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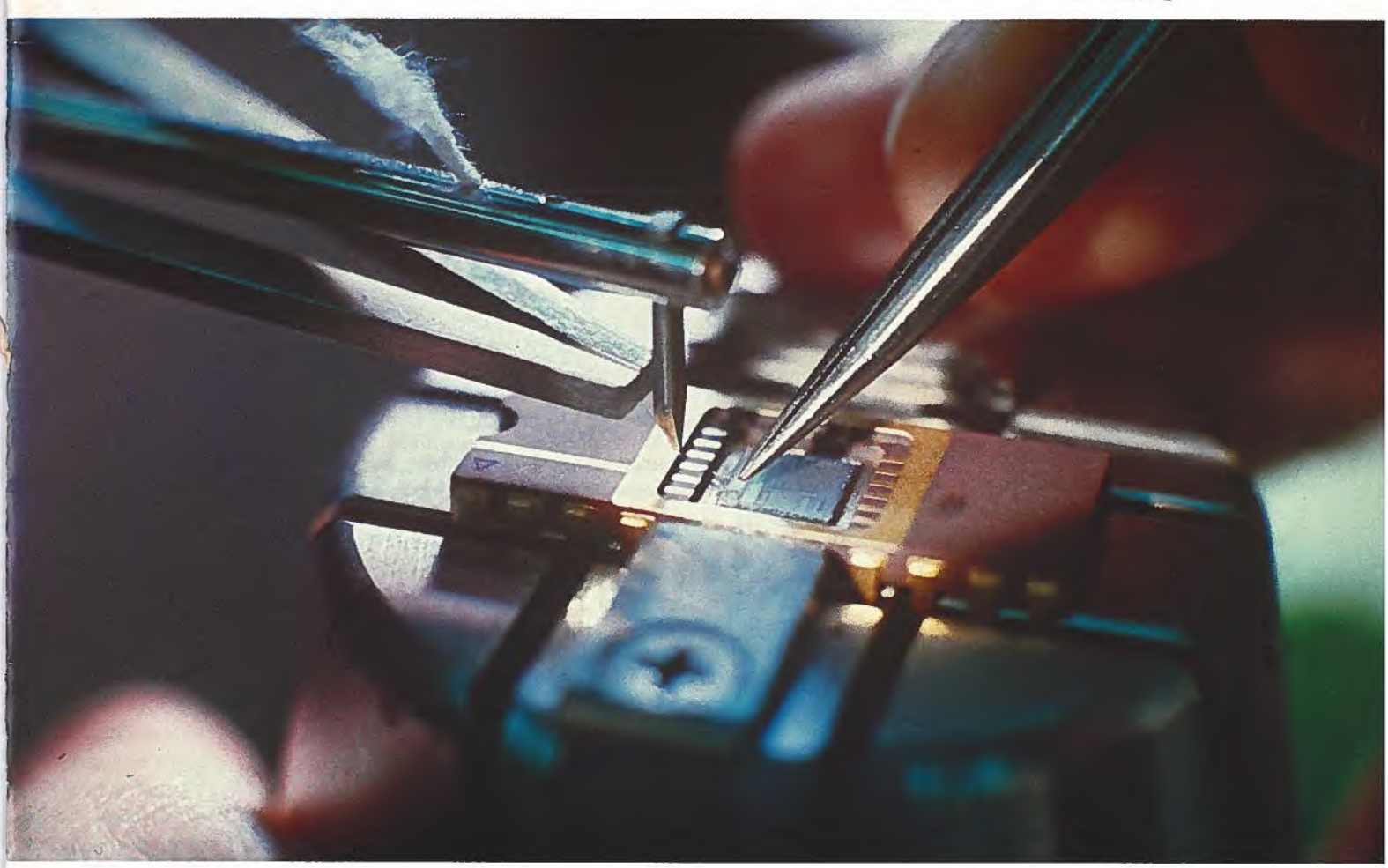

High Tech: Problems and Promises — Page 3

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(Publié aussi en français)

The Honourable Edward C. Lumley
Minister of Industry, Trade and Commerce
and
Regional Economic Expansion

The Honourable William Rompkey
Minister of State for Small Business and Tourism

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In this article, Canada Commerce staff writer Bob McDonell examines some of the major problems and questions about the Canadian labour market of the 1980s and beyond addressed by governments, labour, industry and educators at the recent National Occupational Outlook Conference.

Labour Market Future Needs Co-operative Action

Shown at the recent First National Occupational Outlook Conference are co-chairmen E. D. Isley, Alberta Minister of Manpower, and Lloyd Axworthy, federal Minister of Employment and Immigration. At right is David Dodge, ADM, Strategic Policy and Planning, Employment and Immigration.

