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Marine instrument uses new technology to chart the ocean depths

A Canadian company is developing a sophisticated instrument that will chart the ocean floor and determine what resources may be found underneath the seabed.

The new research tool, called *Seabed 2*, is being designed by Hunttec ('70) Limited of Toronto and will be able to work in depths of more than 2 kilometres of water to identify resources that may lie as much as 100 metres underneath the seabed.

The *Seabed 2*, considered unique by its inventors, is an electronic "fish" that will be towed beneath a research boat.

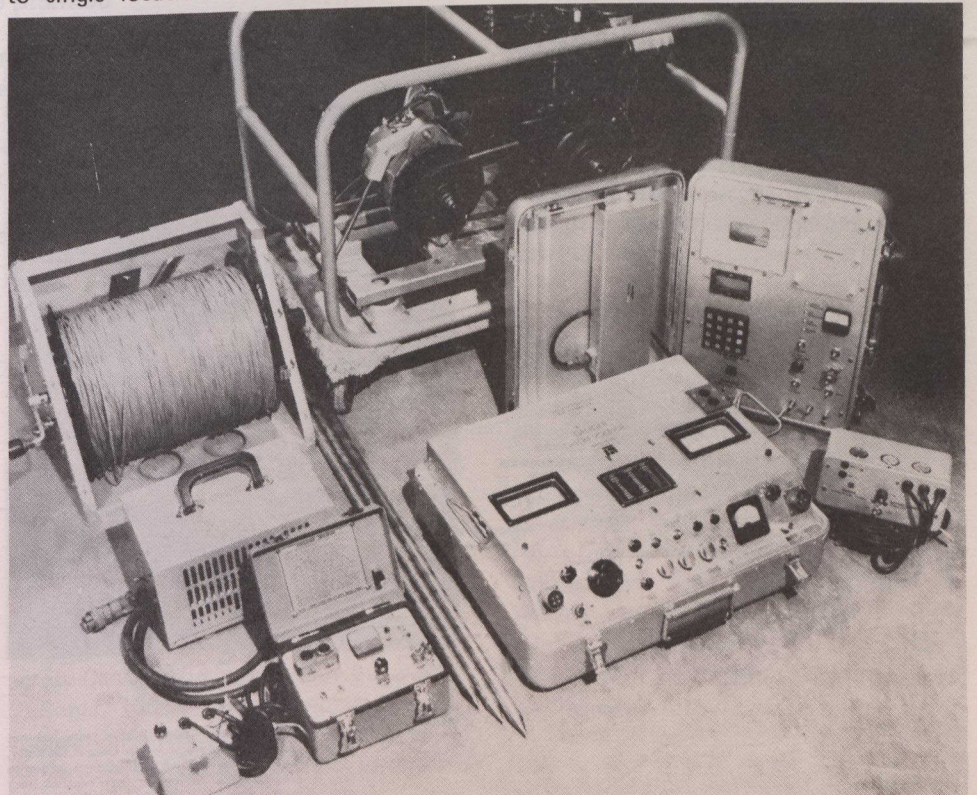
While oceans cover almost 70 per cent of the Earth's surface, it is only recently that explorers have been able to see on a wide plane what lies below water more than a few dozen metres in depth. Mini-submarines have been built to take divers to single locations at depths of several

thousand metres, but for much scientific and resource exploration, the efficient way of covering large areas is to use an unmanned, towed, sonar device.

Computer holds data

Usually called towfish, they often take the form of streamlined canisters filled with equipment that send out sound waves and measure how long it takes the sound to hit non-liquid surfaces and bounce back. *Seabed 2* is a rugged box-like cage holding two devices that take three kinds of measurements in one pass over an area. The data will be sent along a cable connecting the device to the research ship and will be entered into a computer on board.

A side scan sonar sends the waves out at an angle and the computer uses the readings to create a picture of major features on the bottom for a distance of



Some of the instrumentation produced by Hunttec ('70) Limited.



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up to 2.5 kilometres on either side of the towfish.

At the same time, a "boomer" sends powerful sonar vibrations downward. Echoes bouncing directly off the bottom are interpreted into a profile of the bottom. Other echoes travel into the sea floor before returning, and these will enable *Seabed 2* to estimate composition of materials buried beneath the ocean floor. Sand, for instance, scatters sound less than rough gravel. A sound profile can accurately predict from the scattering what kinds of material would be found if a hole were dug at any particular spot along the path of the towfish.

"It's amazing what an enormous leap you have to take to go to greater depths," says James Rossiter, Hunttec's vice-president for development and marketing. The company's current model towfish, *Seabed 1*, weighs 300 kilograms and can work in water between 200 and 400 metres; the *Seabed 2* will have to weigh 3 000 kilograms. "The whole towing technology is substantially different when you're at those depths. It takes a much fatter cable to keep on a path at that depth, so cable drag becomes a very large factor," said Mr. Rossiter.

Tests this summer

The first *Seabed 2* will be ready for testing next June. The hardware is being built in Toronto and the instrumentation is being prepared in Halifax under \$5.5-million worth of federal development contracts. According to company president Roger Hutchins, another generation of equipment will be built to work at 6 kilometres, making it capable of exploring all but the deepest abysses in the oceans.

