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Government-Business Co-Operation in R&D

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Managing Editor, Periodicals:
Anna Hibberd

Editor:
Don Wight

Contributing editors:
Bob McDonell
Shirley Plowman
John Hughson

Designer:
Stephen Shewchuk

Correspondence to:
Canada Commerce (98)
Department of Industry, Trade and Commerce
Ottawa, Ontario K1A 0H5

Telephone:
(613) 995-8900 Ext. 53 (information)
(613) 995-8900 Ext. 55 (additional copies)

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Contents **Page**

Editorially speaking. . . .

High technology. . . .One hears the term everywhere these days. An industry of ever increasing importance, it is also one in which Canada excels.

The importance attached to this burgeoning field was clearly demonstrated at a recent HiTECH Conference in Ottawa when, in less than 60 hours, 61 trade officers from IT&C's posts around the world held more than 5,000 interviews with Canadians interested in high technology export! More on page 7.

And there **are** numerous markets. Here we zero in on just one with a comprehensive article (page 12) on market opportunities for Canadian high technology in Britain.

While there may be fewer export opportunities for high technology in China, a report prepared by our post in Peking reveals there are ample markets for a variety of Canadian products, services and expertise in the People's Republic.

On the home front, Commerce's Bob McDonell continues his series on alternate energy, this time dealing with CANDU and Canada in the nuclear arena.

The Federal Business Development Bank offers advice on financing a small business; Shirley Plowman reports on a survey that questions "Are Women (Managers) Treated Differently?"; and the Economists' Corner suggests "Capital Shifts from Power to Petro".

And there's more! Read on. . . .

D.E.W.

The trade climate for Canadian businessmen looking at China today can be said to be mixed. What is of fundamental importance, however, is that China's leaders are determined to transform the People's Republic into a sophisticated, modern state.

The door remains open to foreign goods and technology and there are export opportunities — even if you would not call it a huge or wide-open market. Self-reliance continues to be the watchword, pragmatism the order of the day and fiscal conservatism a strong underlying force.

Trade Opportunities in China

Exploratory oil drilling platform off the Bohai coast.

by Carl E. Rufelds
Minister-Counsellor (Commercial)
Peking, China

China has made some headway in balancing the budget, curbing inflation and gaining better control of certain problem sectors of the economy.

Generally speaking, the Chinese economy in 1981 appears to have performed much as the government predicted: stronger in agriculture, light industry, individual incomes and trade; weaker in heavy industry and energy, with unemployment still a problem.

While the government has made progress in reordering its development priorities, the task of balancing the budget has virtually dried up domestic investment capital (although they are expected to start to utilize some of their massive foreign credit).

There is no sign China intends to opt in a big way for foreign loans — except perhaps those at concessionary or near concessionary terms. Thus the prospect for an upsurge in major megabuck projects is not bright.

Labour-intensive light industry continues to be favoured over heavy industry. This is based on the premise that it can yield rapid returns, meet the rising demand for consumer goods and increase exports — thereby earning foreign exchange to pay for imported foodstuffs, equipment and technology vital to modernization.

Even here the emphasis is on upgrading of existing plants to improve production and/or quality and not on building entirely new facilities.

Some domestic capital and scarce foreign exchange is nevertheless being selectively directed at the key bottleneck sectors of transportation, communications, construction materials and energy — with rumours that the non-ferrous metals and mineral sector may soon get the nod for limited investments.

One bright spot is offshore petroleum where China has now set the rules and will enter into joint ventures with foreign oil companies — ones that will be obliged to provide the gigantic amounts of capital required for exploration and development.

While the tight reign on investments is expected to continue until 1985 the foregoing "favoured" and "bottleneck" areas are ones where Canada possesses a high degree of expertise and specialization — so, on balance, the prospects are rather bright.

China's trade environment and potential today, just "aren't what they used to be" or, at least, were thought to be.

While being decidedly more relaxed and open, with a growing set of laws to regulate foreign commerce, investment and taxation, it is not the huge market that was originally assumed. Also, decentralization of decision-making from Beijing (Peking) to the provinces has added further complexities to an already highly complex bureaucracy.

But it **is** an interesting market. Canadian companies and businessmen will just have to get out into industrial centres like Shanghai, Tianjin, Xian, Guangzhou and South China and Harbin and Northeast China to conclude export sales.

Canada-China Trade

1981 was a banner year for bilateral trade. For the first time Canadian exports to the People's Republic of China are expected to pass the $1.0 billion mark, making China Canada's 10th or 11th largest export market — ahead of such countries as Australia, Venezuela and Mexico.

The Republic's exports to Canada are also up — indeed, their export performance registered an estimated 43 per cent increase against a 15 per cent improvement in ours. However, a large trade imbalance in Canada's favour remains and the embassy continues to collaborate with Chinese in endeavours to improve their trade with Canada.

Canadian exports to the People's Republic of China are expected to pass the $1.0 billion mark, a great improvement.

Our motivation is not entirely altruistic — China is strapped for foreign exchange and the more they can earn the better the chances for Canadian exports.

The makeup of Canadian exports in 1981 showed little change from the normal pattern, principally comprising raw or semi-finished materials such as pulp, paper, potash, sulphur, asbestos and aluminum for China's agriculture and light industry sectors and of course, food grains. Most of these commodities can be forecast as growth areas, including our traditional mainstay, wheat.

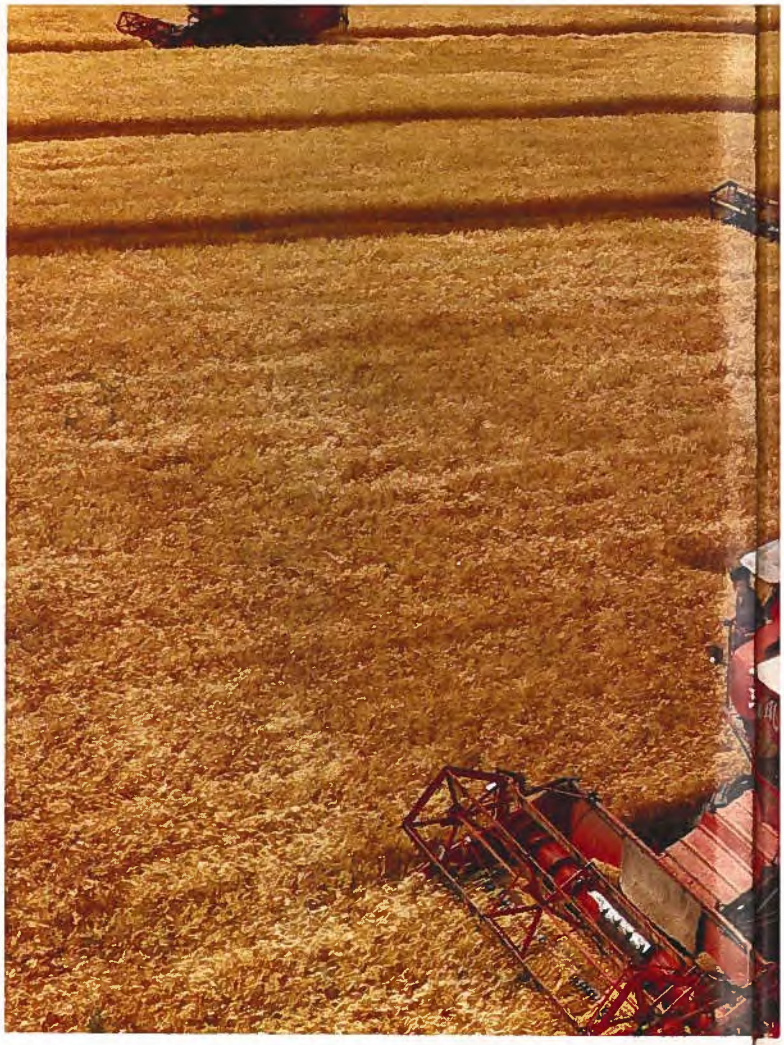
Fully manufactured and sophisticated high technology goods remained a small, albeit, growing component of our trade. But we intend to do better and this is the sector where trade development efforts are being focussed on a highly selective basis.

The obvious lead company is a Canadian firm already established in China — of which there are several. While CIDA is only now developing a program for the People's Republic — agriculture is certainly one area of interest. If it is selected, a CIDA project could turn out to be an important vehicle for introducing new Canadian capabilities and broadening the number of our agriculture-oriented companies working in China.

Wheat, a traditional Canadian export, is being harvested here on a state farm in Heilongjiang Province.

Top right: **Coal is a high priority area for the People's Republic.**

Below right: **A water turbogenerator unit with a capacity of 125,000 kilowatts.**



Forestry

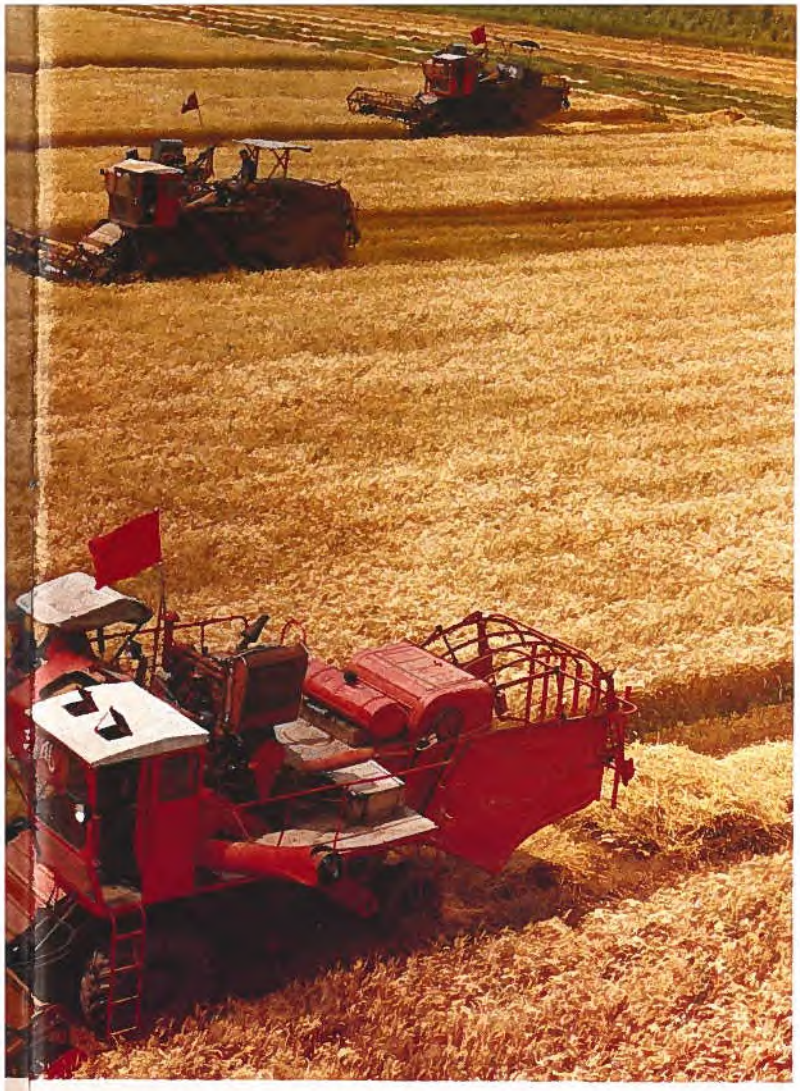
Besides pulp and paper, there is a growing demand for other types of forest products such as lumber, heavy timber, plywood and finishing veneers.

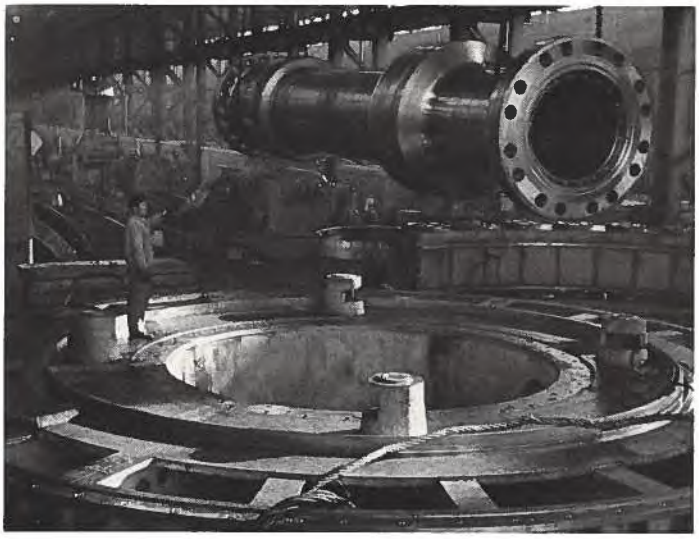
Viewed against China's ravaged forest resources and resultant chronic shortfall in production, backward and sometimes wasteful processing and an inefficient and over-loaded distribution system, it is easy to envisage opportunities for Canadian forest products as well as for expertise in mill design and forest management.

The major obstacle in the past has not been foreign competition so much as China's policy of "self-sufficiency" and a reluctance to make foreign exchange available except for the most pressing needs.

However, ecological problems are forcing a reduction in logging and forestry operations which, coupled with strong demand that substitute products cannot entirely satisfy, has caused the authorities to be less dogmatic and place some recent orders for lumber.

Now for the specific trade opportunities the Commercial Division sees for Canadian goods and services in China. While focus is on the more exciting export prospects, obstacles to trade, competitive forces and market approaches will also be flagged:





Agriculture

China is ready to buy advanced agriculture technology — everything from new seed varieties for pasture regeneration or expanded production of crops such as malting barley, through improved poultry breeding stock and better livestock bloodlines, advanced processing of meat and agriculture products for export markets to know-how in land use and farm management.

Our competition is mainly from the United States and, to some extent, Europe and Australia. But we have had considerable recent success and a sound base has been established for future growth.

In the immediate term, agriculture development projects financed by international agencies, appear to offer the greatest potential for Canadian companies.

A "consortium" approach by several Canadian firms may be necessary to meet the increasing number of instances where the Chinese require a "package" of related products, services and technical advice.

Because of its development importance to the People's Republic and its relevance to Canadian know-how, CIDA is also examining the forestry sector as an area of possible co-operation.

Telecommunications

There is a pressing need for a significant expansion in telecommunications capacity to meet modernization goals and industrial requirements (for instance, at present, China has about one telephone for every 250 persons, well down the list of other developing countries).

A reliance on satellites (INTELSAT) to meet most domestic intercity telephone and T.V. transmission requirements matches up well with Canadian capabilities and creates opportunities for supply of earth stations, related equipment and systems design.

A major trade obstacle in the past has been the need to deal only with the communications ministry. But this has changed. Now, thanks to decentralization policies, foreign firms are able to negotiate directly with potential end-users (such as regional authorities), special economic zones and ministries (such as petroleum, railways and electric power), that operate and maintain their own communications network.