"Today I think we are laying the foundation for a new forum in Canada — a forum whereby all parties, governments, labour and business can co-operate to tackle one of the country's major challenges: that of ensuring Canada has an efficient, highly trained labour force possessing the necessary skills responsive to the market place."

Thus Ernie Isley, Minister of Manpower for the Alberta government, summed up the raison d'être of the first National Occupational Outlook Conference held recently in Ottawa and officially opened by Lloyd Axworthy, federal Minister of Employment and Immigration.

In his opening address, Mr. Axworthy observed, "It's called an Outlook Conference and I think it is aptly named because there are many people who are looking at the world of work, some of them with a great deal of anxiety.

"There are many people in Canada, particularly the many thousands who are unemployed, who are deeply anxious about where their jobs will come from, and there are also many thousands who are equally concerned about the security of their jobs. So in a sense the way which we represent their concerns and speak for their interests will be among the signs to which we can point at the end of this session to assess its success."

While the two ministers, one provincial, one federal, outlined the reason and the problems faced by the delegates, it was in the panels and the free ranging discussions both on the floor and in the corridors of the Palais des Congrès in Hull, site of the convention, that a picture of Canada's labour needs of the future emerged.

Mr. Axworthy expressed the delegates' concerns thus: "We are also here to talk about the future. One of the great questions of the 1980s will be the way in which our occupations and skills will be dramatically altered by the pressure of competitive forces in the national arena, by the introduction of new technologies, by the development of new processes by which we make our goods and provide our services.

"One of the things that this present recession has shown us is that if we are going to maintain a healthy and vital economy, then we are going to have to become lean and productive in a competitive society. That means that we will have to make far better use of the skills of our people, of the resources of our workforce and to match these resources to the kind of jobs that will exist."

While the main focus of the conference was the Canadian Occupational Projection System (COPS), a joint federal-provincial undertaking designed to collect, organize and disseminate information about future supply and demand for workers on an occupational basis, the delegates also examined the basic structural changes that face Canada.

Some of these structural changes are already upon us, the delegates agreed. . .technological changes brought on by microelectronics and robotics. . .the growing move to conservation. . .the fears of pollution. . .and the replacement of many traditional markets for minerals, metals and forest products by new substances.

But perhaps the greatest challenge of all was the human and social problems which could be created if the changes are not managed in a structured way.

In the words of Dr. Stuart Smith, chairman of the Science Council of Canada, we must look at alternatives if Canada's present high rates of unemployment are to become, as many delegates predict, the norm of the future. As partial solutions, work sharing, educational and skills

upgrading sabbaticals, community and quality of life improvement, were all discussed and suggested for further study.

While on balance there were more questions asked than answered, the one bright spot in the conference according to most delegates was the apparent co-operation between the provincial and federal governments, industry, labour and other concerned sectors of the economy that is being brought to bear in solving these problems.

During the coming months, the participants will be studying ways and means to provide Canada with more reliable indicators of future market needs — COPS, and other initiatives designed to meet our industrial and social labour requirements.

Canadian Occupational Project System

The Canadian Occupational Projection System (COPS) is designed to collect, organize and disseminate information about future supply and demand for workers on an occupational basis.

Federal and provincial governments are working to develop COPS in co-operation with business, labour and other interested groups.

The Need:

• A lot of labour market information is now available from a variety of sources — government, industry, labour and the academic community. However, this information is not put together in any comprehensive sort of way.

COPS will attempt to organize this material into a useful format so that when fully developed, the system will allow for better long-term planning of Canada's human resources.

• Much available information relates to the immediate or short term. Yet there is an urgent need for long-term data. It may take up to five years for an individual to prepare for a highly skilled occupation, and even longer for governments to plan for and construct or upgrade training facilities and equipment.

COPS is designed to provide medium to long-term views over three to 10 years of possible needs for and supplies of workers, by province.

COPS will supplement mechanistic economic models and statistical data with extensive consultation with provincial governments and the private sector. Estimates of possible occupational imbalances will be discussed and revised annually. The system will rely on knowledge and judgement from all sectors about employment trends and their impact to provide a more complete picture of the labour market.

• In some cases there is a serious lack of data. On the demand side, we lack hard information about the long-term effects of technological change on skill needs. On the supply side, we have very little knowledge about people's patterns of occupational change or the extent to which they receive training within industry.

COPS will analyze and, in some cases, initiate research on these and other issues, so the system operates with the most complete labour market information available — information which will further improve over time.

The Product:

COPS will produce a range of future estimates for the Canadian labour market, over a three-to-10-year period. The system will be based on several possible future paths for overall economic activity, and will produce estimates of supply and demand for workers by province and by occupation.