Towed submersibles have been standard

equipment in oceanography for several years, usually providing only sidescan or downward echo readings on any one pass. Limitations on range and depth have hindered careful study of the ocean depths.

Seabed 2 is being designed to adapt to biases in the data caused by changes in water conditions. Readings in water are often unreliable because water has perverse properties. "Air is much more predictable," Mr. Rossiter said. Differences in salinity, density and temperature can change a sonar signal and cause false readings.

The system will also correct the readings if the towfish drifts off track. The towfish will at times be towed by 5 to 7 kilometres of cable and there is a possibility of drifting. A track recovery system measures roll, pitch and yaw of the towfish and its position in respect to the ship to ensure the instruments are making accurate measurements.

After being interpreted by the computer, the data from a towfish are transformed into a continuous series of shaded lines on long rolls of paper. Surface measurements form a picture that looks from a distance like a black and white photograph. Changes in composition and features of the bottom are highlighted as patterns and variations in shadings of grey that are sometimes very subtle.

Design incorporates computer

Seabed 2 will take advantage of recent leaps in the capabilities of computers as well as developments in sonar equipment. Hunttec is looking at whether a colour display of the data may make it easier to interpret.

Because it can take almost an entire

Hunttec ('70) Limited is a wholly Canadian company which sells and leases specialized geoscientific instrumentation, designed and manufactured at its plants in Toronto and Dartmouth, Nova Scotia.

Over 70 per cent of the company's revenue from the sale of products and services is derived from export markets. The company has two main product groups, geoelectric instrument systems for mineral prospecting on land, and acoustic based systems for seafloor engineering studies and geological mapping. All Hunttec products are available for lease or sale throughout the world and are supported by a field engineering service group.

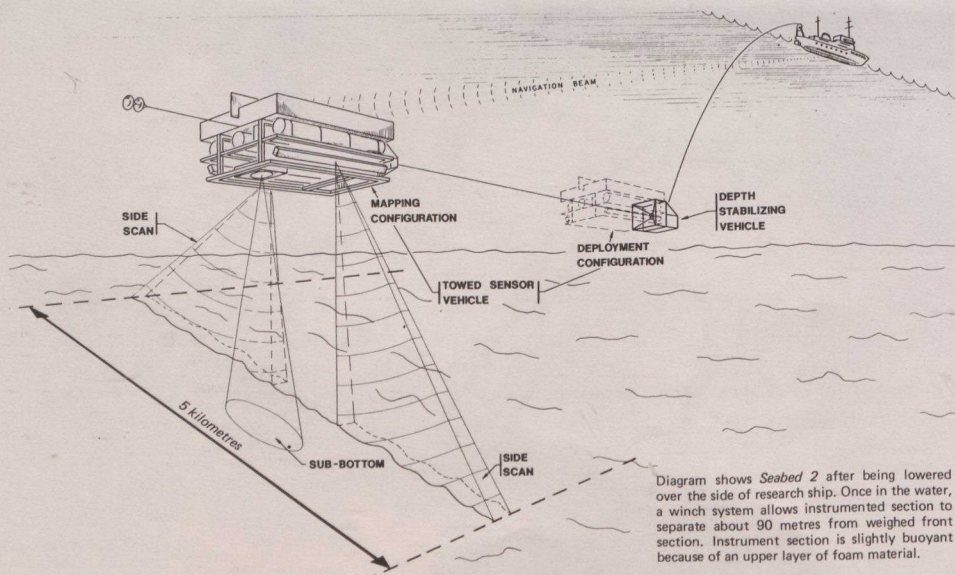
day to lower the towfish on several kilometres of cable and raise it again, scientists will want a piece of equipment that is sturdy and reliable. *Seabed 2* is designed so that if one component fails another system will back it up and continue taking measurements, Mr. Rossiter said.

Towfish often make the news when they are used to find remains of sunken ships. Repeated passes of a small towfish helped a group of Ontario explorers find the remains of two ships that sank in Lake Ontario during the War of 1812. The sidescan sonar images of the wrecks created an eerie likeness of the ships on the computer printouts. The masts even seemed to cast a shadow, but in the lightless depths the shadow was in fact an area where sound waves could not penetrate because they had been bounced back by the ships.

Mr. Rossiter said *Seabed 2* could be used for deep-sea treasure-hunting — and in fact can locate items as small as 10 centimetres in diameter — but that is not its prime purpose.

As designed, the *Seabed 2* will be especially useful for mapping and exploration of minerals and sediments by commercial firms and government agencies, he said. It also would be useful for routine sweeps of pipelines and around oil-production platforms. The system is being designed in the form of modular components so the technology can be added on to smaller, less sophisticated systems.

The project is being backed mainly by the pilot industry laboratory program of the federal National Research Council, with additional support from the Departments of Energy, Mines and Resources, Defence and Fisheries and Oceans.



Automotive centre opened

Premier William Davis and Industry and Trade Minister Gord Walker of Ontario have officially opened the Ontario Centre for Automotive Parts Technology, the second of six centres being created under the province's \$120-million, five-year technology development program.

Premier Davis said the centre in St. Catharines, Ontario, was being set up in response to challenges arising from the global restructuring of the automotive industry.