Competition from Japanese and U.S. suppliers is fierce. Success has and will require considerable time, marketing investment, competitive prices and financing.

Foreign firms, however, are judged not just by the price and quality of their products and service, but also by their willingness to engage in technical exchanges, training of the Republic's personnel, transfer of technology and their readiness to entertain joint manufacturing or servicing arrangements. These are factors Canadian companies must consider when developing a proposal.

Transportation
Transportation is a serious economic bottleneck. The People's Republic has long recognized the need for upgrading its transportation system to better service both freight and passenger movement and it now seems determined (perhaps obliged, is a better word) to do something about it.

While China has considerable domestic capability and will want to do most of the upgrading of rolling-stock and track themselves, the magnitude of investment capital needed may prompt them to look for advanced items from abroad.

There appear to be bright prospects for port and railway material/bulk handling equipment, traffic scheduling computer hardware and software packages and for systems to optimize existing facilities.

Competition for transport infrastructure projects, such as ports and railways, is very keen and often funded by tied development assistance loans — principally by the Japanese. The World Bank is also involved in this sector, improving the chances for Canadian involvement.

Aerospace
While immediate commercial possibilities in this sector are limited, a number of Canadian firms have adopted a long-term approach to the market, including the sourcing of finishing of parts and components in China.

The hope is that building up a sound working relationship will lead to future sales and/or the possible co-production of equipment under licensing or joint venture arrangements. So far the approach seems to be working well.

Light Industry
As mentioned earlier, this sector is being favoured by the People's Republic planners, with the emphasis on modernizing existing facilities. Food processing and packaging, tourism, paper manufacturing and converting and modern light construction materials for high-rise and industrial buildings seem to be areas with good prospects for Canadian industry.

A difficulty here is identifying the exact needs and plants targeted for improvements or expansion. The five-year plan, due last November, was expected to catalogue specific undertakings but it has been delayed and is now not forecast until mid-summer.

In the meantime, the Post has initiated an intensive program of visits to authorities and end-users in China's most important industrial regions in an attempt to flush out projects and other trade opportunities of particular interest to Canada.

Energy
Despite the huge investments required, hydro is receiving a fair degree of attention. Projects in South China are high on the country's priority list, with China implementing some and the World Bank financing others.

One Canadian company is utilizing the CPPF to do a pre-feasibility study and others are forming up to pursue the supply of engineering design, project management, electrical-mechanical equipment and transmission lines.

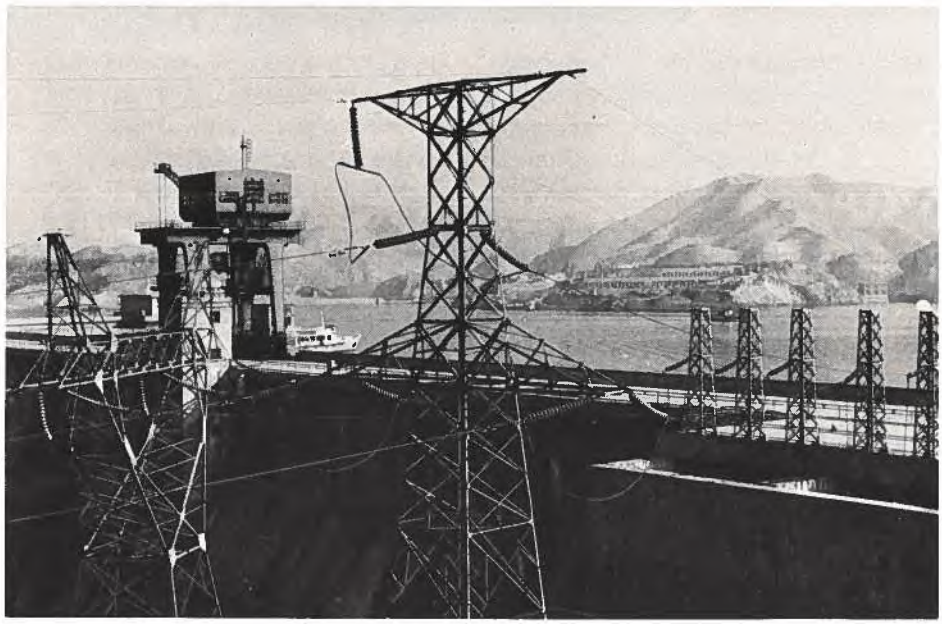
There is stiff competition from Japan, the U.S., Europe and China's own industry. However, Canada has been cultivating this sector for some time and the Chinese are well aware of — and receptive to — Canadian expertise and products.

Again, the successful proposal will undoubtedly be one that recognizes the Republic's interests in attracting new technologies, in doing some manufacturing locally and in responding to the need for attractive financing terms.

Petroleum
As noted earlier, the oil and gas sector — particularly off-shore exploration and drilling — is the scene of considerable activity.

While China, not unlike Canada, wants to maximize the benefits to its domestic industry from the mega-dollar projects, they now lack the essential capital, know-how and manufacturing capability.

Canadian oil-equipment suppliers interested in this new market opportunity should contact not only the successful foreign oil companies but also the responsible Chinese entities. Again, some form of collaboration



Liujiaxia Hydro Power Station at Yellow River, Northwest China.

Two ingredients have traditionally paid off in exports sales to China — patience and perseverance.

Today these are not enough. Flexibility and imagination are also essential.

Canada-China Trade Close to $1 Billion

Trade between Canada and China totalled $924 million for the first nine months of 1981, representing a growth of 20 per cent over the previous year, reports the First Secretary of the Chinese Embassy in Ottawa.

Speaking at a Toronto seminar on business opportunities in China, Liu Tze Pu said his country has been moving ahead with trade and joint venture links with a number of countries for the development of everything from oil to light industry.

Canadian exports of wheat, potash, sulphur and forestry products topped the trading list. But Canada is expected to make in-roads with high technology products, especially in agriculture, communications and transportation, noted William Coleman, executive director of the Canada-China Trade Council.

Coleman said that China needs to boost exports to arrive at a better balance of trade with Canada (and other countries) and to get foreign currency. He also added that trade between Canada and China will grow at a steady, but gradual rate, for the rest of the 80s.

Trade Connections

with the domestic industry will be essential to a successful export deal and a long-term relationship.

Coal
This is another high priority area for the People's Republic which also has considerable but outdated expertise and mining equipment manufacturing capability.

Industrialized coal importing and mining countries such as Japan, Belgium, Germany, Great Britain and others have been very active and have, by and large, staked out their claims to those things the Chinese cannot do themselves.

This is not seen as an area of great interest to Canada but is noted here because it is a growth area in the People's Republic.

Nuclear
A recently completed Chinese study of future energy needs concluded that the nation should embark on a nuclear power program (particularly for energy-starved industrial regions of Eastern China such as Shanghai). But no decision has been made.

When the lack of investment capital is considered, an early go-ahead appears unlikely — unless, of course, a foreign supplier offers a plant and technology package on terms so favourable that the Chinese just could not turn it down.

Education
The approval last November of a $200 million World Bank loan for the development of 26 modern universities in the People's Republic makes this a very interesting sector for Canadian companies.

Any Canadian firm that has been following this project and has been in touch with the World Bank might also explore the possibility of exhibiting at the several education equipment trade exhibitions in China planned for 1982. After all, the Chinese are expected to look to these shows for ideas and new products.

Mining
Except for coal there has been little recent activity, due to the cutback in investment, in this sector. However, we have been hearing rumours that some non-ferrous metals and minerals projects may be re-activated. The embassy is monitoring developments and will be quick to alert interested Canadian companies to any opportunities.

Summary
Two ingredients have traditionally paid off in exports sales to China — patience and perseverance.

Today these are not enough. Flexibility and imagination are also essential: flexibility as in a readiness to consider things like co-production, compensation trade, joint ventures or a combination of all three (without, of course, losing sight of the bottom line); and imagination in packaging the proposal to make it attractive to the Chinese.

As experienced China traders know, China is not an easy market to crack. If you go in expecting quick results, you will in many cases be disappointed. And there are products which realistically won't sell at all in China given its present state of economic development. It is thus up to each individual business firm to assess the potential and decide whether the bottom line is attractive enough to warrant devoting time and money to develop the China market.

Looking at the medium and long-term, and focussing on some of the sectors cited here, the China market offers opportunities which cannot be ignored.

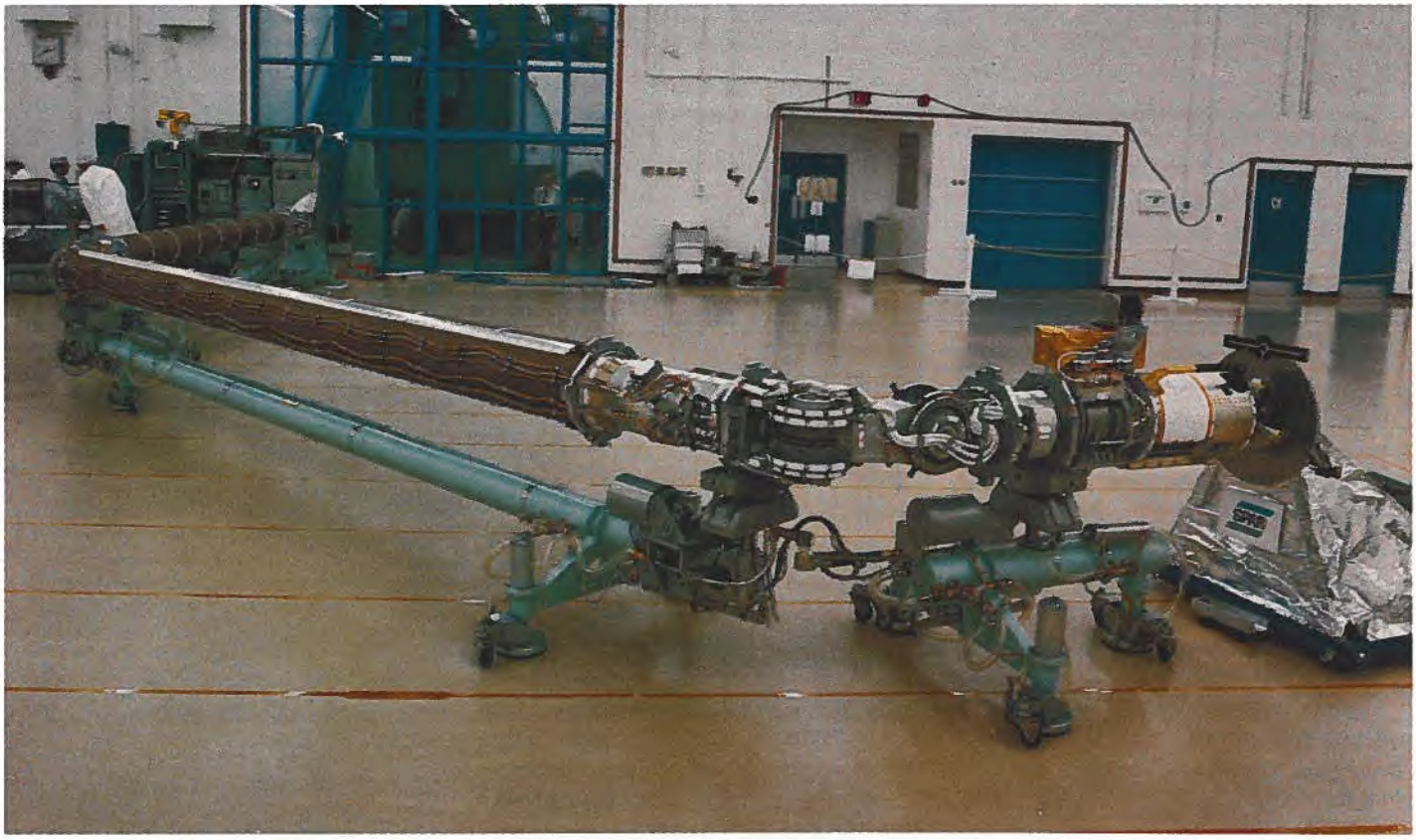
For more information, please contact:
Asia Division
Bureau of Pacific, Asian, African and Middle Eastern Affairs (33)
Industry, Trade and Commerce
9th Floor East
235 Queen Street
Ottawa, Ontario K1A 0H5
Tel: (613) 996-9195
or:
Commercial Division
Canadian Embassy
10 San Li Tun
Peking
People's Republic of China

"SHARING OUR TECHNOLOGY WITH YOU"

Theme of the Canadian Governments and Manufacturers' Participation in Major International Exhibitions to Increase Canada's High-Tech Exports

+ WASHINGTON D.C. U.S.A.
Armed Forces Communications and Electronics Show
Sheraton Washington Hotel
June 15-17, 1982.
Contact: Michel Samson Tel. (613) 593-5467
+ While space at both these shows is sold out, a visit will be helpful in determining the state of the art around the world.

PHILADELPHIA PENN. U.S.A.
Canadian Solo High Technology Show for the Mid-Atlantic Region National Guard Armory
For Information on Participation contact:
Jutta Butcher
U.S. Market Development Bureau
235 Queen St., Ottawa, Ont. Tel. (613) 593-5467.



CANADA
has its arm in space
And an expert hand in the future
of computer technology.

Even such an eminent futurist as Jules Verne would have been impressed with the speed with which some 600 Canadian business executives completed a world-wide prospecting trip this Spring at .....

HiTEC '82 — The 20th High Technology Industries Export Conference

While it took Phileas Phogg 80 days to circumvent the world, the HiTEC participants accomplished the equivalent tour in less than 60 hours through some 5,000 interviews with 61 Trade Commissioners from every continent and corner of the world.

And Jules would have been suitably impressed with the wide range of products which the assembly was offering on the world market — products which he would not have thought possible in his wildest dreams.

The annual conference, arranged each year since 1962 by the Defence Programs Branch, is probably the most cost effective method of bringing together export oriented businessmen and women, and Canada's on-the-spot trade representatives from our far-flung embassies and consulates.

Originally designed to assist Canadian suppliers of defence-related products, over the years the HiTEC conferences have expanded their role to include the whole gamut of high technology products and services.

While the business executives attending this year's event included most of the "Blue Chip" players in the high technology field, it also attracted a large number of representatives from small and diversified companies looking for their first target in the complex world of international trade.

Held early this Spring at the Canadian Government Conference Centre in Ottawa, the conference also allowed delegates the opportunity of discussing their problems with representatives of the Canadian Commercial Corporation; the Export Development Corporation: the Office of Special Trade Relations; the Department of Supply and Services; the Department of National Defence, as well as several procurement agencies of the United States government.

An indication of the wide-spread dispersion of the Trade Commissioners was the fact that there were 20 from 15 U.S. posts; 13 from 11 countries in Europe and NATO; 13 from the Middle East and Asia; 7 from South America as well as one each from Mexico, New Zealand and Australia — truly a world-wide prospective market for all types of Canadian goods.