COPS will highlight any apparent imbalances that would occur in the future if steps are not taken by governments, employers, unions and individuals to change the course of events.

Uses:

COPS projections can be applied in many ways by government and private sector users and by individuals. They will be useful to governments for educational and immigration planning and the determination of training needs. Private sector users will be able to incorporate COPS projections into their manpower planning and training decisions. Individuals will find the projections valuable tools in course selection and career choice.

Access:

COPS projections will be available in 1983/84 through published reports and through computer terminals used by analysts in the federal and provincial governments, businesses, labour groups and universities.

Department of Employment and Immigration technicians explain the operation of the Canadian Occupation Projection System to delegates at the recent National Occupational Outlook Conference.

High Tech — Problems and Promises

Today Canada is in the forefront of the "information society" with its innovations in the field of telecommunications but it cannot rest on its laurels if it is to remain competitive in one of the fastest growing industries in the world, according to John Roth, President of Bell-Northern Research.

Speaking at the recent First National Occupational Outlook Conference in Ottawa, Mr. Roth said, "I come from a company that believes in long-range strategic planning. Indeed, we have been successful because we have worked very hard to understand and anticipate the technologies and markets of the future and to apply this knowledge to develop a competitive advantage."

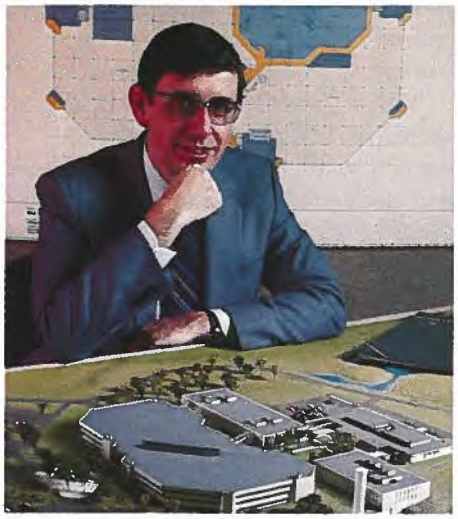
An important step, he suggested, is to develop economic sovereignty, the road to which "is a tough one, but it is negotiable . . . . If Canada wants to have economic sovereignty, there *must* be a national strategy," he said.

"The manner in which Canadians chose to participate (in the information society) will have far-reaching implications. The most advanced nations of the world are preparing to place themselves at the forefront of the information society. We must not let them do it at our expense. We *can* be leaders. We *can* have economic sovereignty."

The first step to economic sovereignty is technological sovereignty.

Using the example of his own company's parent, Northern Telecom Limited, Mr. Roth showed how it had developed its own technological sovereignty after it was cut loose from its original United States parent company in the 1950s.

With the help of Bell-Northern Research, Northern Telecom (NorTel for short) was so successful in developing and controlling its own technology that today it is the largest telecommunications manufacturer in Canada, second largest in North America and sixth largest in the world — truly in the forefront.



John Roth, Bell-Northern Research President with a model of facilities under construction.

Part of this success has been because NorTel and Bell-Northern have what Mr. Roth calls a "world class" vision. "We believed that the way of the future in telecommunications was digital communications. We believed in this vision strongly enough that we staked our reputation on it and announced it to the world. And we were right!"

The companies now have a new "vision", one in which they also believe so strongly that, again, "we have publicly announced our plans."

"Over the next five years we plan to spend about $1.2 billion on developing new products and services to integrate all major office communications functions," he stated. "This will include new voice and data terminals, a series of services and features for information handling, and enhanced networks based on digital communications technology. We call this the OPEN World."

Considering the chaos at present in the office communications with various suppliers offering a bewildering array of systems, products and services, many of them incompatible, he said that the OPEN World concept would allow an organization to manage its own information-handling needs (including data processing, voice and data communications, word processing and communications) as one system.

With such a vision, Mr. Roth expect NorTel and Bell-Northern to maintain and, perhaps, enhance their lead in the telecommunications and microelectronics fields.

But such a lead can only be maintained through constant attention to research and development to which his company and NorTel give top priority. Unfortunately, Canada itself spends a smaller proportion of its gross national product on industrial research and development than most other industrial nations and he noted that 80 per cent the technology Canada uses is imported.

"That's a problem I know can be dealt with. We have done so ourselves," he said. "I believe that we have a good chance of winning this competition."

His reasons:

- Canada has one of the most highly educated populations in the world.
- Canadian industry has recognized the need for more industrial research and development and is meeting it by increasing expenditures in this area by 21 per cent in 1981 and a budgeted 22 per cent in 1982 with significant growth projected for the coming year.
- New CAD/CAM (computer assisted design/computer assisted manufacture) and robotics technologies are making smaller operations more flexible and more competitive and are making it possible to compete with large foreign suppliers.
- Canada has an advantage as an innovative world leader in the development of telecommunications services and microelectronics equipment — "an advantage in the world's fastest growing market".