Mr. Walker said the facility would help to ensure that Ontario's automotive parts manufacturers increase their productivity and competitiveness through the application of new technology, effective marketing programs and improved management and delivery methods.

Objectives of the Ontario Centre for Automotive Parts Technology are to improve the productivity and quality of automotive parts manufacturing in Ontario; to enhance technological capabilities in product design, development and manufacturing; and to increase the ability of manufacturers to identify and capture new market opportunities in the automotive field.

Circulatory disease studied

The federal government will soon begin a five-year study of vibration white finger disease — also known as Reynaud's disease — an ailment that strikes people who use vibrating tools such as chain saws, jack hammers and some farm equipment.

Prolonged jarring by a heavy piece of equipment, usually in cold weather, damages nerve endings in worker's fingers and collapses tiny blood vessels. It causes numbness, tingling and blanching in the fingers and can lead to loss of control of the hands and gangrene.

Forestry workers affected

Experts estimate that more than 10 000 Canadians are candidates for vibration white finger disease. Surveys have shown that more than 50 per cent of British Columbia lumbermen are afflicted.

This year, with \$114 530 from Environment Canada, the University of British Columbia's medical faculty will survey about 200 B.C. lumbermen and test the circulation in their hands.

"We want to look at the people who use chainsaws to determine if the disease

is increasing or decreasing," says Donald Myles, manager of forestry contract programs for Environment Canada.

"New anti-vibration chainsaws have been introduced in the last four or five years, but they haven't been around long enough for us to know if they're having any effect. We also want to find out if white finger is reversible if a worker stops using the equipment in the early stages of the disease."

The lumbermen are to be checked for five years, with the B.C. Workmen's Compensation Board and the Woodworkers of America union helping to run the study.

In 1981, the most recent year for which statistics are available, about 500 Ontario workers were collecting Workmen's Compensation for disability resulting from white finger disease.

Solar water heaters on trial

The federal government is conducting an experiment under the Department of Public Works' purchase and use of solar heating (PUSH) program, to demonstrate the practicality of solar water heaters in Canadian homes.

The \$2.5-million program which is being administered by the Department of Energy, Mines and Resources calls for 1 125 home solar systems to be installed across the country by 14 companies which applied to participate in the project. The federal government will pay 65 per cent of the installation cost which is currently about \$3 600 per unit.

The solar systems are designed to operate alongside conventional water heaters in single-family dwellings. The 225-litre heating system calls for the installation of three 1.2 x 1.2 metre solar collector panels.

The program is a first step in what executive director of the Canadian Solar Industries Association Adrian Gatrill hopes will be an expansion into other areas of solar technology.

"Up to now, the government's policy has been to put solar heating units on government buildings, so that the early risk of something going wrong could be worked out before it became a full-fledged commercial thing. Now it's time solar heating systems moved into the private market place and this is a start," said Mr. Gatrill.

He added that the solar industry is hoping to see similar government programs set up for the introduction of solar water heating systems into industry.

World communications year conference planned

"Canada's global link — technology and communications" is the theme chosen to highlight the 1983 World Communications Year, Canada's premier electrical and electronics exposition.

Sponsored by the Canadian region of the Institute of Electrical and Electronic Engineers (IEEE), the 1983 International Electrical, Electronics Conference and Exposition (IEEC&E) will take place on September 26, 27 and 28, 1983, in Toronto.

"Technology and communications is an apt choice for World Communications Year," according to conference chairman Hugh J. Swain, "especially as Canada is a recognized leader in communications systems and equipment technology and has well-established links with industry and many governments around the world.

"To further emphasize this link, the 1983 conference and exposition has been registered by the United Nations as an official activity of World Communications Year."

Held every two years, the event traditionally attracts buyers and sellers from



across Canada and throughout the world.

Some 100 technical papers, mostly application-oriented, will be presented at conference seminars which will cover the latest developments in electrical and electronic technology.

Entomologist honoured

Entomologist Eugene Munroe has received the Entomological Society of Canada's gold medal in Toronto.