While handling an average of some 80 interviews each over the three days was a strenuous exercise for the Trade Commissioners, the true test of effectiveness will be the follow-up which Canadian companies must do themselves in order to make sales.

Of course, the Trade Commissioners, now known as Foreign Officers (Trade), will be assisting the companies in making the proper contacts when they return to their posts.

For our trade representatives, the conference is an opportunity to learn first-hand the growing expertise of Canadian firms and to meet their Canadian counterparts in Ottawa and regions of Canada.

This year's conference was sponsored by the Department of International Trade and its ADM Trade Development, C.T. Charland. Direct responsibility was assigned to T.M. Chell, Assistant Under-Secretary Defence Programs. Co-ordinator was Bryan Metcalfe.

Conference breaks provided excellent opportunities for further business chats as well as the usual sociability.

For more than 20 years, the Canadian scientific community has been assuring a skeptical world market that the safest and cheapest nuclear energy is produced by the.....

CANDU REACTOR .. Marvel of Canadian Ingenuity

In this, the third in Canada Commerce's series on alternate energy, Bob McDonell examines some of the fact and fiction about the nuclear alternative.

The Canadian nuclear industry had its beginnings during the darkest days of World War II, when Canadian scientists in a joint effort with their counterparts from Britain and the United States chose a remote village, about 160 kilometres (100 miles) up the Ottawa river from the Capital, to build the laboratories that would help them solve the mysteries of the atom.

After the War, the Canadian government decided to maintain the Chalk River Nuclear Laboratories (see separate story) and to develop peaceful applications of the atom.

For the first decade, the program was heavily concentrated on basic nuclear physics and nuclear chemistry under the aegis of the National Research Council.

By 1952, this research showed a promising future for the atom in the fields of power and medicine. As a result, the Canadian government created Atomic Energy of Canada Limited (AECL) as a federally-funded Crown Corporation responsible for developing the peaceful application of atomic energy in Canada.

By 1954, it was decided that Canada should embark on a program to develop a nuclear power system based on heavy water cooled and moderated natural uranium which, in turn, led to the CANDU reactor as we know it today.

While other countries based their nuclear power technology on enriched uranium and light water, Canadian experience has shown that the method Canada chose is the safest, easiest to handle, most reliable and, in operation, proving to be the most economical.

In spite of all these obvious advantages, Canada has had a great deal of difficulty in selling its reactors abroad. While some of the difficulty has been attributed to the stringent safeguards Canada has placed on the sale of CANDU reactors (some of the strictest in the world), more has to be done to co-ordinate the efforts of the federal and provincial governments and the private sector, each of whom, in the past, had a different outlook on the marketing of the system. A third and perhaps the most difficult task has been convincing the developed countries that Canada has the industrial capability to compete in the sophisticated nuclear market.

On the home scene, many sincere environmentalists have fought a vigilant battle against nuclear power in any form, claiming that the risks to the environment are too great. However, they would have difficulty proving their charges.

One of Canada's leading environmentalists — whose association with the National Research Council and the Science Council of Canada has permitted close scrutiny of the development of the CANDU reactor — is Dr. P.D. McTaggart-Cowan.

He says: "To my mind, the CANDU is the safest power-producing device ever built. In concept, it is also the simplest and most reliable reactor.

"There are a number of very sincere objectors simply because they can't dissociate the peaceful uses of nuclear energy from those of wartime. I have a lot of respect for them even though I think they're quite wrong.

"Too often, people assume that the Canadian system has the same problems as the American (incidents such as Three Mile Island) or British. It has not; the CANDU is much more forgiving in design. This relative simplicity reduces the number of critical points in the system and allows for the redundancy upon which safe operation relies."

While he admits nuclear waste is a problem that has to be faced in the future, he feels that research into methods of reprocessing and final disposal of radioactive spent fuel from the CANDU can, with adequate funding for research, produce the same level of safety as is now proven in operation of the CANDU.

As the final clincher, Dr. McTaggart-Cowan says: "On an issue where the public image has become as fouled up as that of nuclear power, I don't know what to do except to stand up and say 'I have studied the question in depth. And nuclear power via the CANDU represents an infinitesimal risk that I cheerfully accept for myself, my children and my grandchildren'."

(As a science writer who for several years was closely associated with Ontario Hydro's nuclear program, I can only echo these sentiments — acid rain and even hydro's drastic change of the ecological balance make the viable alternatives a much greater risk to the environment.)

In large measure the excellent safety record of the CANDU reactor is due to the development of equipment capable of testing the systems safeguards. One such example is shown above testing the spent fuel safeguard system. It was developed by the Chalk River Nuclear Laboratories.

+ Patrick McTaggart-Cowan is an outspoken critic of environmental problems who brings a solid scientific background to bear on the question. A member since 1974 of the National Research Council Management Committee of Scientific Criteria for Environmental Quality, he served as Executive Director, Science Council of Canada; President, Simon Fraser University, and Director, Meteorological Service of Canada. He is an Officer of the Order of Canada in recognition of his achievements and contributions to science in Canada.

In spite of endorsation by most of the best scientific minds in Canada, a gradual realization by the Canadian public as a whole that acid rain is a far more serious problem than nuclear radiation, and the world's best record for reliability, Canada's nuclear power industry is in trouble, especially in the shorter term.

To address this, the Canadian government has redoubled its efforts to sell CANDU technology and hardware on world markets.

As part of this effort, a unit of IT&C has been set up to coordinate the Canadian export marketing strategies, combining high profile marketing techniques with solid technical backup. At the same time, senior ministers of the crown, including the Prime Minister, are joining the promotion of CANDU in their talks with major government officials in several countries around the world.

But as Rick Bower, IT&C's head of nuclear promotion puts it: "We cannot expect immediate results. The downturn in the world's economy has greatly reduced the world's demand for energy, particularly in the developed nations. But we must prepare now for the time when energy demands will outstrip the world's ability to supply them from conventional sources, or environmental concerns over acid rain will require a switch to more benign sources of power.

"Canada with its proven technology and expertise in the field must not lose its decided edge when markets and economies return to normal."

As larger and larger portions of the world's gross national product are earmarked for energy, Canada is in the fortunate position of having a viable alternative to reduce its dependence on the vagaries of petroleum prices and production (controlled, in large measure, by foreign-dominated conglomerates and governments.)

In the next energy article, Canada Commerce will explore the hydrogen concept which, combined with our nuclear-powered electrical plants, promises an inexhaustible supply of energy for the 21st Century.

While nuclear research was their raison d'être, the expertise built up over some 40 years by Chalk River Nuclear Laboratories covers a wide range of disciplines. This expertise and know-how is now available to Canadian business on a contract basis. Recently, Canada Commerce's Bob McDonell visited CRNL and brings us this report on .....

Government-Business Co-operation in R&D

Travelling along the Trans-Canada Highway about halfway between Ottawa and North Bay, one would hardly expect that, a few miles away, nestled on the banks of the Ottawa River, is one of the world's largest and most prestigious research and development centres — the Chalk River Nuclear Laboratories.

Employing more than 2,200 people, including approximately 400 professional engineers and scientists, CRNL has developed from a basic research organization devoted to the development of the peaceful uses of atomic energy into a full-fledged multi-disciplinary organization capable of carrying a project from basic research through to pilot plant testing. In addition to its Chalk River facilities, it also maintains labs at Whiteshell Nuclear Establishment, Piniwa, Manitoba.

This high-powered R&D establishment is now available to Canadian business on a contract basis. The same expertise that developed Canada's CANDU reactor system (see CANDU Reactor — A Marvel of Canadian Ingenuity in this issue) is now available to all Canadian industries.

From the early days, the researchers at CRNL have been accustomed to relating their work to designer's requirements. As soon as the demonstration and prototype reactors were committed and project responsibility transferred to other Atomic Energy of Canada engineering organizations, the researchers at CRNL recognized that their research programs should also be focussed on developing Canadian capabilities in the manufacture of the required hardware in Canada.

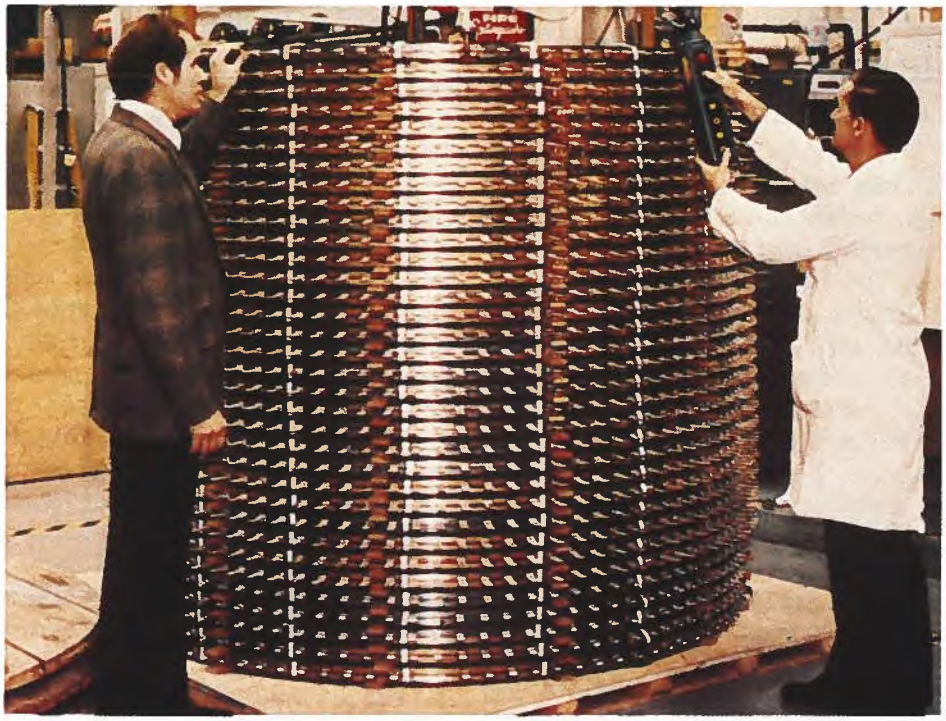
Acoustic emission monitoring of tensile test.

This led to researchers working in close collaboration with Canadian manufacturers in the development of suitable hardware, design improvements and problem solving.

Since the products were at the leading edge of a new and highly sophisticated industry, the laboratory facilities, expertise and interrelationships between researchers and industry had to be developed to the highest order.

It is this same dedication which CRNL is now offering on a contract basis to consulting engineers, research and development agencies and manufacturers.

A primary guideline of CRNL is to not compete with the private sector in Canada. There remains, however, a very large and mutually advantageous area of R&D where the two can and should co-operate to keep Canada in the forefront of world technology.



A magnet for the superconductivity cyclotron is examined by staff members at the Chalk River Nuclear Laboratories.

Among the many fields in which CRNL excels are:

Chemical Engineering and Process Technology
- Corrosion and deposition
- Catalyst development and testing
- Sieve tray design
- Distillation columns and packing
- Process design and analysis
- Chemical cleaning
- Computer process simulation
- Reactor decontamination
- Hydrogen-oxygen recombination

Equipment Design, Development and Testing
- Pumps, seals and valves
- Remote maintenance equipment
- Low leakage, high pressure, high temperature systems
- Thin layer activation

Steam Generator & Heat Exchanger Technology
- Thermal-hydraulic analysis
- Flow measurement and analysis
- Tube expansion techniques
- Flow induced vibration analysis and measurement
- Fretting wear testing
- Repair techniques
- Experimental fluid dynamics

Reliability and Quality Assurance
- Reliability analysis
- Quality assurance
- Neutron radiography
- Gamma scanning
- Remote manipulation testing
- Nondestructive Testing
  Eddy current
  Ultrasonics
  Potential drop

Material Analysis and Evaluation
- Scanning electron microscopy
- Scanning auger microscopy
- Transmission electron microscopy
- X-ray diffraction
- Profilometry
- Optical microscopy
- Fracture analysis
- Stress analysis
- High pressure testing
- Fatigue testing
- Creep testing

Electronics, Instrumentation and Control
- Environmental monitoring equipment
- Radiation and health instruments
- Gamma ray transmission tomography
- Measurement, testing and calibration
- Medical instrumentation
- Position emission tomography
- Computer aided design
- Computer imaging
- Specialized data storage and processing systems
- Analysis, simulation, system dynamics, control
- Data communications networks

Environmental Science
- Monitoring instrumentation
- Radioactive tracers
- Waste management
- System modelling
- Waste processing by
  reverse osmosis
  water purification
  immobilization
  incineration
  sewage treatment
- — Atmospheric dispersion
- — Trace radioactivity analysis

Chemistry and Chemical Analysis
- Isotope separation
- Radiation chemistry
- Catalytic exchange
- Water chemistry
- Chromatography
- Elemental analysis
- Electroanalytical techniques
- Spectroscopy
- Ion implantation
- Activation analysis

Accelerator Technology
- Radio frequency engineering
- High vacuum technology
- Low temperature technology
- Superconducting and conventional design magnets
- Particle beam optics
- High voltage technology
- Particle accelerator design
- Electron irradiation services

Nuclear Services
- Fuel testing
- Material testing
- Irradiation services
- Neutron radiography.

Radiographic instrumentation for flow visualization in heavy water towers.