Another factor contributing to NorTel's success in building its tech-

nological sovereignty has been the fact that both NorTel and Bell-Northern have established the largest part of their operations in the Ottawa area and are in the process of constructing a $37 million, 35,000 m^2 (377,000 sq. ft.) building "to pull together our people currently in rental locations".

"The synergy that results from co-location is an essential ingredient in our success," Mr. Roth explained.

"And it's an extension of that synergy that has caused other high technology companies to spring up in the same area . . . . The sense of community is very important in the high technology business . . . . It's something that high technology companies have to keep in mind when they are locating new facilities, since we all compete to attract the top scientists.

"High tech people like to be near one another and near educational facilities which have strong programs in their subject areas."

This leads to another problem faced by high technology industries — the shortage of qualified people.

"The strength and success of all high technology industries, whether they are active in microelectronics, robotics or CAD/CAM, are its people," Mr. Roth emphasized.

"At Bell-Northern we have been fortunate to be able to attract some of the best people in their fields. We make a determined effort to go after the best graduates our universities and technical schools turn out."

Bell-Northern technical staff wires a laser (about the size of a speck of black pepper) into a fibre optic communications system.

However, even before the onset of the current recession, Bell-Northern was becoming increasingly concerned "about our ability to find enough top-notch graduates."

"When I see Canadian forecasts of shortages of 1,000 to 2,000 engineers a year over the next five years and hear predictions of shortages by 1990 of 40,000 data processing professionals, I find it pretty upsetting."

"And the problem isn't going to get better. In 1985 the projection is that just 1,867 electrical engineers will graduate from Canadian universities. If the economy has improved and hiring increased even to its previous levels, we'll be in trouble right away."

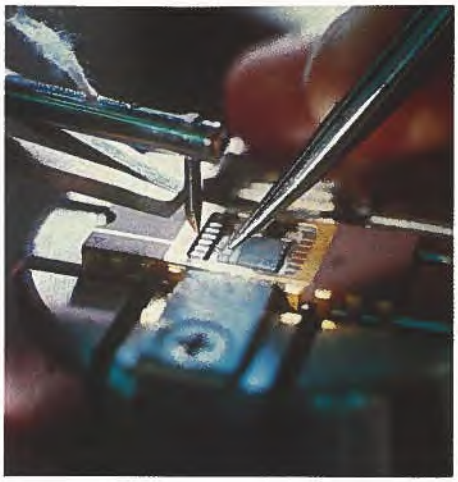
There is at present a worldwide shortage of trained engineers and professionals in almost every aspect of the computer and associated industries. It is projected that the United States will need an additional 51,000 electrical and computer engineers in 1985 and yet U.S. universities will produce only 15,000.

"What we have to do is ensure that a larger, and not a smaller, percentage of (the university-age) population enters the sciences. To do that we have to make sure that young women also view high technology careers in a more positive light than we have in the past. The number of women entering engineering and computer is still discouragingly small."

In addition, the industry, and Canadians in general, must change the way in which it looks at university, college and training school faculty members. "We cannot hope to enlist the brightest and best as teachers if we continue to pay them less than those who don't teach. If a young engineer is worth $25,000 a year to industry, can he be worth less to the country, and its future, as a teacher of future engineers?"

Mr. Roth made a number of suggestions by which these shortages of qualified personnel could be in some measure alleviated.

"Without sacrificing academic freedom of thought or decision, we may have to consider such things as allocation of areas of study, so that we can make best use of the university bricks, mortar, money and brains available, to produce the number and type of graduates needed for national survival and growth," he said.



A silicon chip, half the diameter of a human hair, being wired into an electronic package.

To help overcome the critical need for engineers and computer scientists "we should consider either allocation of engineering and computer science space in other faculties where enrolment is down, or space swapping between universities".

Governments should re-examine programs for scholarships, fellowships, bursaries and the funding of university chairs to meet the shortages in business and industry.

Industries should establish in-house training courses to update and retrain engineers, assistants and other individuals. More innovative and flexible management education programs must be introduced.

Industries must also "be ready to work with universities — in a variety of ways — to help ensure universities are kept current with new directions".

Mr. Roth believes that, through a concerted effort, Canada can go a long way toward solving many problems in the high technology industries and maintain and even further its competitive position in world markets.

A (Tissue) Cultural Revolution

by R.M. (Bob) Shaw
IT&C/REE Regional Office, Vancouver

Culture is a many-splendored word. We have ethnic cultures, horticulture, pisciculture, cultured pearls, mariculture, cultural festivals, cultured ladies and gentlemen. . .the list seems endless.