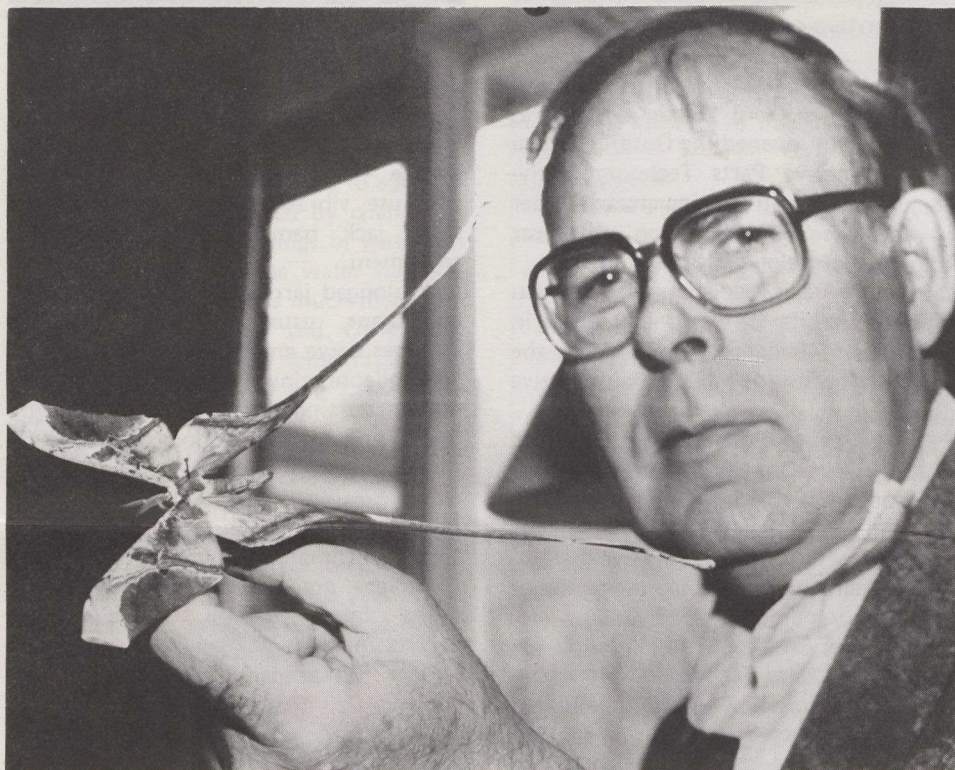
The medal, which is the society's highest award, was presented to Dr. Munroe for his work with other entomologists on a project that is expected to identify 15 000 species of moth and butterfly in North America. The presentation was made at the joint annual meeting of the entomological societies of the United States, Canada and Ontario.

Monumental species project

The project, which is funded by a grant from the National Science and Engineering Research Council, is being handled by Dr. Munroe and seven other entomology editors in the United States. Research has been underway for ten years and is expected to take another 30 years to complete. It will consist of 21 volumes, made up of some 150 individual books of data, each with some 200 pages. The books will explain just about everything there is to know about the moths and butterflies.

Much of the research and work is done by Dr. Munroe at his home in Dunrobin, Ontario but it has also taken him to every continent except Antarctica.

Dr. Munroe's interest in entomology began early and he began collecting butterflies and moths seriously when he was about nine years old. He later studied



Entomologist Eugene Munroe displays South American moth from his collection.

entomology, has taught it and has served as a medical entomologist with the armed forces in the Second World War. He was the first science adviser to the science secretariat of the Privy Council Office and later became principal scientific adviser and head of studies.

Eventually he began to do research with the Entomological Research

Institute. He has also been editor of the *Canadian Entomologist* and president of the Entomological Society of Canada.

Since his retirement from the government service in 1979 he has been involved in the North American species project and he is a research associate with the Lyman Entomological Museum and Research Laboratory at McGill University.

Guidelines on personal harassment introduced

The federal government has taken the lead in combating personal harassment in the workplace with the recent introduction of policy guidelines for the public service.

Treasury Board President Herb Gray and Minister responsible for the Status of Women Judy Erola, announced the policy at year's end, following the implementation of an awareness campaign directed at federal public servants.

New measures

The measures under the policy are designed to foster a working environment where personal harassment will not be tolerated. Mechanisms have been introduced to provide for enforcement of the anti-harassment policy.

A brochure has been distributed to all federal public servants outlining the

policy on harassment, making clear that any act of personal or sexual harassment as defined will be subject to serious disciplinary measures.

Definition

Under the policy, personal harassment is defined as any behaviour that is directed at and is offensive to an employee or endangers an employee's job, undermines the performance of that job or threatens the economic livelihood of the employee.

Sexual harassment includes offensive sexual comments, gestures or physical contact that is considered objectionable or physical contact that is considered objectionable or offensive; it is behaviour that is deliberate, one-sided and both males and females can be victims of it.

Departments and agencies have been asked to establish a redress system with a

senior officer responsible for resolving complaints of harassment. This person will report directly to the deputy head and, preferably, will not be part of other redress areas such as staff relations.

Employees who feel they are being harassed should make their feelings known to the harasser and, where there is more than one incident, keep a written record of the instances. At any time, employees may report the matter to their supervisors; if the supervisor is the person doing the harassing then the employee may go directly to the departmental contact. Such complaints are to be treated in confidence and no record will be placed on the complainant's personal file. If the employees are not satisfied with actions taken by their department, they may refer the complaint to the Anti-Discrimination Branch of the Public Service Commission or to the Canadian Human Rights Commission.

Space 'black hole' discovered

A black hole — the second largest stellar black hole ever detected — has been found in a neighbouring galaxy by two Canadian scientists from Canada's National Research Council and an American colleague.

David Crampton and John Hutchins of the NRC's Dominion Astrophysical Laboratory in Victoria, British Columbia, and University of Michigan researcher Anne Cowley found the invisible object in late November while observing its companion star in the Large Magellanic Cloud, a neighbouring galaxy to the Milky Way.

The hole, named LMC X-3, is thought to be a collection of material whose density and gravity are so great that it sucks in objects like a vacuum. The first stellar object believed to be a black hole was found in 1974 in the constellation Cygnus in the Milky Way.

Black holes are believed to be formed when giant stars burn out and collapse in on themselves. Their molecules become packed so tightly that one teaspoonful would weigh as much as the Earth. This creates gravity so strong even light cannot escape. Thus, black holes cannot be seen with the tools available to astronomers.