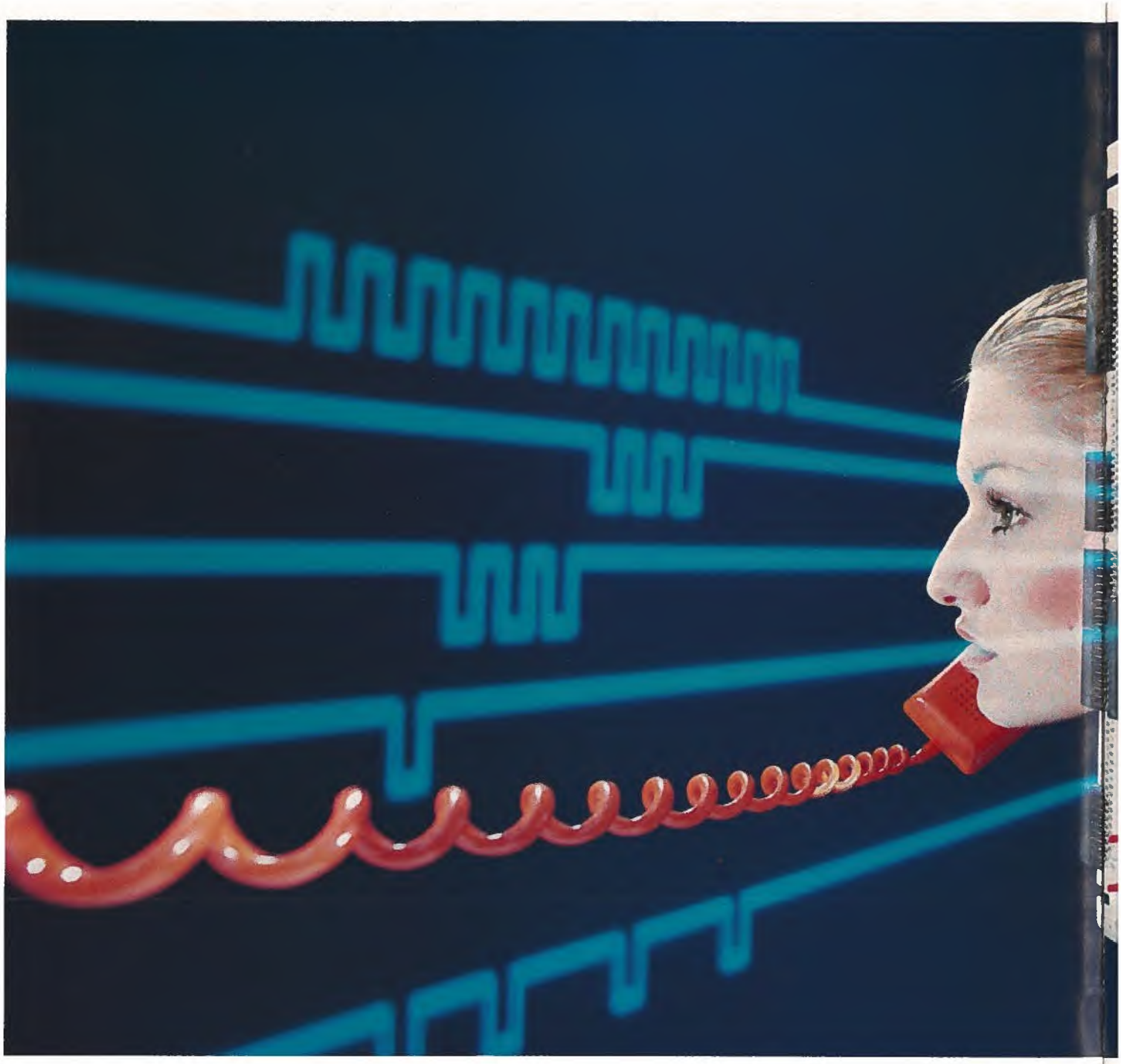
Quite an impressive list of capabilities and one which — according to CRNL general manager of commercial operations, E.C.W. Perryman — Canadian businesses, consultants and R&D organizations can tap in many ways.

Mr. Perryman adds: "As the complexity of modern technology increases, so do the problems and cost of research. Few organizations can afford to provide the R&D facilities and the broad spectrum of technical experts required to independently solve all their problems.

"Thus CRNL is always prepared to offer its facilities, staff and R&D organizational experience to assist industry in solving its technical problems. All work is carried out in the strictest confidence and initial discussions are free and without obligation."

On a contract basis, the laboratories provide advisory and consultation services; carry out R&D work to meet the needs of individual companies; and undertake developmental programs oriented to industrial needs.

For further information contact:
Commercial Operations Division
Atomic Energy of Canada Limited Research Company
Chalk River Nuclear Laboratories
Chalk River, Ontario
K0J 1J0
Telephone (613) 584-3311
Telex 053-34555



With access conditions being progressively liberalized — thereby offering wider scope for sales — and with Britain attempting to create a modern economy based on high technology, the opportunities for Canadian exporters are greatly expanding. In the following article, prepared by the Commercial Division of our Post in London, we take a look at....

High Technology Opportunities in Britain

A prolonged period of difficulties for much of British manufacturing has produced the realization that British industry must modernize production if it wishes to remain viable in the modern world.

Despite relatively poor industrial performance in recent years, a renewal is gathering momentum that is intended to create a modern economy based on high technology.

The traditional industrial approach of longstanding labour

The UK market for voice and data communication equipment is estimated to be worth $60 billion over the next five years.

practices, capital and energy-intensive production has not met the modern challenge and a more open-world trading system makes it impossible to focus solely on the domestic market.

British manufacturers are being forced to meet world production efficiency standards and will have to lead in the introduction of many new technologies — if they are to prosper in the 1990s. Structural changes will be required throughout UK industry and more rapid introduction of advanced production techniques is necessary. **The result will be a rapid increase in import demand for specialized equipment and innovative production techniques and systems.**

Leading the market will be information technology. At present 50 per cent of UK firms have not introduced any form of information technology or micro-electronics. The UK government is planning to spend C$130 million annually over the next few years to support such developments as: robotics; fibre optics; computer-aided design; and office automation.

This provides an excellent opportunity for Canadian high technology companies in the telecommunications, computer and automation fields to launch themselves into the UK market. Specific products in demand include PABXs and accessories, call logging equipment, automatic telex tape generators for word processors/computers/typewriters, telex accessories — e.g. autodialers and communications multiplexers.

The UK market for voice and data communication equipment is estimated to be worth $60 billion over the next five years, rising to a sharp peak by 1986. The split will be roughly 60-40 between telephony and data processing.

A number of Canadian electronics companies including Northern Telecom, Mitel, Gandalf and Canadian Marconi are making commitments to this market.

Access conditions are being progressively liberalized, offering wider scope for sales. The Telecommunications Act, passed in October '81, ended the Post Office monopoly and will allow greater competition for the supply of apparatus for attachment to the network and greater freedom in sourcing value-added services or telecommunications circuits.

A joint initiative between the UK government and the business community has been launched under the title "Information Technology Year '82 (IT'82)". This campaign is intended to spread awareness of opportunities offered by the technological marriage of computers, telecommunications and micro-electronics. A series of events is planned to bring the message of "Information Technology" home to UK businessmen.

According to a recent survey,

increased spending on computer hardware (including peripherals) and software and telecommunications is immediate and, with IT'82 focusing attention on the benefits of computerization and automation, **the time is right for Canadian companies with world competitive technology and/or services to capture a larger share of an expanding market**.

Information technology has applications for enhanced productivity in all industry sectors and Canadian companies developing advanced electronics, perhaps primarily for domestic use, should keep aware of the international implications.

The Commercial Division of the Canadian High Commission in London would be pleased to assess the prospects for particular products or services and recommend appropriate marketing strategies.

Two industries that offer particular promise for the application of modern electronic technology are Defence and Oil and Gas.

Britain is NATO's second largest defence spender with an annual budget currently in excess of C$30 billion and growing at a real annual rate of 3 per cent. Approximately 44 per cent of this budget is spent on equipment procurement.

The UK defence program has recently undergone a major reassessment. Within a more streamlined effort, less dependent on costly aircraft and surface ships, the UK will introduce more technologically advanced electronics-based systems to improve defence capabilities.

Such a change presents considerable opportunities for Canadian defence and related high technology industries since the great majority of Canadian defence exports comprise equipment of a military support nature — electrical and electronics equipment, communications

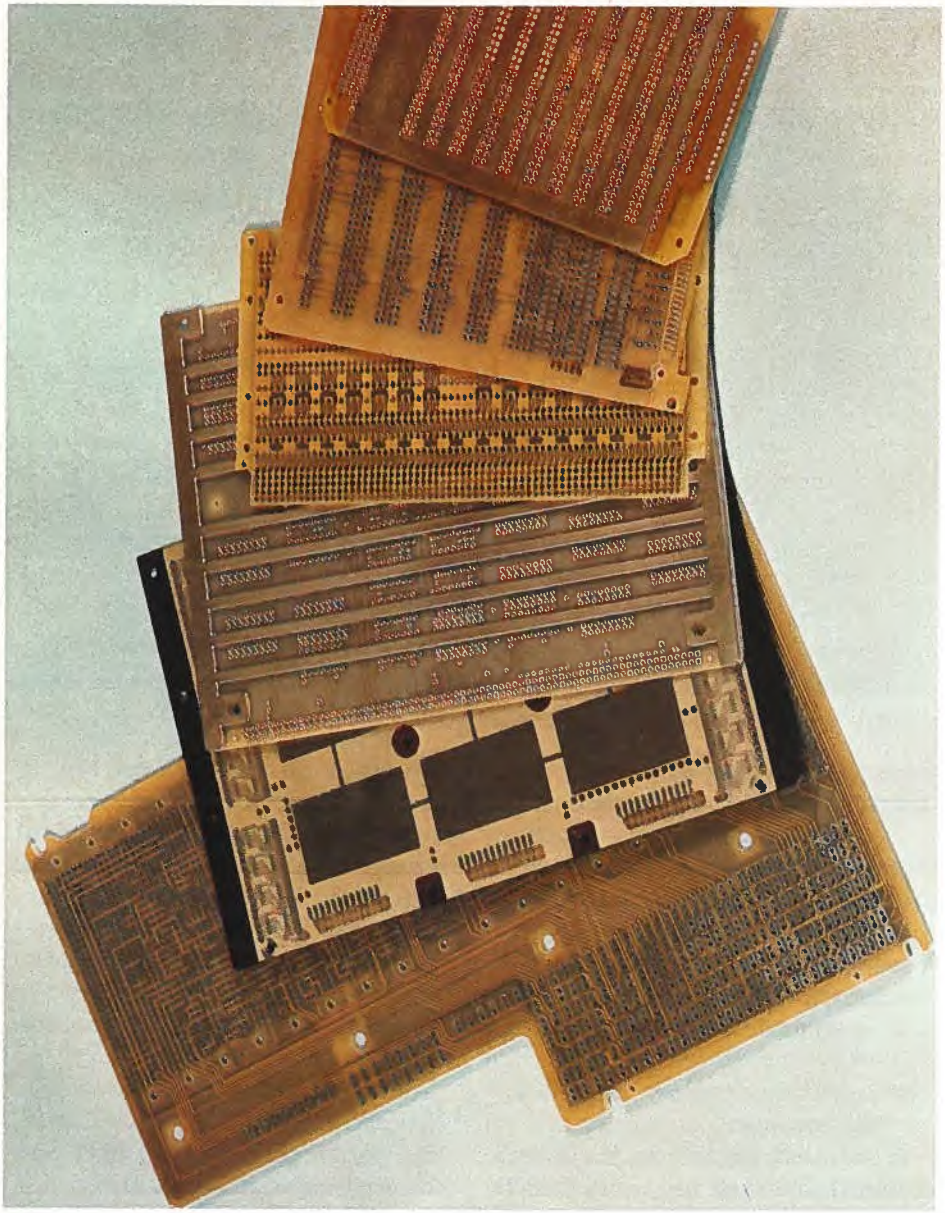
equipment, aerospace products and various parts, components and sub-assemblies.

It should also be borne in mind that Canada's participation in international defence trade, while closely controlled, has consistently emphasized co-operation with our NATO allies in the production of defence equipment to equip and supply NATO military forces for collective security. Hence, the UK defence market meets the prerequisites of both market opportunity and Canadian defence export policy.

In the past, Canada has not been a major supplier to the UK Ministry of Defence (UK MOD) although the formal framework through NATO and the Canada/UK agreement on co-operative defence research development and production plays a major role in the support of Canadian defence industry efforts to penetrate the UK defence market.

It should also be recognized that Britain has a large defence industry and tends to restrict defence imports to world standard, highly sophisticated equipment not available from UK sources. A Canadian company with such equipment faces a fairly straight-forward, but demanding, marketing task.

Northern Telecom markets its SL-1 digital business communications system.



Multilayer printed wiring boards by Canadian Marconi.

There are several sources of information on business opportunities. Defence Programs Bureau of the Department of External Affairs can often provide guidance on general UK equipment procurement plans and NATO requirements being sourced in Britain.

In addition, the Commercial Division of the Canadian High Commission in London often uncovers specific opportunities as a result of meetings with UK Ministry of Defence officials and/or British firms.

The rewards of success are worth trying to build up a relationship with key personnel within UK MOD.

The normal practice for companies wishing to establish themselves as suppliers is to convince the procurement executive of the Ministry of Defence that their equipment represents the technical "state of the art", should be considered within future requirements and endorsed for offshore supply.

This effort involves briefing to the procurement executive and specialist establishments, probably over a considerable period of time, and reinforced by periodic up-dates.

When it is determined that the particular equipment could meet a future requirement, the names of probable prime bidders for the project usually become apparent. The Canadian company must then convince one or more of the UK "prime" bidders that it would be mutually beneficial to collaborate on the project bid.

Previous informal contacts with major UK defence contractors would identify typical conditions for co-operation. Companies can often use these personal contacts to learn about probable future requirements before they are officially released.

The essential point is, that in almost every instance, a British company will lead on bids for UK government major project procurement.

The Procurement Executive is not, as its name might imply, simply a contracts-letting organization. It is made up of 11 directorates staffed on a project basis by highly trained military and scientific personnel. It is the focal point for activity at all stages of the procurement procedure and has highly regarded technical competence.

Any companies interested in obtaining an initial reaction from the UK MOD on the possible future application of their equipment or services may contact the Commercial Division of the Canadian High Commission in London. Personnel there would

approach the Ministry of Defence on your behalf. Should the reply be positive, a decision must then be made whether or not to spend the time required to become established as a supplier.

The Oil and Gas Industry is one of the buoyant sectors in the UK economy. Total oil production in 1981 was 89 million tonnes — making Britain the seventh largest world producer. Expenditure on North Sea developments between 1980-95 is estimated at more than C$150 billion — with half of this total represented by capital spending on new fields, including equipment, materials, fabrication and services.

Unlike the telecommunications and defence industries, the oil and gas industry is dominated by the private sector and access to the market is fairly open — subject to normal commercial considerations.

The government's Offshore Supplies Office ensures UK industry is given the opportunity to compete on a non-discriminatory basis. As a result, local companies have captured more than 70 per cent of all goods and services for offshore developments.

UK competition is less severe in the offshore exploration and test drilling phases, accounting for less than 30 per cent of business placed for this work.

Several Canadian companies (among them International Submarine Engineering; Huntec; and CanOcean Resources) are selling into this offshore market — but almost invariably, they are offering highly specialized, sophisticated equipment and services. Other companies with proven technology should ensure their capabilities are known to the offshore operators.

It is characteristic of this industry that many operators, while interested in new developments, are reluctant to introduce untried methods. **Essential to success is being known and having a good reputation.**

CanOcean's North Sea "Thistle A" platform.

In addition to convincing the operators of the advantages of buying from Canada, a marketing plan must include a local presence. Whether that means setting up an organization in the UK or appointing an agent/distributor, it is critical to guarantee readily available product or service support.

Specialist officers in the Commercial Division are available to assist Canadian companies seeking to learn more of their marketing prospects in the UK offshore.

Introducing high technology products or services internationally to government organizations or private enterprise can involve companies in expensive market and/or product development work. The Canadian government recognizes these costs may be beyond an individual company's capacity to finance. A number of assistance programs have been put in place to share these risks.

Details on these programs are available from the federal government's regional offices located in major cities across Canada. This assistance, in many forms, can be obtained for all phases in the product/marketing cycle. **Successful exporters have recognized these government financial incentives as an important benefit when planning new marketing ventures.**

Several Canadian companies now selling high technology products and services to the UK owe some of their success to these government programs. Newcomers can be assured of this backing, including the "on-the-spot" co-operation and guidance of the Trade Commissioner Service.