And now we come to tissue culture.

A pioneer in this advanced culture in Canada is Kelowna Nurseries Ltd. of Kelowna, B.C. This 52-year-old company has built a reputation as a producer of quality fruit trees and ornamental plants. It has an annual field production of 250,000 fruit trees; a container production of 200,000 ornamental shrubs in pots; and now, with tissue culture, production of 750,000 plants.

The company was not satisfied with the quality and supply of rootstocks so, in 1979 with the assistance of the National Research Council and the B.C. Ministry of Agriculture, Kelowna Nurseries established a laboratory and growth room to research fruit-tree micropropagation (tissue culture).

Continuing support from the Department of Industry, Trade and Commerce and Regional Economic Expansion (IT&C/REE) through the Enterprise Development Program (EDP) and from the friendly local banker has enabled the basic research to be applied on a commercial scale.

As a result, the company has developed a technology that has revolutionized tree production as well as being a technology that can be adapted to almost any variety of tree and which can be exported to any country seeking to expand production.

Through tissue culture, a tree is cloned. Instead of working from seed, a bud is cut from a plant and peeled down to its innermost shoot tip with the aid of a microscope. The tiny shoot then goes into a test tube partially filled with a nutrient medium together with vitamins, minerals, sucrose and a growth hormone.

After some four weeks these shoots have elongated to what is known as two to five nodes. In sterile conditions in a laboratory these shoots are dissected to their nodes and transferred onto a new medium to stimulate growth in the nodes.

Another four weeks and these axillary buds have sufficiently elongated to permit subculture of each

Tissue cultured rootstocks growing under natural conditions in an irrigated field.

new two to five node shoot produced.

It sounds complicated, but it works. Each tiny bud can be reproduced over and over again through its clones. In addition to the speed of reproduction, there is the quality. Each clone is identical with the one that went before it.

Kelowna Nurseries has made it work with fruit trees but isn't stopping there. An ongoing research program with grapes has resulted in the introduction of virus-free self-rooted and grafted vinifera varieties.

Now the company is going further ahead seeking to establish the commercial feasibility of producing forest species by micropropagation. To look at Canada's seemingly endless forests it is difficult to believe that within the next few decades there will be a shortage of forest products as the world demand for renewable resources increases inexorably.

Kelowna Nurseries is now researching the feasibility of plantlet production of several conifer species from seed and from selected elite trees. It is the company's aim to supply large quantities of tissue-culture-derived plantlets on contract for use in a re-forestation program integrated with the containerized seedlings produced at present.

And the company isn't stopping there. As an indicator of the adaptability of this Canadian-developed technology, Kelowna Nurseries is seeking to apply it to date-palms.

As all of the tissue culture fruit-tree rootstocks, grapes and woody ornamentals that Kelowna Nurseries is now producing on a commercial basis are from quarantinable viruses, they can be shipped throughout the world.

With its background of successful micropropagation and its complete laboratory facilities and qualified researchers, the company is seeking research contracts to develop commercial production of plants having significant economic value.

Tissue culture can be applied to the multiplication of plant species grown in temperate, tropical and arid regions of the world. After initial research in the laboratory to develop commercial procedures, satellite laboratories and nurseries could be established throughout the world.

The expertise developed at Kelowna Nurseries through three generations of the Tomiye family. Thomas Tomiye, president of the company, was introduced into the nursery by his father when it covered just five hectares. He expanded it from a combined nursery and vegetable farm to a well-established fruit tree nursery of 100,000 annual production.

Management of the company has now passed to Thomas Tomiye's son, Reg, who has been involved in the business all his life. He has been instrumental in increasing fruit tree production and initiating ornamental production. With the co-operation of Dr. David Lane of Agriculture Canada he is responsible for the tissue culture program.

General manager of the company is Dr. Howard Resh, a horticulture graduate from the University of British Columbia in 1975. His specialties include plant propagation, plant nutrition, greenhouse designs and management and development of intensive cropping systems. His book, "Hydroponic Food Production" has gained worldwide recognition and is available in English, Spanish and Japanese languages.

Dr. David Dunstan and Reg Tomiye inspect clonal multiplication of apple rootstocks on agar medium jars in the Kelowna Nurseries growth room.

A small tissue culture apple about two to three centimetres long with initial roots forming. It is now ready for planting in outside conditions.

Dr. David Dunstan, a graduate of the North East London Polytechnic in London, England, is research director of the tissue culture program. He has been in charge of all phases of the program, including laboratory design, equipment purchase, hiring, training and management of technical staff.

