of 1:47:11, set by Jim Knaub of Long Beach, California, last year. Co-owner of a chain of jewelry stores, Viger lost the use of his legs in an automobile accident ten years ago.

Wild turkey returns to Ontario

One of the world's most exciting upland game birds is once again roaming Ontario's forests due to the combined efforts of the Ontario Federation of Anglers and Hunters and the Ministry of Natural Resources, reports *Canadian Scene*.

The wild turkey, lost to Ontario residents in the early 1900s because of the clearing of land for agriculture, is being reinstated through the efforts of conservationists and game managers.

Seventy-five of the turkeys have been trapped from pure wild stock in the United States, flown to Ontario and released at preselected sites near Simcoe and Brighton, west of Toronto.

They have adapted well despite bad weather that accompanied their arrival. A number of birds have been fitted with radio transmitters to monitor their movement and to provide information that will be used to manage this protected species.