Correspondence may be directed to:
European Bureau (27)
Western Europe Division
Department of External Affairs
235 Queen Street
Ottawa, Ontario
Canada K1A 0H5
or:
Defence Programs Branch (32/2)
Department of External Affairs
235 Queen Street
Ottawa, Ontario
Canada K1A 0H5
or:
Commercial Division
Canadian High Commission
One Grosvenor Square
London, W1X 0AB
England

Having recently initiated several changes, it seems appropriate to provide a brief description of the Program for Export Market Development (PEMD). In so doing, we also highlight three companies which have benefited from PEMD assistance.

PEMD — The Program for Export Market Development

PEMD shares the financial risk with Canadian businesses as they develop and increase their export markets. The program provides a per diem ($100) for time worked on a proposal in Canada, a per diem ($150) for time spent in travel status abroad and a sharing of up to 50 per cent of other preparation costs.

Assistance is provided in seven specific areas: Section A for specific project bidding; Section B market identification; Section C for trade fairs; Section D incoming buyers; Section E establishment of export consortia; Section F sustained export market development activities; and PEMD Food for the export market development of agriculture, fisheries and food products.

PEMD is available to Canadian manufacturing and service industries. The company must be incorporated, established and operating in Canada and have sufficient operational experience. The applicant should satisfy the Department of its positive net worth and working capital and marketing and managerial capabilities.

The program is not meant to assist companies established in their export markets but can be used to expand their activities into new markets.

The main goal of the program is to ensure potential benefits to Canada by diversification and expansion of its export markets, particularly through the supply of goods and services from Canadian sources and increased industrial regional activity and employment opportunities in Canada.

The program sections B, C and D are decentralized to Industry, Trade and Commerce Regional Offices across Canada where IT&C officers are available to discuss the PEMD program and its eligibility criteria. When a company has made its decision to export and to apply for PEMD assistance, applications for all sections of the program can be obtained from the Regional Offices.

Claims will not be accepted for dates prior to the submission of the application; therefore, it remains in the company's best interest to submit a PEMD application as soon as the decision to enter the export market is made.

In 1980, **Zimmcor Company** of Lachine, Quebec, was successful in obtaining a contract from Kalico Construction Company of New York for the manufacture and installation of an aluminum curtain wall for an office building on Park Avenue in New York City.

In addition, all aluminum, hardware, steel reinforcement, fabrication of all metal framing and parts were supplied by Canadian companies. This was one of the largest contracts pursued by the company at that time against strong U.S. competition.

For this project, a repayable contribution of $16,311.00 was approved under Section A of PEMD to support the company's efforts to prepare the proposal and negotiate the contract.

The company believes that it would not have pursued this and other export opportunities without the assurance of PEMD financial assistance, particularly in its initial attempts to penetrate the U.S. market.

Bois Cobodex Inc./Cobodex Lumber Inc. of Grenville, Quebec, a consortium of three hardwood lumber producers, was incorporated in 1978 for the purpose of exporting hardwood lumber to the U.S. and Europe.

The producers, all located in the Outaouais region of Quebec, had never exported their products prior to the formation of the consortium.

At their own expense a feasibility study was completed and the group implemented the recommendations of the study by incorporating their consortium with assistance provided by Section E of PEMD. In this instance, a repayable contribution of $88,590.00 was approved to support the formation of the new company and its initial three-year period of operation.

Consortium formation, which involved a pooling of managerial, marketing and financial resources, has proved to be the ideal vehicle for the group to pursue international markets which were previously unattainable to the individual member firms.

The consortium's success is demonstrated by an average 25 per cent growth in its export sales in each succeeding year of its operation since 1978.

Salton Fabrication Ltd. of Surrey, British Columbia recently concluded negotiations for a contract with Corfino, a forest products company in the Honduras, for the sale of eight Canadian manufactured lumber kilns for $600,000.

Salton Fabrication Ltd. is a Canadian-owned manufacturer of lumber drying equipment and waste wood energy systems. The company has an impressive record of growing export sales.

Further information on PEMD may be obtained through:
Ben Monkhouse
Chief, PEMD Program Office
Programs Branch (41A/1)
Industry, Trade and Commerce
235 Queen St.
Ottawa, Ontario K1A 0H5
or: **The IT&C Regional Office nearest you.**

Are Women (Managers) Treated Differently?

A sample group of women owner/managers was asked recently to talk about major concerns facing them today. In the following article by Canada Commerce's Shirley Plowman, an insight is given into what these concerns are and how they may differ from those of their male counterparts.

For many, just getting started is often the main problem.

"Although many women have proved to be competent and successful in business, it's often hard to get that first important loan unless your partner is a male or you have a husband," one owner/manager said ruefully. "There's still the feeling that a woman alone somehow can't hack it."

Lack of management skills is a major problem. "Some women go into business blindly — without seeing the hard work ahead," advised one young owner/manager. "It takes a lot of patience and guts to build up a successful business."

Said another: "The location is so important. Obviously if you're going to choose a posh location in an exclusive part of a shopping mall, you could get in trouble. It's good to have the high exposure, but if the people just come in to browse — you still have to meet those high monthly rents."

Getting an efficient staff was difficult for some. "The kids out of school are looking for the money, but they don't want to work too hard to get it. My father's staff of 15 years ago was more reliable and dependable."

Often the young company cannot initially afford experienced personnel. "It's getting harder and harder to get good staff. The young seem insufficiently trained or lacking in a basic education."

Managers resent providing employee benefits and good wages to the unskilled or disinterested.

The small independent businessperson finds it hard to compete against the chains. "Their vast and effective advertising and the fact that they can offer lower prices, is an inhibiting factor in selling our products. People are buying with a view to stretching those dollars."

Some new owners were appalled at all the paperwork involved with running a business. "Before embarking on your own, you should really know all the brickbats about a business. We're often so busy anticipating the sweet smell of success, we forget that there will be a lot of challenges too."

There was the complaint that wholesalers treat women manager/owners a little differently. "When I place an order, I sometimes feel they don't take me as seriously as if I were a man, and some supplies are later than they should be."

Others believe they suffer from lack of the "old boy network." Men, and especially businessmen, have many chances to meet casually and exchange valuable business information. Working women, with home ties and responsibilities, often can't take the time to attend seminars or get involved in business luncheons.

Although many women owner/managers believe their problems as a small business person are no different from those of businessmen, there are those who offer differing views.

"Customers think that if you're a woman, you couldn't possibly know very much about certain traditionally male-oriented products, like hardware."

Said another: "Banks are not as co-operative about providing loans to women. They almost always ask that your husband, father or brother be a co-signer."

Even other women can be a problem. "If my male partner and I are both accessible to a customer, women customers still prefer to go to him."

Salesmen, too, often prefer to speak to the male co-partner. When asked the reason for this, one salesman replied, "It's not that I have anything against women in business. Many are topnotch. It's just that often she's more selective and firmer about saying 'Thanks a lot, but no thanks'."

But some of the women found that salesmen try to take advantage of them. "Some of the merchants think a woman can be fooled easily and unless you're alert at all times, you can be cheated. Either you're charged for products not left or you're simply overcharged. You have to be constantly on your guard — especially against those who try to foist products on you that you know won't sell."

Sexual harassment was also cited by a few of the women managers. "You get the odd obscene phone call or some kook wants to meet you just because you're a woman."

"Banks are not as co-operative about providing loans to women. They almost always ask that your husband, father or brother be a co-signer."

Old traditions are hard to breach. "Men, especially from the old country, think women's place is in the home. They don't want to deal with a woman as a manager."

Professor Frank Collom, Queen's University School of Business, recently completed "A Profile Study of Women Who Own and Operate Their Own Business," for IT&C's Small Business Secretariat. Before starting the study he contacted six lawyers, six accountants and six bankers and asked them the following questions. Their composite replies are interesting in light of the complaints voiced by a cross-section of business owner/managers.

Q. From your experience, can you relate any incidences where you felt that women might have had problems in starting, owning, or operating a business?

A. Some women have not done the careful kind of analysis needed before beginning the business. Some appear to be rather "flighty" in their analysis and tend to have a "romantic" view of the business world. Many are very naive about money and credit, and with the need to keep good sets of account books. In many cases it required the agreement of the husband before the venture was taken on. Some husbands have used us to convince their wives that the venture was not a good idea or had little chance of success. Women often need the backing of the husband before credit would be extended or before a landlord would lease a premise.

Q. Do they come to you as well prepared as men?

A. The answers to this question varied from "come well prepared" to "not as well as the typical male." Each group could cite incidences where women were extremely well prepared all the way to poorly prepared. One respondent said that, in general, women do not do a very good job on analysis.

Q. Do they face legal constraints not placed on men?

A. In general, none of the groups knew of any legal constraints.

Q. Are they as experienced as men?

A. Most of the respondents felt that if the women had a good background of work experience in the chosen area they wished to pursue as business owners, then they were as experienced as most men. However, it was with those who had not worked for many years or their work careers were unrelated to the business they wished to start, that the lack of experience showed up.

Q. Are they as risk-oriented as men?

A. Most respondents felt that women were much more conservative than their male counterparts. Some said that women "go into business with blinders on," they realize the risks "but the risks do not mean much to them" and "they cannot grasp the total range of risks that they face." However, one person said that the "real" businesswoman was as risk-oriented as any male.

Q. Do they seek advice as readily as men?

A. It was the general consensus of the three groups that women were more likely to seek advice than men.

Q. Are they prepared to accept and act on your advice?

A. The answers were mixed. Some felt that women "soothed" their minds by seeking advice but would not act or follow up on the advice. Others felt that the women were excellent in accepting and acting on the advice given to them — especially if the woman had solicited them for advice.

Q. Do most women come to you for advice before business starts or after — when there are problems?

A. Women tend to seek advice at the early stages of the business especially when they realize that they have made obligations from which they cannot retreat. Once the early phases of the business are over — if the business does not fail — women tended to come for advice more or less in response to problems they encounter. Others felt that they act or react no differently than men.

Q. When they seek advice, are they taken as seriously as men?

A. Every respondent replied that they personally treated all businesswomen as seriously as they would any male client. They felt, however, that the community and many of the male business competitors did not take them as seriously. Another set of opinions expressed by the group was that women are taken more seriously now than they were five to ten years ago and that the woman in small business is taken more seriously than those involved (although not as owners) in large businesses.

Q. Do women typically come to you alone, or with their spouse?

A. The responses were split evenly between coming for advice on their own and showing up with the spouse if there is one. If the spouse is a partner, it is not unexpected that they should show up together. Those who come alone are usually the "better" businesswomen, or those with a high degree of self-confidence, one respondent replied.

Q. Are they decisive — "soft-hearted" — "hard-hearted" — i.e. are they ruthless in matters of business or when their business may be affected?

A. The general feeling was that they are good business people who are prepared to make the tough decisions. Women tend to become "harder" in business matters the longer they operate the business. That is, the realities of owning and operating a business in a competitive climate tends to have a "hardening" effect on them over a period of time. One respondent noted that "the more of their own money there is in the business, the tougher they appear about business matters."

Women tend to become "harder" in business matters the longer they operate the business. That is, the realities of owning and operating a business in a competitive climate tends to have a "hardening" effect on them over a period of time.

Professor Collom said that of the 236 women who co-operated with him in his interviews, only one-quarter had made use of government services and many were not aware of government programs.

More than half of Collom's interviewees (56 per cent) were under 35 and close to half (42 per cent) were under 30 when they started their businesses. Some 48 per cent came from families already operating a business. One out of three was not born in Canada. A high number (70 per cent) started their business as opposed to inheriting it.

One-third said that the federal, provincial and local governments were "extremely helpful." Family and friends were also most supportive. Three-quarters do not own but rent their business premises.

Despite difficulties, either in getting started or in keeping the business afloat, almost all enjoyed the challenge, the sense of being one's own boss and the independence.

Said one happy and successful woman to me: "If you go into it well prepared financially and with solid advice, and minor setbacks don't discourage you. . .if you don't mind extremely hard work and long hours and if you have the respect and support of a good group of employees who are almost as dedicated as you are — then boy, the sky's the limit!"

Seeing that there existed a need to improve labour and material productivity in the Newfoundland fishing industry, IT&C personnel at the Regional Office in St. John's initiated a seminar on the subject. Examining problems and seeking solutions, the two-day event proved successful. As reported here. . . . .

Productivity Improvement Seminar Participants "nipping at the bit."

by David Mulroney
IT&C Regional Office, St. John's, Newfoundland

Ask anyone involved with the Newfoundland fishery about the problems besetting the industry and you're liable to hear a number of issues raised.

Much attention has been focussed on the marketing end — on the changing consumption pattern in the United States, or the difficulty of penetrating the European Economic Community (EEC), or the challenge of developing products that will satisfy Japanese tastes.

But there has also been considerable attention paid to the supply side of the industry.

For example, a recent Royal Commission into the inshore fishery of Newfoundland and Labrador pointed to a major cause of concern: productivity stands at a troubling 43 per cent.

The Commission went on to suggest that improvements in labour productivity of 10 per cent and material productivity (yield) of 5 per cent could translate into savings of $30 million on an industry-wide basis — or the difference between success and failure for a good many plants.

It was with this in mind that the Newfoundland Regional Office — IT&C (Industry, Trade and Commerce) set about planning a seminar on productivity improvement for the fishing industry.

Delivery of the seminar was delegated to the NewLantic Group, a newly-formed consulting team with a background in business administration, industrial engineering, and the fishing industry.

From the earliest planning stages, the challenge was clear: while the seminar would have to address the extent and complexity of the productivity problem, it would also have to provide keys to improvement and recovery.

Held over two-and-one-half days in mid-March, the seminar attracted a good cross section, with close to 30 plant managers and foremen attending, as well as representatives from various federal and provincial departments.

The first session was devoted to developing a basic understanding of productivity and its various measures — all the ways of comparing inputs with outputs.

This was followed by a consideration of the benefits to be derived from productivity improvement. Through careful analysis of industry-wide statements of income and expenditure, the group was encouraged to focus on the "big numbers" — such as sales, salaries and materials — and the effects even small improvements in those areas would have on net operating profit.

From the "what" and "why" of productivity improvement, attention turned to the "how."

Again, the approach was practical and positive, zeroing in on those many aspects of an operation that are well within a manager's control — staff training, utilization and supervision, or production scheduling.

Of course, there's more to productivity improvement than simply knowing how to proceed — you've got to go out and do it!

To that end, later sections examined some of the tools of the trade: management information systems; motivation techniques; and incentive systems. To bring it all closer to home, the group members got a chance to roll up their sleeves and tackle a productivity case study. Later, NewLantic's Al Boone used a second case study to walk the group through the steps an industrial engineer would take in searching out problems and working out solutions.