His research team includes four laboratory technicians with two support staff and four in transplant with one support staff. This highly proficient team can now put some 100,000 plants in an acre of land and they have 80 hectares which are rapidly filling up with the clones.

This, then, is Canada's latest cultural revolution, a revolution which can substantially increase Canada's trade and enhance its place as a world leader in technology.

With increasing emphasis placed on the alleviation of Canada's unemployment situation, government initiatives are growing daily more important. One such initiative is . . .

$100 Million for Job Creation

In response to Canada's number one concern — unemployment, the federal government is spending an additional $100 million in funding for economic development programs that will create up to 13,300 direct and 39,000 indirect jobs.

The $100 million is part of $300 million allocated for economic development initiatives in the June 1982 federal budget. Over two fiscal years, the funds will be divided among three Department of Industry, Trade and Commerce/Regional Economic Expansion (IT&C/REE) programs — the Enterprise Development Program (EDP), the Support for Technology Enhanced Productivity Program (STEP), and the Defence Industry Productivity Program (DIPP); and two National Research Council programs — the Industrial Research Assistance Program (IRAP) and the Program for Industry/Laboratory Projects (PILP).

"These programs have been chosen for additional funding at this time because they are proven instruments of job creation, both in the short and longer term. Their immediate effect is to create jobs *now*, and it is estimated that for each direct job created, between one and three indirect jobs are generated in the operations of suppliers and sub-contractors," said Ed Lumley, Minister of Industry, Trade and Commerce and Regional Economic Expansion, in the joint announcement made with Donald Johnston, Minister of State for Science and Technology and Economic Development.

The breakdown of the additional $100 million funding approved for these programs, in millions of dollars, is as follows:

	1982/83	1983/84
EDP	14.0*	16.7
STEP		6.2
DIPP	19.3	34.1
IRAP	1.5	4.2
PILP	.6	3.4
Sub-totals	**35.4**	**64.6**

*Previously approved in September 1982 as interim funding.

The general scope and past performance of the programs, described below, are further indications of why they were chosen to implement this new initiative.

The IT&C/REE Programs

EDP — Introduced in 1977 as the consolidation of numerous assistance programs, the Enterprise Development Program was designed to help small and medium-sized manufacturing and processing firms to become more viable and internationally competitive. The product innovation development side of the program provides up to 75 per cent of eligible costs towards research, development and design projects and enables companies to conduct market feasibility and productivity enhancement studies.

In 1981-82 alone, $119 million in EDP contributions was approved for 576 innovation and product development projects in such industries as machinery, electronics, ship components, automotive vehicles, building components and textiles. It is forecast that, over five years, these projects will generate sales of $6 billion and create or maintain almost 16,000 jobs.

STEP — The Support for Technology Enhanced Productivity Program was introduced in January 1982 to encourage Canadian "makers" and "users" of the new technologies to take advantage of the opportunities being created by the "electronics revolution". STEP provides makers of microelectronics and advanced production equipment with capital and R&D assistance to help them develop major projects so that they may successfully compete in international markets. For users, STEP makes incentives available enabling Canadian manufacturers to undertake feasibility studies and implement projects applying electronics to their operations.

The program also offers an industrial information program and provides for the establishment of up to 10 centres of advanced technology in microelectronics, located at Canadian universities in each province. At the present time, there are five major and many smaller STEP projects in progress or planning stages. These projects involve more than $28 million in federal funding and are expected to create at least 3,500 direct jobs.

Signing in for job application.

Canada's home construction industry — employment.

DIPP — The Defence Industry Productivity Program dates back to 1959 when the Canada/United States Defence Production Sharing Agreement was concluded. Today, it operates under defence development and product sharing agreements with the United States, Britain, France, the Netherlands, Italy, Sweden, Germany and Norway. DIPP helps to develop and sustain the technological capability of the Canadian defence and related civilian industries. It is used by companies across a range of industry sectors, such as electronics, transport, avionics, navigation equipment, space technology, metallurgy and engines. Historically, DIPP projects have led to an excess of $15 in sales for each $1 of support provided, so the $166 million in federal assistance given out in 1981-82 can be expected to generate almost $2.5 billion in sales for the companies involved.

The NRC Programs

IRAP — The Industrial Research Assistance Program was established in 1961 to stimulate industrial research in Canada. The scope and resources of the program were increased significantly in 1981-82 through the integration of IRAP and two other programs into a single Industrial Research Assistance Program. IRAP encourages firms to move into new areas of technology, with the assistance and guidance of government technical experts, and promotes company investment into areas of demonstrated high potential. Under the terms of an IRAP agreement, NRC provides financial assistance by paying the salaries of the company research staff working on approved research projects, with the company paying for all other aspects of the research costs.