New means to reduce sulphur dioxide emissions

The amount of sulphur dioxide released into the atmosphere by Inco Ltd.'s operations in the Sudbury, Ontario area could be cut by half, says a federal-provincial study group.

In a report tabled in the Ontario legislature last month by Environment Minister Keith Norton, the group says a combination of new smelting equipment and pollution-reduction devices could reduce the emissions to low levels.

Inco has been identified as North America's largest single source of sulphur dioxide emissions which react chemically with moisture in the atmosphere and eventually fall as acid rain or snow, often thousands of kilometres from the source.

The study group was set up by the Ontario government to show what technology exists for the reduction of the emissions and what its impact would be on Inco and Falconbridge Nickel Mines Ltd., employment and the environment.

Spokesmen for the two companies say they are working on new techniques to reduce the pollution and plan to make

announcements next year.

Before starting its present shutdown, which is to last until April, Inco was releasing sulphur dioxide into the atmosphere at a rate of 2 300 tonnes a day. The company had been ordered by the province to reduce those emissions to about 1 800 tonnes a day by January 1. However, to achieve such a reduction would cost at least \$500 million and Stuart Warner, Inco's vice-president for

environment and occupational health, said the company would be hard-pressed to find anyone willing to lend that amount of money while nickel markets are still severely depressed.

The study group, made up of federal, provincial and private environment experts, says the cost could be offset to some extent by reduced maintenance and energy costs and a reduction in operating staff.

Biotechnology firm finds industrial uses for microbes

Allelix Incorporated is completing construction of a \$20-million laboratory in Mississauga, Ontario where researchers will develop microbes for use in the fields of oil exploration, mining and farming.

"It's very exciting," said company president Alan Bates. "We're treading new ground here with real rewards for people who innovate and develop products with significant economic impact."

Allelix, a partnership of John Labatt Limited, the Canada Development Corporation and the Ontario government, will explore ways that biotechnology (the science of harnessing microorganisms and plant cells for specific commercial applications) can be applied to Canada's resource and agricultural sectors.

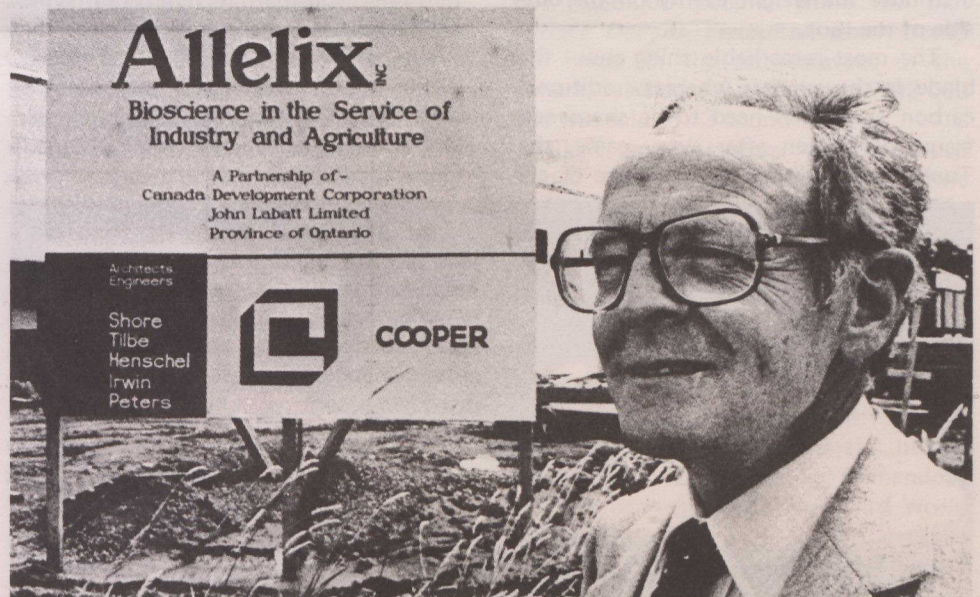
A number of projects have already been planned for the new research facility. One will examine ways in which oil companies can recover hard to reach deposits by using microbes to alter the properties of the oil making it easier to retrieve. In the area of mining, Allelix will investigate

certain bacteria that can be used to recover minerals from low-grade ore and mine tailings. The company is also considering ways to improve crop yields by introducing nitrogen fixation to certain agricultural crops.

While most major industrialized countries are involved in some areas of biotechnological research, Allelix is one of only a handful of Canadian companies in this field. Research at the Allelix laboratory is expected to stimulate the Canadian economy and to find international markets. The laboratory with its unique products and processes will also lead to employment for highly skilled Canadian workers.

"Ultimately we hope to play a significant role in improving the productivity and competitiveness of Canada's primary industrial sectors," said Mr. Bates. Allelix is beginning a world-wide search for 120 scientists and support staff needed for the research facility.

(Excerpts of an article from Ontario Business News, September 1982.)



President of Allelix Allan Bates surveys the new biotechnology facility in Mississauga.

Employees face hazards to fertility in the workplace

The Canadian Advisory Council on the Status of Women has released a new study, *Reproductive Hazards at Work: Men, Women and the Fertility Gamble*. In her announcement of the publication, Council president Lucie Pépin stressed that "all workers must be alerted to the danger of this issue. We have found that almost all workplaces contain hazards to the reproductive system — not only factories, nuclear plants or mines, but also hospitals, offices and schools. These hazards do not simply harm pregnant women, but other women, men and future generations as well."