Peter Nicholson of the Atlantic Fisheries Task Force talked about the options for change in the industry; Earle McCurdy of the Newfoundland Fishermen, Food and Allied Workers Union provided labour's perspective on productivity improvement, drawing attention to the need for co-operation and communication; John Carter, an accountant with Clarkson Gordon, delivered a hard-hitting dinner address on the need for up-to-date and thorough financial information.

Finally, in order to remind the group that they aren't alone in their efforts, representatives from federal and provincial departments outlined forms of government assistance available to encourage productivity improvement, such as the contributions towards feasibility studies provided under IT&C's Enterprise Development Program (EDP).

Through two-and-one-half days of fairly hard slogging, there was plenty of reaction and response from the industry side, agreeing, questioning, challenging statistics with on-the-job examples — always making it clear that there is no easy jump from the classroom to the plant.

There was also the feeling that the seminar's emphasis on results had narrowed that distance somewhat. In the words of Martin O'Brien, owner of Tors Cove Fisheries on the Island's south shore: "It was clear that there were considerable improvements that **could** be made — and many of the boys were nipping at the bit to get at it!"

Well-known among the business community for its long-term lending and venture capital activities, the Federal Business Development Bank begins, in this issue, a three-part series on "Going into Business for Yourself". Here the FBDB examines the elements involved in. . . . . .

Financing a Small Business

Canadians going into business for themselves sometimes think the only financing they'll need is for start-up. Once the business is established, they assume it will pay its own way and, in the process, retire the debts incurred in its early days.

A small business — any business for that matter — progresses through many stages during the course of its lifetime, each stage of which could require additional financing. Good management includes anticipating those different stages and preparing for them.

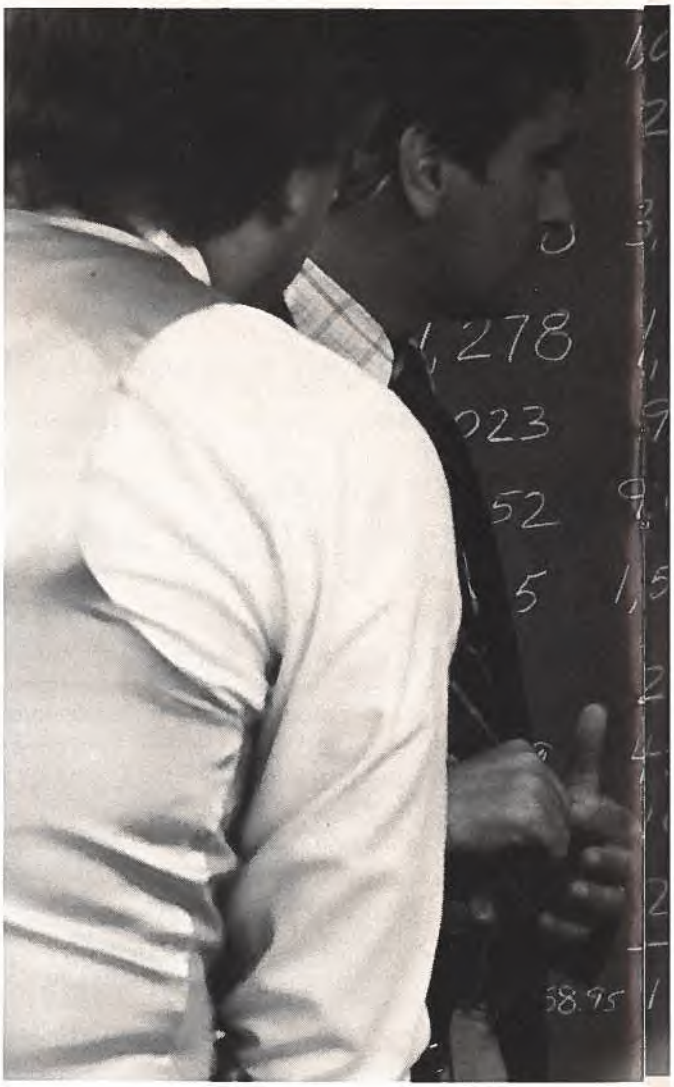
There are four stages during which financing is almost always needed: start-up, on-going day-to-day, expansion and lean times. The financial requirements will vary from one stage to the next; the form the financing will take also varies.

Start-up usually requires the most financing, whether starting from scratch, buying an on-going business or buying a franchise. Many of the costs that must be met however, are one-time costs — the purchase of premises, for example, or of machinery and equipment.

There may be other capital expenditures such as building improvements, signage and delivery vehicles. Whether retailer or manufacturer, the new business will require an initial inventory and will want to establish a reorder reserve.

Even the purchase of an on-going business or a franchise will often require additional expenditures as the new owner makes changes. And, in whatever way the entrepreneur enters business on his own, there will always be the opening day expenses — advertising, legal, promotional and regulatory. There will always be the need, too, to establish contingency and reserve funds.

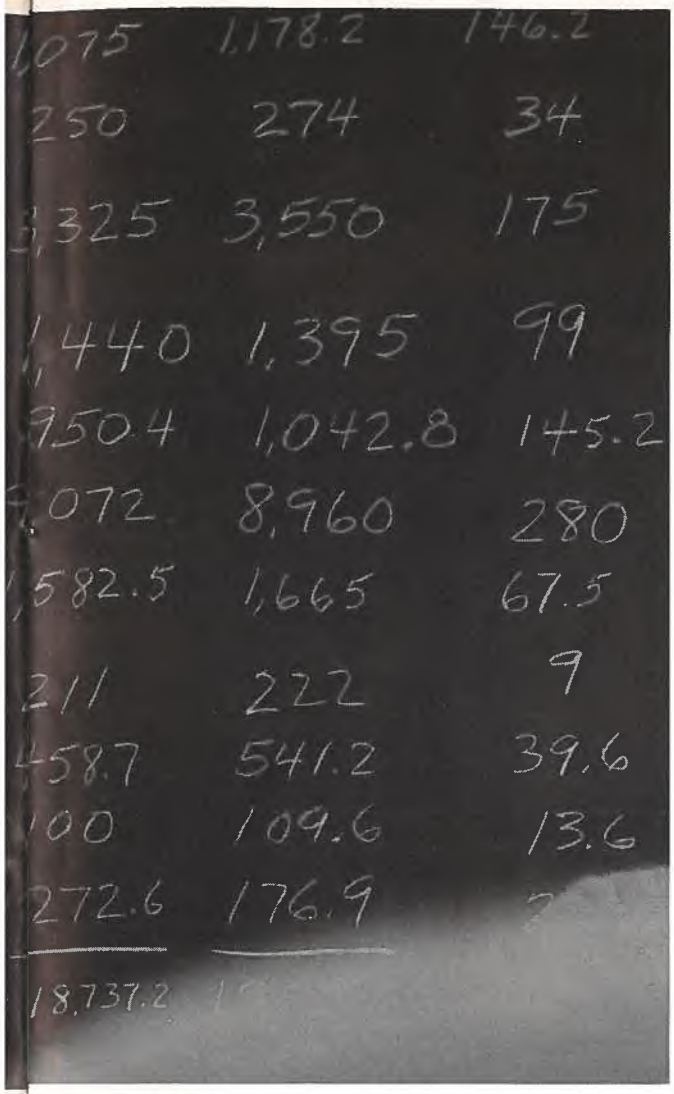
A contingency fund of 10 to 20 per cent of planned start-up costs is needed for the unexpected expenses. A reserve fund equal to two or three months overhead is also needed to carry the business through its start-up period.



Once in business, the entrepreneur must have sufficient working capital to maintain day-to-day operations. Working capital is the difference between current assets such as inventory, accounts receivable and cash, and current liabilities such as accounts payable and short-term bank credit.

Working capital should be sufficient to meet current liabilities as they come due, and to finance day-to-day costs of operations such as payroll, rent and advertising.

Start-up usually requires the most financing, whether starting from scratch, buying an on-going business or buying a franchise. Many of the costs that must be met however, are one-time costs — the purchase of premises, for example, or of machinery and equipment.



The level of working capital is affected by a number of factors such as the size and character of inventory, the amount and terms of accounts receivable and payable, and seasonal trends. But, in practical terms, a small business should have enough working capital to maintain its purchasing power and establish a favourable credit rating with its suppliers. With adequate working capital, a business can take full advantage of trade discounts and be able to keep its costs and prices competitive.

Financing for expansion, or growth capital, is required when the size of the business is increased in some significant way — for example, by the takeover of another business or when there is some significant diversification in the business. Normal year-to-year growth is usually financed from working capital.

A significant change in a business usually means corresponding increases in cash flow and profitability with which to cover additional financing costs. Growth capital funds could be required to finance new premises, new equipment, additional inventory or the development of new products.

Finally, there is the financing that may be required to carry the business through lean times. There are two kinds of lean times: those resulting from economic slowdowns and those resulting from business failures either due to inadequate management, lack of product or service acceptance.

Financing is usually available for seasonal lean times when the lender is reasonably confident eventual good times will enable the borrower to repay his debt. But when the lean times result from the other causes, lenders are reluctant to offer financing unless there is clear evidence that corrective action is being taken.

For the most part, if a business has fallen on lean times because of some fault of its own, additional financing will usually be in the form of ownership dollars — money that the owner or partners are putting into the business.

Very few businesses are self-financing. Indeed, it is not often desirable for any business. There are two main reasons for this. The first is that outside financing, if properly managed, will enable the business to profitably operate at more efficient levels than a reliance on self-financing would permit.

The second is that some of the funds that might be employed in self-financing could be more profitably employed in other ways.

The most pervasive consideration, however, is that every business is subject to change — change in the business environment, change in the levels of its performance, change in the character of the goods and services it offers.

Outside financing, properly managed, will cushion the business against the adverse effects of change. Alternatively, outside financing will enable the business to take full advantage of change when the effects of change are positive.

NEXT:
The Kinds of Financing that are Available to the Small Business.

Should you be interested in finding out more about going into business for yourself, the Federal Business Development Bank offers a self-instructional program, "Financing a Small Business", which may be of interest. Known as a Management Clinic, it consists of a 20-minute audio-visual presentation and accompanying workbook. This Management Clinic is available, at nominal charge, at any FBDB branch office across Canada.

Economists' Corner

Oil, gas, electricity — all forms of energy and power. And all, in today's world, in a state of flux. Attempting to put some perspective on developments in these fields, the Economists' Corner gives an overview of the situation and notes that. . . .

Capital Shifts from Power to Petro

Even before the 1973 oil crisis the federal government was more involved in matters related to the petroleum industry than in electric power developments. In view of federal responsibilities, this is understandable.

Oil is an international commodity that can be piped across continents and floated across oceans at relatively little cost and loss. Natural gas is still in the incipient stage as an ocean-crossing commodity (LNG), but it has indisputable continental dimensions (North America, Europe) and thus international status.

Accordingly, the federal government has been actively concerned with oil and gas for decades (initially the National Oil Policy of 1961; recently the National Energy Program of 1980).

Electricity, on the other hand, has been developed in Canada mostly under provincial auspices. In the context of the immense North American continent, electric power is a regional resource. Because of the high capital cost of transmission, it is transported over hundreds of miles, rather than over thousands of miles, like oil. The only way to ship power across the ocean is indirectly, by incorporating it in a product with a power-hungry manufacturing process, such as aluminum.

Because of this power has been developed for local use or for sale to neighbouring regions, including those in the U.S. In the latter case, the federal government enters the picture through the National Energy Board, but power exports have not generated much public discussion in Canada in the past. Controversies about power developments tended to be primarily of provincial, rather than country-wide dimensions.

To give a contemporary example, neither Ottawa nor the Canadian public as a whole got greatly exercised when — following earlier precedents in other provinces — the Quebec government decided to nationalize the private power companies in Quebec in the 1960s, although the national Treasury lost tax revenue in the process ("the Crown cannot tax the Crown").

This standing on the sidelines of national consciousness may change somewhat in future as the "oil crisis" has forced the federal government to take a comprehensive and national, rather than a purely sectoral and provincial, view of our various energy sources.

The priority of fossil fuels over primary electricity (from hydro and nuclear sources) is also reflected in its share of total primary energy demands: 27 per cent in 1979, against 61 per cent for oil and gas, in terms of Btu's (National Energy Program, p.99).

Power: Less Talk, More Action

Against this historic background of electric power as a second stringer in the energy concert, it comes as a surprise to find electricity has played the first violin in the sphere of capital expenditures. For twenty years, from 1960 to 1979, investments for electric power developments have almost without exception topped those for all fossil fuels put together.

Summarizing the situation by five-year periods, the following picture emerges:

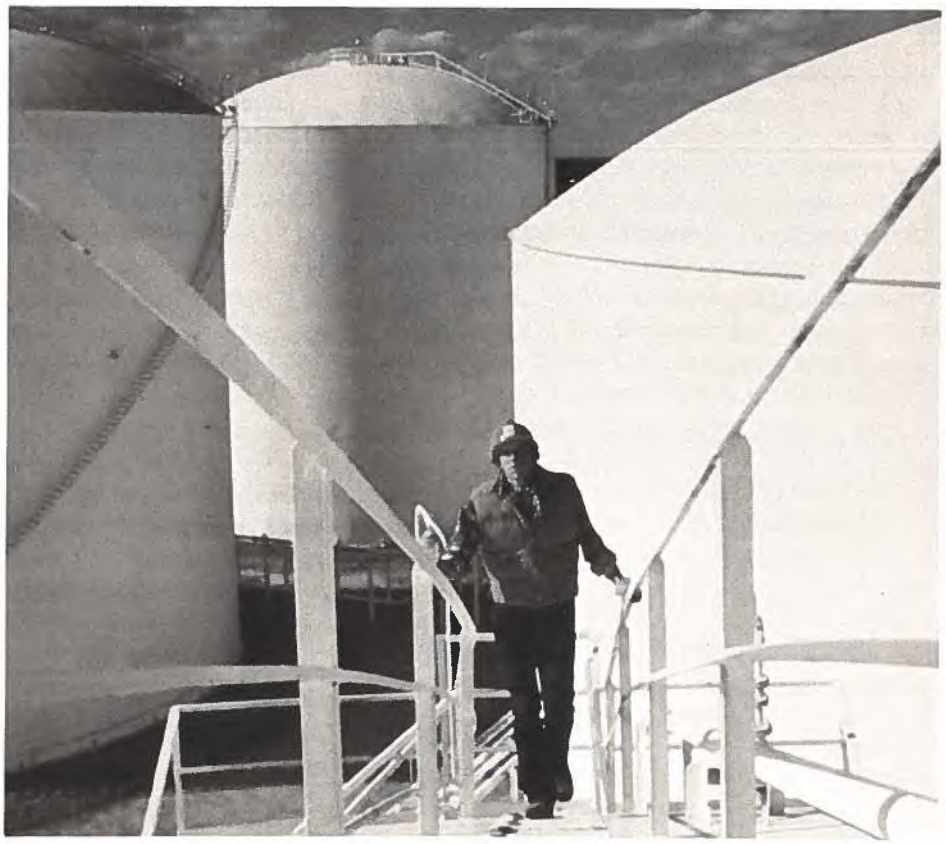


Table 1 — Distribution of Energy-Related Capital Expenditures* over Petroleum & Gas and Electric Power, 1960-79

		1960-64	1965-69	1970-74	1975-79
(A) Petroleum & Gas	$M	2,757.4	4,264.9	8,195.0	17,862.9
	%	47.5	41.2	44.8	41.3
(B) Electric Power	$M	3,050.4	6,081.9	10,108.3	25,369.5
	%	52.5	58.8	55.2	58.7
(C) Total Energy-Related Capital Expenditures	$M	5,807.8	10,346.8	18,303.3	43,232.4
	%	100	100	100	100

Note: Petroleum & Gas comprises the following categories of StatCan's **Private and Public Investment in Canada** (Cat. 61-206); crude oil and natural gas; pipelines; gas distribution; petroleum and coal products. Excluded categories are coal mining and uranium exploration, which until recently were not segregated by StatCan for reasons of confidentiality.
*Excluding non-capitalized repairs.