PILP — The Program for Industry/Laboratory Projects, initiated in 1975, is aimed at bringing about the application of commercially exploitable scientific and engineering knowledge in the government's laboratories where significant economic and social benefits to Canada can be foreseen. PILP is a shared-cost co-operative program through which companies are introduced to expertise and know-how which is often new to them, yet relevant and important for enhancing profitability.

All of these ongoing industrial support programs are aimed at promoting product and process development and innovation. As such, they not only have an immediate job creation effect, but they also encourage longer-term viable industrial development which will result in additional capital investment and increased industrial activity by the private sector. Each government contribution provides only a share of the total direct cost of individual projects undertaken. For every $1 of Crown contribution, between $2 and $10 is contributed in direct costs by the recipient company for its share of the project, and this does not include indirect costs such as sales and marketing.

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ENERGEX '82 Sets Pace for Energy Conferences

A new type of energy conference was inaugurated at the University of Regina in August 1982.

ENERGEX '82 A Forum on Self-Reliance: Conservation, Production and Consumption, meshed technical sessions, workshops, tours and an exposition to provide conference participants and the general public with the opportunity to learn about and participate in the latest developments in energy research and technology in Canada and the world.

It is hoped that ENERGEX '82 will be the beginning of a series of Canadian energy conference/expositions to be held regularly every two or three years.

The calendar of events for the four-day event included the 8th Annual Technical Conference and Meeting of the Solar Energy Society of Canada, Inc., energy tours in Saskatchewan, an energy exposition and workshops.

Saskatchewan, with its extreme climate and vast energy resources, has often been a leader in energy research and conservation and, as such, was an appropriate host for the first energy conference featuring the interplay between man and man, man and machine, and man and his environment within the context of energy management.

The workshops offered in conjunction with the conference reflected these concerns, providing participants with "hands-on" experience with energy-efficient products and installations being developed by industry and private concerns.

The technical sessions formed the basis of the Solar Energy Society conference. During the conference 237 papers representing concerns of 39 countries were presented to approximately 750 participants. Included were more than 150 offshore representatives from 55 countries. Over the four days of the conference, topics discussed ranged from energy conservation and systems to alternate fuels and energy resources to the human, social, political and legal aspects of energy usage.

Typical of the many energy-related displays at the highly successful ENERGEX '82 conference and exhibition in Regina.

Proceedings from the conference total two volumes (1,300 pages). Copies are available from ENERGEX '82 at the University of Regina.

Conference highlights were the keynote speeches of Henry Thomas, Assistant Secretary for International Affairs, U.S. Department of Energy; Dr. Stuart Smith, Chairman of the Science Council of Canada; Ivan Head, President of Ottawa's International Development Research Centre; Peter M. Towe, Chairman of the Board of Petro-Canada International Assistance Corporation; and the Hon. Herb Gray, then federal Minister of Industry, Trade and Commerce and Regional Economic Expansion.

At ENERGEX '82, Dr. José Goldenberg (left) of the University of São Paulo, Brazil, chats with Henry Thomas, Assistant Secretary for International Affairs, United States Department of Energy.

The effect of oil dependence on the world economy, the instability of supply and the dependence on imported oil in developing countries were recognized by all speakers as major problems. They also pointed out that conferences such as ENERGEX '82 provide the opportunity to formulate solutions to many of these problems. According to Peter Towe: "ENERGEX '82 will address the importance of energy self-reliance, the ready availability of adequate sources and uses, and the recognition, in technical, economic and social terms, that human progress and development are inextricably linked to a secure access to energy."

With self-reliance as a major issue, Secretary Thomas noted that "while all nations have a natural desire for certain degrees of self-sufficiency, this is a goal few nations have hope of ever achieving." Thus the conference also recognized that self-reliance can only be approached through international co-operation. It is to everyone's benefit to encourage conservation, development of technology for more efficient energy usage, and further exploration and development of

hydrocarbon based resources (especially in oil-related industries) in both developed *and* developing countries.

Ivan Head pointed out: "Because Canada looks to developing countries as promising markets for Canadian goods, it is in our interest to assist them to better their economic conditions. Energy is a vital segment of these economies."

Thus the approach to energy development, as viewed at the ENERGEX '82 conference, was an all-encompassing one. "Because exploitation of energy sources can lead to far-reaching consequences, the responsibility of the present generation to act as stewards for the future is an inescapable one. . ." said Mr. Head. "Quite clearly, energy problems are only in part technical problems. Whether in the industrialized countries or in the developing countries, they cannot be segmented from the social, political, economic, and environmental context in which they occur. Solutions proposed without reference to all these elements are unlikely to succeed, or to endure."