The report analyzes these different hazards, unveils discriminatory practices which prevent women from entering certain jobs because of their reproductive physiology, and underlines the risks in-

volved for the male population. The author outlines the obstacles to establishing a safe working environment and actions that can be taken in this regard in Canada and abroad. The report concludes that the co-operation of workers, employees and governments is necessary to ensure the establishment of strict protective standards in the workplace.

"The situation is of grave concern," stated Mrs. Pépin, "because the well-being of the entire population is at stake. The Council has formulated recommendations for action on this issue, particularly in the areas of discrimination, protective standards and statistics on workers' fertility."

The study was prepared for the Council by Nancy Miller Chenier, a nurse and health and safety consultant who is cur-

recently specializing in research on women and health.

For more information contact the Canadian Advisory Council on the Status of Women, 66 Slater Street, Ottawa, Ontario K1P 5H1, Canada.

Bomb-sniffer ready to test

The first of the federal government's new bomb-sniffing devices is expected to be in trial use shortly.

The device's inventor, Dr. Lorne Elias of the Canada's National Research Council, said the council would lend six or seven of the "in-house" devices to government departments interested in trying them out.

Dr. Elias named the Royal Canadian Mounted Police, the Department of National Defence, the Customs and Excise Department, Canada Post and Canadian embassies as the probable recipients of the bomb-sniffers.

The device, used to detect the location and amount of explosives, can trace explosives ten to 100 times better than existing commercial devices.

The sniffer is small enough to fit in an attaché case but exact details of how it works could not be given for security reasons. NRC and Transport Canada have spent about three years developing it.

Once the first devices are in use, it will be possible to determine if any changes have to be made when they go into production.

Canadian food aid for Mozambique

A grant of \$6 million to supply food aid to Mozambique has been announced by Deputy Prime Minister and Secretary of State for External Affairs Allan J. MacEachen. The funds, supplied by the Canadian International Development Agency (CIDA), cover the purchase and transportation of Canadian wheat.

Mozambique is facing severe food shortages, particularly in Nampula and Cabo Delgado provinces in the north and Inhambane province in the south where drought conditions have seriously reduced crop production.

Mozambique's National Commission for Natural Disasters will have the responsibility for co-ordinating the distribution of food aid, while the World Food Program will be responsible for monitoring the Canadian food aid on behalf of CIDA.

Cheaper skate blades stay sharp longer

In 1975 Roger Baikie, a Montreal bottler of Coca Cola and Canada Dry, gave his brother Hugh, a natural-born tinkerer, \$60 000 to try to make a better ice-skate blade.

Hugh spent \$500 000 and came up with what he called the Tuuk (it rhymes with book), the Inuit word for ice chisel. The blade is made of plastic with a Swedish surgical steel runner and can be bolted to any leather or plastic boot.

The plastic top is merlon polycarbonate, molded in hollow, lopsided cups at heel and toe. The shape is designed to distribute the weight evenly on the outside of the foot.

The most remarkable thing about the blade is the runner: whereas traditional carbon steel ones need to be sharpened frequently, often after every game, the Tuuk needs sharpening only five or six

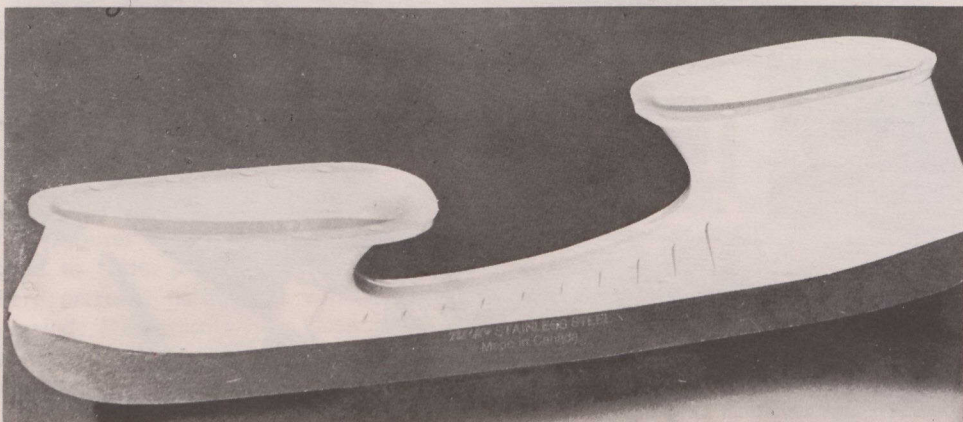
times a season. The Tuuk is also cheaper to build, rustproof and 40 per cent lighter.

The Tuuk caught on with the Montreal Canadiens hockey team and later with the other National Hockey League teams. Soon all the principal skate manufacturers were putting Tuuk blades on their best skates.

In 1979-80, Tuuk produced 570 000 pairs of blades itself and Bauer, a skate manufacturer which it had authorized to manufacture Tuuks, added another million.

Tuuks come in a variety of types, including figure blades and blades for goalies, at prices up to \$50.