What is the explanation of the surprisingly high share of capital spending for power development?

In the first place, electric power generation from hydro or nuclear plants is highly capital intensive but has low operating costs; the reverse has generally been true for fossil fuels.

Secondly, the data for electric power projects are more complete. A substantial part of this power is used for residential purposes and the statistics include capital outlays for delivery right into the plants, offices or homes of users. This of course applies to natural gas too, but the capital amounts reported for petroleum are understated. They exclude the post-refinery investments in oil tankers, terminals, trucks and service stations to distribute oil and its products to the industrial or private consumer.

A third reason for the high proportion of energy capital drawn to power development may be its attractiveness to many domestic and foreign institutional investors, such as insurance companies or pension funds looking for safe investments. To a large degree, electric utilities are a "sovereign risk"; the return on the investment is virtually guaranteed by provincial governments. Investors also find it attractive that most of these utilities, being Crown corporations, pay no income tax.

And investors know the installations they have financed will produce renewable and remunerative electric power for a long time — a power dam has a useful life expectancy of 25 to 50 years, about double the life span of facilities in the oil fields. All these features have encouraged substantial amounts of institutional capital to flow into large new electric power developments.

On the other side of the ledger, there are some specific features of the petroleum industry which also suggest the need for high capital spending. One of these is the need for continuing exploration to make up for the fact that old wells become uneconomical and ultimately run dry in a relatively short time span. Hence it takes a good deal of running (capital spending) just to stay in the same place. To expand output, even more capital funds are required, all the more so if they are to be applied to resources which previously were considered extra-marginal because of high cost and the need to develop advanced technology in "terra incognita".

Then there is the aspect of uncertainty. In conventional oil production, investments usually do not take the form of a huge durable structure. Rather, they are capitalized expenditures paid to contract drillers to make a hole in the ground in the right place, hopefully giving access to commercially exploitable oil and gas resources — simple in principle, but extraordinarily complex in practice, with far less predictable physical output for the funds spent than in the development of hydro resources. This risk factor tends to increase the need for capital, as not every expenditure yields output. The risk has to be overcome by the lure of profits.

All these observations lead to the conclusion that there are some factors leading us to expect high capital spending data for electricity, compared to the petroleum and gas sector, while there are others that would suggest high capital spending figures for petroleum and gas (as not all investment yields output).

Another relevant aspect may well be the complexity of the decision-making process in the contemporary petroleum industry, compared to the less complicated situation in the power field. For all their technical complexity, power projects, being regional, involve less decision makers than Canadian petroleum and gas projects. The feasibility of the latter does not only depend on the decisions of federal and provincial governments within Canada, but also on current and future decisions of governments abroad (e.g. OPEC countries).

Governments in nearly all countries have felt inclined or impelled to greatly increase their powers during or after the 1973 oil crisis, not only as regulators and revenue collectors, but to a varying extent also as direct or indirect participants in the exploration, production, transportation and marketing process of this lifeblood of the world's contemporary and highly political economy.

Apart from this complex involvement of governments, substantial petroleum and gas projects require the know-how and co-operation of many large and small Canadian and foreign firms, spread over different and not always integrated industrial sectors. All this greatly complicates the decision process, which is not helped by an apparent alternation of reports on gluts and shortages in the world's supply and demand of oil and gas.

The relatively simple decision structure in the field of electric utili-

ties (one or a few regional corporations plus the provincial government) may well be a contributory reason to their moving ahead faster in capital outlays in the past.

Dramatic Change

However, a dramatic change is under way in the relation between electric power and petro fuels.

In 1978, electric power developments at 61 per cent of all energy-related capital spending overshadowed by far the investments in the petroleum and gas sectors. Preliminary forecasts suggest that this ratio may be reversed in 1982, with oil and natural gas accounting for about 60 per cent and electricity for 40 per cent of total energy-related capital investment (see table 2).

In current dollars, capital investments for electric power projects in 1978 were below $6 billion; they are slated to grow by 45 per cent to $8½ billion in 1982. The petroleum and natural gas sector, however, is planning on more than tripling its 1978 capital spending program by 1982, going from less than $4 billion to $12½ billion.

Some energy experts believe that in recent years the cost of capital projects for oil and gas has risen more than the outlays for hydro projects. The current relative shift of capital from electric power to petro fuels measured in current dollars thus would accentuate the shift that has occurred in terms of physical energy output. This aspect deserves to be signaled as one explanation of the lower relative capital share of electric utilities in 1982.

Financing of capital projects, nevertheless, takes place in nominal dollars, the dollars inscribed in loan agreements and debt instruments. For those concerned with the demand made on capital markets, current dollars are part of the real world. There will be more demand for funds for oil and gas than for power projects, even if differences in inflation rates are part of the explanation.

As there has been some overcapacity in Canada's electric utilities, some relaxation of capital expenditure plans for the early 1980s is considered to be "for real" and may last several years. Another upsurge in expansion of capacity is expected later in this decade, according to preliminary forecasts of provincial utilities received by the Department of Energy, Mines and Resources.

Capital Breakdown for Petro Sector

Now to the fossil fuels sector. A look across row (A) in table 3 and its four subsectors shows continuous growth of the dollar amounts over each of the five-year periods listed. There are, however, some notable changes in the relative shares of the subsectors in the total oil and gas-related capital expenditures, as a vertical comparison in each of the four columns shows.

For instance, crude oil and natural gas surged up from about 55 per cent earlier to 75 per cent of the total in 1975-79, while the ratio of capital expenditure for pipelines dropped by half to about one-tenth of the total in that period.

The most recent trends in oil and gas are shown on an annual basis for 1978 to 1982 in Table 2. Particularly striking is the revival of pipeline construction which, in 1979, called for less than $250 million and by 1982 is estimated to require nearly $2½ billion in capital outlays, mostly for natural gas transmission (Canadian conduit for Alaska gas, enlargement of TCPL system and expansion into Quebec and the Maritimes).

The overall increase in energy-related capital expenditures is even more impressive when put in the context of total private and public capital expenditures. In the 1960s, energy-related capital outlays varied from 12 to 15 per cent of the total. In the early 1970s, 15 per cent became the typical proportion, gradually rising in the second half of the decade. Currently, energy-related capital expenditures have exceeded 20 per cent of all capital spending in Canada. Some of the pressure on capital supply has been alleviated over the period by lower proportional outlays for housing and institutional purposes. Housing from 1960 on has taken from 15 to 25 per cent of all capital expenditures and is now near the lower part of the range.

As capital generally speaking can be redirected or transferred from one intended application to another, the increase in total energy capital needed may be more important than internal shifts between sectors.

Table 3 — Distribution of Petroleum & Gas Related Capital Expenditures

		1960-64	1965-69	1970-74	1975-79
(A) Petroleum & Gas	$M	2,757.4	4,264.9	8,195.0	17,862.9
	%	100.0	100.0	100.0	100.0
(1) Crude Oil and Natural Gas	$M	1,581.1	2,408.1	4,361.3	13,400.4
	%	57.3	56.5	53.2	75.0
(2) Pipelines	$M	604.3	917.9	1,683.8	1,615.1
	%	21.9	21.5	20.5	9.0
(3) Gas Distribution	$M	343.9	475.6	695.3	1,097.1
	%	12.5	11.1	8.5	6.2
(4) Petroleum & Coal Products	$M	228.1	463.3	1,454.6	1,750.3
	%	8.3	10.9	17.8	9.8

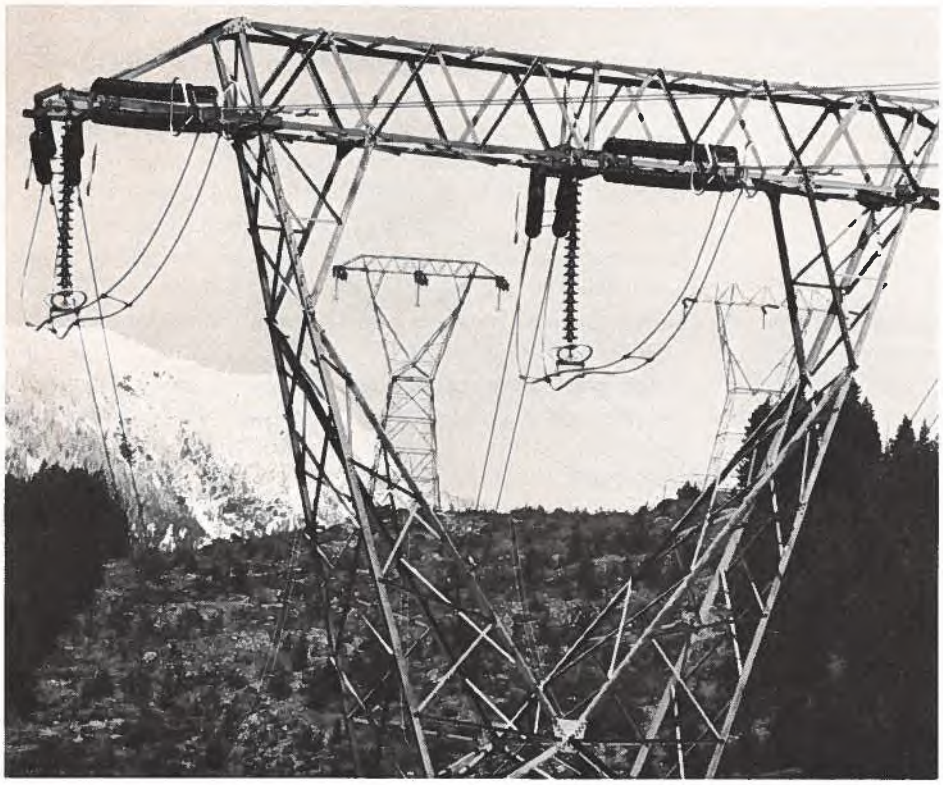
Notes: (1) Comprises establishments primarily engaged in the production of petroleum or natural gas from wells, or from surface shales or sands.
(2) Establishments primarily engaged in transporting crude oil and natural gas.
(3) Establishments primarily engaged in the distribution of natural or manufactured gas through a system of mains.
(4) Includes petroleum refineries and miscellaneous oil & coal products establishments. (Statistics Canada)

Table 2 — Energy-Related Capital Expenditures By Year, 1978-1982

			1978	1979	1980	1981	1982*	1978-82
(A)	Petroleum & Gas	$M	3,777.0	5,080.3	7,566.1	9,470.0	12,479.0	38,372.4
	as per cent of (C)		38.9	44.4	55.3	56.0	59.2	52.7
(A)-i	Crude Oil and Natural Gas	$M	2,902.9	4,315.2	6,253.4	6,663.1	8,434.6	28,569.2
		% of (A)	76.9	84.9	82.7	70.4	67.6	74.5
(A)-ii	Pipelines	$M	312.4	228.6	601.6	1,753.5	2,408.6	5,304.7
		% of (A)	8.3	4.5	7.9	18.5	19.3	13.8
(A)-iii	Gas Distribution	$M	246.6	262.5	386.4	435.4	639.0	1,969.9
		% of (A)	6.5	5.2	5.1	4.6	5.1	5.1
(A)-iv	Petroleum & Coal Products	$M	315.1	274.0	324.7	618.0	996.8	2,528.6
		% of (A)	8.3	5.4	4.3	6.5	8.0	6.6
(B)	Electric Power	$M	5,936.3	6,363.8	6,109.0	7,432.8	8,610.6	34,452.5
	as percent of (C)		61.1	55.6	44.7	44.0	40.8	47.3
(C)	Total Energy-Related Investment (= A + B)	$M	9,713.3	11,444.1	13,675.1	16,902.8	21,089.6	72,824.9

Source: Statistics Canada, "Private and public investment in Canda", Cat 61-025 Annual.

***Note:** The 1982 data reflect capital spending intentions reported by companies in the industries listed as reported to Statistics Canada in the period from November 1981 to the end of January 1982.



Once capital takes concrete form in capital goods, however, in pipelines or power facilities, for instance, it is a different matter. Wide fluctuations among sectors present a challenge to public and private decision makers, not only in the energy sector, but also in supplier industries. Like Odysseus, they have to sail between Scylla and Charibdys, avoiding the dangers of inadequate facilities on one side, and on the other the risk of over-investment if long-term trends in world supply/demand conditions turn out different from expectations.

Decision-making is complicated by international uncertainty and by hard-to-reconcile divergencies of views and interests existing both between and within the public and private sectors in Canada. This can easily lead to protracted negotiations which are frustrating to the general public. The experience is not unique to this country and to our age.

Jean Monnet, "the father of the European Economic Community", held to the belief that in every effective negotiation there had to be a crisis. "People agree in principle but. . .they only act when driven by necessity". If this seems pessimistic, Canadians can take comfort in the knowledge that they have already a common destiny, and that the necessity of a national approach to energy matters should by now be obvious.

Herbert C. Byleveld
Economic Intelligence Directorate (23)
Office of Policy Analysis
235 Queen St.,
Ottawa, Ontario K1A 0H5
Tel.: (613) 995-7160

New and Up-Dated Publications

EXPORT INFORMATION LATIN AMERICAN AUTOMOTIVE AFTERMARKET

Methods for accessing this market have been compiled from information gathered by leading representatives of the industry and officers of the Department of Industry, Trade and Commerce who have participated in the trade missions to Latin America during the past three years.

General information concerning prospective growth in the area, shipping, payment, travel and communications, is followed by an explanation of the Andean Pact and a comprehensive coverage of assistance available to the prospective exporter from the government.

An individual look at the situation in eight countries, including the six covered by the Pact, follows. Lists of Canada's trade offices in Latin America and regional offices in Canada complete this brochure.

Bilingual, 31 pages.

For copies contact: Mr. Ron Watters, Department of Industry, Trade and Commerce, Automotive Parts Division, Surface Transportation Branch, 235 Queen St., 6th Floor East (50), Ottawa, Ontario K1A 0H5. Telephone: (613) 995-3304.

AUTOMOTIVE PARTS FROM CANADA

A guide to suppliers of parts and accessories for cars, trucks and other passenger vehicles, service equipment and aftermarket chemicals has been prepared by Automotive Surveys of Canada. **It is available at $30.00 from the following address:** Automotive Surveys of Canada, 109 Vanderhoof Avenue, Toronto, Ontario M4G 2J2. (Copies available free to departmental employees only).

English, 100 pages.

For further information contact: Mr. Ron Watters, Department of Industry, Trade and Commerce, Automotive Parts Division, Surface Transportation Branch, 235 Queen St., 6th Floor East (50), Ottawa, Ontario K1A 0H5. Telephone: (613) 995-3304.

DEPARTMENT OF INDUSTRY, TRADE AND COMMERCE AUDIO/VISUAL CATALOGUE

A catalogue of video cassettes, films and slides available free of charge from the departmental software library.

Bilingual, 37 pages.

For copies contact: Mrs. C. Davidson, Department of Industry, Trade and Commerce, Public Information Directorate, 235 Queen St., 2nd Floor West (98), Ottawa, Ontario K1A 0H5. Telephone: (613) 995-8900 Ext. 51.

CRTA: COST RECOVERABLE TECHNICAL ASSISTANCE PROGRAM

A fold-out brochure explaining a federal government program designed to assist developing countries to acquire Canadian expertise and to promote capital projects and other quality Canadian goods in these countries.

Bilingual.

For copies contact: Mr. J.R. Caux, CRTA Unit, Bureau of Pacific, Asia, Africa and Middle Eastern Affairs, Department of External Affairs, 235 Queen St., 9th Floor East (33/1), Ottawa, Ontario K1A 0H5. Telephone: (613) 995-9092.

SMALL BUSINESS IN CANADA: A STATISTICAL PROFILE, 1981

The third edition of this profile which has been published by the Small Business Secretariat, provides a significant data base of statistical information on this important sector of the economy. It examines major industrial sectors from the point of view of size of firms and includes, for the first time, information on the export capabilities of Canada's small manufacturers.

Bilingual, 31 pages.

For copies contact: Anne Dagenais, Small Business Secretariat, Advocacy Office, 235 Queen St., 8th Floor East (63), Ottawa, Ontario K1A 0H5. Telephone: (613) 995-9197.

Exporting Step-by-Step

Published by Dalhousie University's Centre for International Business Studies, the new and revised 1982 edition of **Exporting** is now available.

In English only, the 116-page book is designed to help manufacturers who are not presently exporting to investigate the possibilities of sales abroad.

New topics, or those which have been expanded since the first edition in 1979, include: Offers; Aligned Documents; and Carnets. Because the United States has altered methods of valuation and classification for customs purposes due to the latest GATT agreement, the chapter on Exporting to the U.S.A. has been rewritten.

Other chapters deal with: Support for Exporters; The Trip Abroad; Banking and Terms of Sale: Marine Insurance: Transportation; Export Documents; Tariff and Non-Tariff Barriers; and more.

Single copies are $9.50; orders for 10 or more are $8.00 per copy, post paid, from: The Centre for International Business Studies, 6152 Coburg Road, 5th Floor, Dalhousie University, Halifax, Nova Scotia B3H 1Z5.

Promotional Projects Program June to September 1982

The following list covers the confirmed and proposed promotional projects for the European, Pacific, Asian, African and Middle Eastern areas as well as the United States, Latin America and the Caribbean. Since some of these events are subject to change, subsequent CANADA COMMERCE editions will carry updated lists so that those planning to attend can adjust their schedules.

PROMOTIONAL PROJECTS PROGRAM (P) EUROPEAN AREA

Project No.	Event	Date	Project Manager
82/47501	DRUPA '82 — 8th International Fair Printing and Paper Dusseldorf, West Germany	June 4-17, 1982	H. Schroeter
82/47543	Poznan International Fair Poznan, Poland (Information Booth)	June 13-22, 1982	H. Schroeter
82/47542	Royal Agricultural Show Kenilworth, England (Information Booth)	July 5-8, 1982	
82/47503	Offshore North Sea '82 — Conference and Exhibition Stavanger, Norway	August 24-27, 1982	M.P. Pearce
82/47547	UN Space — Outer Space Conference and Exhibition Vienna, Austria	August 1982	L.V. Ford
82/47534	ISPO '82 (Autumn) 17th International Sports Equipment Exhibition Munich, West Germany	September 9-12, 1982	
82/47515	AUTOMECHANIKA '82 — International Trade Fair for Motor Car Workshop and Service Station Equipment, Automobile Parts and Accessories Frankfurt, West Germany	Sept. 14-19, 1982	J. Harman
82/47529	Zagreb International Autumn Fair Zagreb, Yugoslavia	Sept. 14-22, 1982	H. Schroeter
82/47530	SICOB — 33rd International Data Processing, Remote Processing, Communication and Office Organization Trade Fair Paris, France	Sept. 21 - Oct. 1, 1982	L. Sarda

EUROPEAN AREA

Project No.	Event	Date	Project Manager
Trade Missions			
82/48507	Industrial Cleaning Equipment Mission from Europe	June 1982	L.V. Ford
82/48521	Mission from France to Farm Progress Show, Regina	June 1982	
82/48524	Seed Mission from Hungary	June 1982	
82/48522	Seed Potato Mission from Hungary	August 1982	
82/48517	Coal Mission to Scandinavia	September 1982	

PROMOTIONAL PROJECTS PROGRAM 1982 (P)
PACIFIC, ASIAN, AFRICAN AND MIDDLE EASTERN AREA

Project No.	Event	Date	Project Manager
Trade Fairs and Information Booths			
82/47607	AG QUIP — Agricultural Equipment Trade Fair Gunnedah, N.S.W., Australia	August 1982	
82/47611	19th Algiers International Trade Fair Algiers, Algeria	September 1982	
82/47604	In-Store Food and Beverage Promotions in Japan	All year	
82/47608	Canada Trade Centre Shows Tokyo, Japan	All year	
82/47609	Catalogue Shows — Newsletter and Direct Mailing Camping New Zealand	Unscheduled	

PACIFIC, ASIAN, AFRICAN AND MIDDLE EASTERN AREA

Project No.	Event	Date	Project Manager
Trade Missions			
82/48607	NTT Technical Mission from Japan	June 1982	
82/48610	Farm Equipment Buyers Mission from Australia and Nigeria to Canadian Farm Progress Show	June 1982	
82/48630	Primary Wood Products Mission to China	June 1982	
82/48617	Cantrade Buyers Mission from Asia and South Pacific	June 2-4, 1982	
82/48637	Ministerial Trade Mission to the Ivory Coast and Cameroon	June 1982	
82/48614	Jewellery/Silverware Products Mission to Australia/New Zealand	July 1982	
82/48645	Industrial Process and Equipment Buyers Mission from Saudi Arabia	July 1982	
82/48601	Fish Wholesalers Mission from Australia	August 1982	
82/48646	Railway Services and Equipment Mission from Saudi Arabia	August 1982	
82/48605	Instrumentation and Process Control Mission to Austech 1, Australia	August 1982	
82/48620	Livestock and Forage Methods and Material Mission to China	August 1982	
82/48609	Technical Seminars — Agricultural Machinery, Australia	August 1982	
82/48647	Fish Products Mission to Nigeria and Egypt	September 1982	
82/48608	Pulp and Paper Machinery Equipment Mission from Australia	September 1982	
82/48641	Ministerial Trade Mission to Nigeria	September 1982	
82/48621	Hydro Electric Equipment Mission from India	September 1982	
82/48628	Oil and Gas Equipment Mission and Seminars in Indonesia, Singapore and Malaysia	September 1982	
82/48629	Mining and Metallurgical Equipment and Services Mission to India	September 1982	

Project No.	Event	Date	Project Manager
Trade Missions			
82/48602	Forage Seed Mission from Japan	September 1982	
82/48635	Gas and Oil Processing and Services Mission to Saudi Arabia	September 1982	
82/48639	Oil and Gas Technology Project Mission from Algeria	September 1982	
82/48636	Airport (Stol) Mission from Angola	September 1982	

PROMOTIONAL PROJECTS PROGRAM 1982 (P) UNITED STATES AREA

Project No.	Event	Date	Project Manager
Trade Fairs and Information Booths			
82/47704	AFCEA — Armed Forces Communications and Electronics Association Expositions, Washington, D.C., U.S.A.	June 15-17, 1982	M. Samson
82/47514	National Computer Conference Houston, Texas, U.S.A.	June 1-10, 1982	T. Matthews
82/47710	Empire Farm Days Hartford, New York, U.S.A.	August 10-12, 1982	
82/47511	Impact '82 International Woodworking and Furniture Supply Fair, Louisville, Kentucky, U.S.A.	September 11-14, 1982	T. Matthews
82/47705	Farm Progress Show Wolcott, Indiana, U.S.A.	September 1982	M. Samson

UNITED STATES AREA

Project No.	Event	Date	Project Manager
Trade Missions			
82/48704	Buyers Mission from U.S.A. to Canada Farm Progress Show-Regina	June 16-17, 1982	
82/48705	Buyers Mission from U.S.A. to Toronto Jewellery Show	July 1982	J. Butcher
82/48707	Lumber Seminar, Philadelphia, Penn. U.S.A.	September 1982	J. Butcher
82/48706	Computer Mission to the West Coast of U.S.A.	September 1982	J. Butcher

PROMOTIONAL PROJECTS PROGRAM 1982 (P) LATIN AMERICA AND CARIBBEAN AREA

Project No.	Event	Date	Project Manager
Trade Fairs and Information Booths			
82/47524	Latin American Oil Show Caracas, Venezuela	June 28 - July 2, 1982	
82/47806	Information in Canacintra Mexico	July 1982	
82/47508	Bogota International Trade Fair Bogota, Columbia (Information Booth)	July 10-25, 1982	
82/48707	International Animal Fair of Rio Grande Do Sul Porto Alegre, Brazil	August 1982	

Project No.	Event	Date	Project Manager
Trade Fairs and Information Booths			
82/47803	Expomedica '82 International Exhibition of Medical Equipment and Instruments	September 1982	

LATIN AMERICA AND CARIBBEAN AREA

Project No.	Event	Date	Project Manager
Trade Missions			
82/48816	Salt Fish Mission to South America	Not Specified	
82/48506	Railway Mission to Venezuela, Columbia and Peru	Not Specified	
82/48809	Alternative Energy (Mini-Hydro) Mission and Seminar in Mexico	Not Specified	
82/48802	Computer Technology Mission to Mexico	Not Specified	
82/48804	Farm Machinery Mission from Mexico and Argentina to Farm Progress Show	June 15-19, 1982	
82/48808	Ocean Industry (Oil & Gas Developments) Mission to Brazil	Not Specified	
82/48814	Fisheries Equipment Technical Mission to Mexico	June 1982	
82/48801	Electrical Power Seminars and Mission to Ecuador, Peru and Chile	June 1982	
82/48812	Seed Potato Mission from Panama	August 1982	
82/48505	Airport Vehicles Mission to Latin America	September 1982	
82/48806	Offshore Oil and Gas Equipment Mission from Mexico	September 1982	

Biomass Gets a Boost

Two Vancouver consulting engineering firms recently were awarded a major federal government contract to study biomass-to-energy conversion systems. (An article, "Biomass — A Viable Alternate Energy", appeared in the April '82 issue of Canada Commerce).

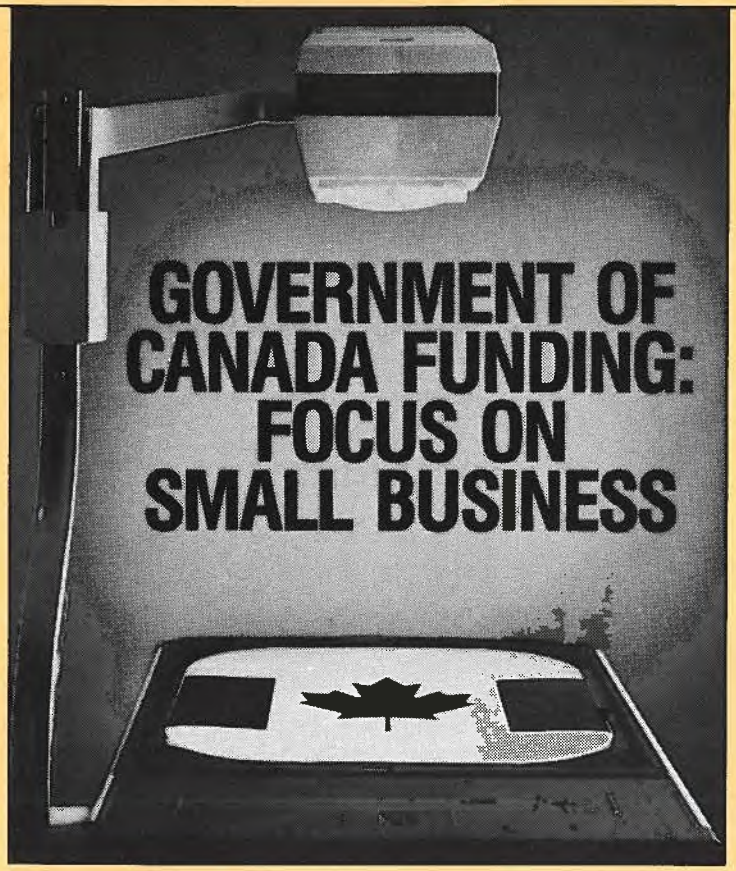
Simons Resource Consultants and B.H. Levelton & Associates Ltd. will carry out the two-year study with the aid of four other consultants.

Simons Resource Consultants is a partnership of four firms within the Simons group of affiliated companies engaged in natural resource developments, energy alternative studies and conservation strategies.

Client for the two-year study is ENFOR, the federal government's "Energy from the Forest" program. ENFOR's aim is to support research, development and demonstration of new methods and technologies for substituting forest biomass for non-renewable fuels and chemical raw materials.

The study will provide a comprehensive overview of all biomass-to-energy conversion technologies. It will include a state-of-the-art review, capital and operating cost figures, labour requirements, operational histories and market assessments.

Four other firms have been retained as specialist consultants. They are Envirocon Ltd. of Vancouver, a member of the Simons group of affiliated companies, which offers comprehensive environmental consulting services, including waste-wood utilization studies, to industry and government; Stanford Research Institute, Menlo Park, California, which produced a similar study for the U.S. Department of Energy; Forintek Canada Corporation, Ottawa, with extensive experience in energy-from-biomass; and John Stone & Associates of Aylmer, Quebec, a firm with considerable experience in the ethanol field.



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