For more information write or call CANPRO Sports Inc., 5790 Ferrier, Montreal, Quebec H4P 1M7, Canada (514) 735-2277.



French Canadian classic to be filmed

Maria Chapdelaine, one of the great romances of French Canada, is being made into a film. French and Quebec movie-makers are co-operating in a \$5-million production which is expected to reach cinemas throughout the world within a year.

Maria Chapdelaine was written by a young French writer, Louis Hémon, who immigrated to Canada in 1911, at the age of 30. Born and educated as a lawyer in France, he was always inclined towards writing and had worked as a journalist in France and England before coming to Canada. Unfortunately, his one great work was not published until after his tragic death at 32 in a railway accident.

Hémon spent less than 18 months in Canada but his portrayal of life in rural Quebec has received world-wide acclaim. *Maria Chapdelaine*, set in the rugged Quebec countryside north of Lake St. John in the early years of this century, has been translated into 18 languages and has been used as a literature text in schools in Ontario and Quebec. It is a tragic love story but, more than that, it is the brave story of hardy settlers determined to wring a livelihood from the bleak backwoods of northern Ontario. Carole Laure, the Quebec actress who will star in the movie, says she had grown up with *Maria Chapdelaine* as part of her life, and she describes the story as an honest portrayal of past generations who laid the foundation of Quebec.

Inept as farm labourer

Shortly after Hémon landed in Montreal, he worked as a labourer on a farm near Peribonka where he soon earned the reputation as being the worst hired hand north of Lake St. John. He was awkward and inept as a farm labourer, but fortunately his employer kept his clumsy helper on the farm because he saw something in Hémon that set him apart from the other settlers in the region. He also allowed him every Saturday free. It was then that he wrote his story. He set it in the harsh landscape where he worked, and based his characters on the people around him in whom he recognized an honest and heroic stubbornness and a mystic devotion to land, language and religion.

Despite his long work hours, Hémon managed to complete *Maria Chapdelaine* by the spring of 1913, and sent it to his Paris publisher. Then he set out with a



Montreal's Carole Laure (right) and Nick Mancuso, stars of new film version.

friend on a fishing expedition in northern Ontario, where he died near the town of Chapleau. He is buried there in the Roman Catholic cemetery in a grave that remained unnoticed for many years.

Maria Chapdelaine was published in Paris in 1914 and a small edition was printed in Montreal in 1916. But it was slow to gain recognition as a minor masterpiece.

In 1919, members of the Quebec Society of Arts, Sciences and Letters erected a monument to Hémon at Peribonka, near where he had worked as a farm labourer and a gifted novelist. And in 1967, a plaque was erected in the Chapleau Centennial Park, close to the young French writer's final resting place.

(Article by Marcus Van Steen in Canadian Scene.)

Canadian Broadcasting Corporation film to highlight opium war

An enterprising and adventurous film crew from the Canadian Broadcasting Corporation is setting out this month to focus their cameras on one of the critical problems of the Third World. The film, called *The Golden Triangle - Canada's Heroin Connection*, will be made during the opium harvest on the borders of Burma, Laos and Thailand.

Producer-director Bob Clark and his film crew, consisting of cameraman Guy Weese or Ian Matheson and soundman Paul Bélanger, have been filming in the hazardous conditions of Third World countries for some dozen years. The results of their bold initiatives have proved to be popular: the two-part documentary, *McClure's China*, about the work of Canadian missionary-doctor Robert McClure, drew a total Canadian audience of some 1.5 million; *Thailand: Land of the Mountain Elephant* was seen

by 1 386 000 people; while the film *Sixteen Days to Timbuktu*, which traced the route of the salt caravans of the Sahara, reached an audience of 792 000 and was sold to 13 countries.

Clark and his crew also produced filmed reports on Cambodia and the guerilla war in Ethiopia as well as the award-winning television film *My People Are Dying*, about the Vietnamese boat people.

Bob Clark, who in the early Seventies worked as a CBC correspondent in Vietnam, has for years taken a keen interest in the Third World.

"What I felt and still feel," he explains, "is that we get a tremendous amount of material on the Third World made by others and so we get the American point of view, or the British point of view. But we never get the Canadian point of view."

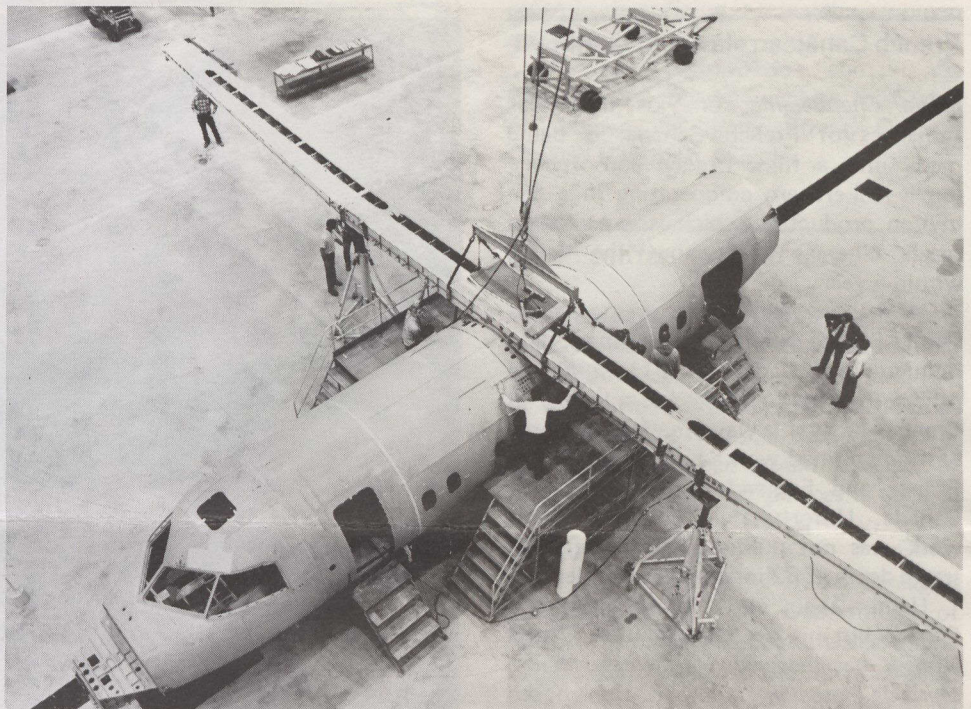
News briefs

Effective February 15, postage for a first-class letter within Canada will increase by 2 cents from the present rate of 30 cents, an increase of 6 per cent. Cabinet approved the increase just before Christmas. All other new rates are effective January 15, including parcels, mail to the United States (37 cents) and to other countries (64 cents).

Air Canada says it has become the first overseas airline to open an "airside" lounge at London's Heathrow Airport. Called the Maple Leaf Lounge, it is situated adjacent to the terminal's three departure gates normally used by the airline. For the businessman, there is teletext and all local telephone calls are on a complimentary basis as are liquor, newspapers and magazines. The lounge is made available for use by Air Canada passengers and those first-class passengers travelling with airlines handled by Air Canada.

Scientists from seven countries — Finland, Greenland, Norway, Sweden, the USSR, Canada and the United States — have agreed to establish a network to facilitate international co-operation, research and training in northern science. The decision was taken at a meeting held in Edmonton, Alberta in October 1982 under the auspices of UNESCO's Man and the Biosphere Program. Three areas, coordinated by different countries, have been identified: problems associated with conflicting land use practices in the North (Sweden); developing the scientific and management-related usefulness of biosphere reserves and other protected areas (Canada); and studies related to the ecology and use of birch forests in the circumpolar sub-arctic region (Finland). The network elected Dr. Milton M.R. Freeman (Canada) as its first chairman, and Dr. Kurt V. Abrahamsson (Sweden), vice-chairman. Its secretariat is to be established in Edmonton, Alberta.

By the year 2000, French-speaking Quebecers will constitute 85 per cent of the province's population, up from the current 81 per cent, while the anglophone population is expected to decline steadily, a government-ordered study predicts. The unreleased study, prepared for the Conseil de la langue française (French-language Council) — an advisory body to Quebec's French-language office — concludes Quebec's francophone majority expanded more rapidly than its English-speaking population and other minority groups between 1971 and 1976.



De Havilland Aircraft of Canada

Mating of the fuselage and wing spans of Canada's first Dash 8 aircraft is done at the Toronto plant of de Havilland Aircraft of Canada. First of four pre-production planes will roll out in April and fly in June. The company already has 40 orders and 79 options for the 36-passenger plane. Delivery will begin in 1984.

A unit of **Northern Telecom Ltd.** of Montreal, Quebec has announced it received a contract worth more than \$100 million to supply fibre optics cable to MCI Communications Corp. of Washington, D.C. The contract could reach \$200 million over four years. It is expected to create 100 jobs in the Saskatoon, Saskatchewan area, the prime fibre optics manufacturing site for Toronto-based Northern Telecom Canada Ltd., a manufacturing arm of Northern Telecom. The MCI will supply fibre for the heavily used 225-mile long-distance telephone network MCI operates between New York and Washington.

More than 100 guests attended a dinner aboard the Brazilian ship, *Henrique Leal*, in the port of Montreal December 6 to mark the ship's maiden voyage. The hosts were the ship's captain Nelson Silva, José Carlos Leal, a director and one of the owners of Companhia de Navegação Marítima Netumar, and Mrs. Leal, and Philip Gainsbury, president of Netumar Navigation Limited, Montreal. The *Henrique Leal*, a cargo vessel capable of handling containers, will be used on Netumar's express run between Brazil and North America. On its maiden voyage it carried coffee, mahogany, aniseed, wool yarn, machinery and cocoa to Canada. On its return trip to Brazil it carried Canadian newsprint.

A mid-December meeting of federal and provincial finance ministers has resulted in an agreement to put money into capital works. Faced with unemployment that they expect will remain high for five or six years, the ministers resolved to assemble a list of specific projects on which more money should be spent.

Spar Aerospace Ltd. of Toronto has been awarded contracts by Hughes Aircraft Co. of El Segundo, California, for the supply of subsystems for the *Intelsat VI* satellites. The projects, which will be carried out at Spar's plants at Ste-Anne-Bellevue, Quebec and Kanata, Ontario are valued at \$33 million.

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