While the ENERGEX '82 conference provided a forum for the discussion of energy technology in an international context, the exposition provided an international marketplace for Canadian expertise and gave participants from developing countries the opportunity to discuss the adaptation of present Canadian products to their needs.

At the exposition there were approximately 250 exhibit booths, both indoors and outside, of practical hardware, services and research from top energy suppliers, consultants, laboratories and government agencies. Particular emphasis was placed on the effective integration of conservation, production and consumption programs into long-term planning and use applications in such areas as oil, gas, coal, hydro, geothermal, solar and wind energy.

Saskatchewan Power Corporation's display included research models and prototypes (a coal dragline mode, an electric car) and representations of other aspects of energy conservation research being carried out at the corporation's facility in Regina. Saskatchewan Telecommunications and the TransCanada Telephone System participation included provision of telecommunications facilities to conference participants and a large exhibit at the exposition which featured fibre optics, PATHFINDER (SASK TEL's videotex service trial), and office automation and data communications equipment. The videotex display, which included a computer game based on residential energy usage, was popular with the general public.

Saskatchewan and federal government departments, through agriculture, industry, commerce, mineral resources and energy research displays, provided information on government supported programs as well as models and representations of products, energy conservation in construction, energy efficient transportation, and solar energy installations.

Ontario, Quebec, Alberta and Manitoba, as well as international concerns such as Rix Industries of the U.S. and the Solar Science Corporation Ltd. of Spain, presented models of natural gas compressors, tube collectors for heating systems, and information on wind energy, the gasification of coal and solar heating systems — the renewable energy options of the future. Private industry, small corporations and individuals from locations across Canada were also represented.

The exposition generated a great deal of public interest with an attendance of approximately 10,000. Many who attended were impressed with the quality and quantity of products and information available.

The exposition also provided the common ground for potential buyers from many countries to meet with suppliers (in small, medium, and large scale industry and government) in Canada and was, in effect, an international promoter and marketplace for Canadian industry.

The objective was to expose foreign visitors to Canadian energy resources, conservation technology and products, services and processes with a goal toward the sale of goods, services and processes, as well as technology transfer and industrial co-operation. The benefits to Canada of the success of such a venture are obvious: the sale of goods, services and processes, increased employment, financial incentives, government interfaces, contribution to third world development, and increased international exposure of Canada's energy capacity.

However, other developed and developing nations also benefit through technology transfer, increased industrial productivity, improved managerial expertise, coordination of research data in various energy spheres and increased co-operation between government and international private sectors.

As Secretary Thomas observed, "The key word here is co-operation. As long as nations work together and conferences such as ENERGEX '82 continue to be held, we can look forward to a better future."

An additional benefit from ENERGEX '82 is the further development of Canadian industry through the exchange of ideas and promotion of joint ventures among exhibitors.

Financing of the whole event was provided from provincial and federal governments, the University of Regina and CIDA.

Plans are under way for a second similar conference to be held in Regina on May 14 to 19, 1984 — ENERGEX '84. In contrast with ENERGEX '82, which dealt primarily with renewable energies, the technical sessions of ENERGEX '84 will emphasize as well new energy sources (heavy oil recovery, oil sands) and energy conservation in residential, commercial and industrial applications and in communications.

For further information, please contact:

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Trade Fairs Prove Their Worth

Empro, a division of Empire Maintenance Inc. of Brampton, Ontario, is a firm believer in the value of trade shows in promoting its overseas sales. The company manufactures nylon and polyester pads for use in machine stripping, scrubbing, polishing and spray buffing of floors.

As a result of its participation in the May 1981 exhibit of Canadian products at the Interclean Show in Amsterdam, the Netherlands, Daniel G. Mack, executive vice-president of Empro, estimates that some $428,000 worth of business is now in the negotiation stage.

Like most of the 13 other Canadian firms that participated in the 1981 show, Empro plans on joining the 1983 edition of Interclean, the biennial international showplace of cleaning equipment and supplies.

In addition to assisting the Canadian firms in the myriad details necessary to mount the sponsored exhibit — space, national identity, shipping, set-up, customs, advertising, to name a few — the Canadian government also provides assistance for other shows under its Program for Export Market Development (PEMD). Companies taking advantage of PEMD are provided with financial assistance to cover up to 50 per cent of expenses incurred in participating in such exhibits.

If successful in generating sales, the companies will repay the government's contribution at the rate of two per cent of sales in the market areas covered by the exhibition or trade fair for three years.

For Empro, sales were made in Saudi Arabia, France and England while negotiations are under way in Kuwait, Greece, the Netherlands and Italy.

Through strict attention to detail both in its manufacturing processes and in its marketing strategies, Empro has carved out a niche in a market dominated by a few huge multinational corporations.

By supplying customers with exactly the product they require whether in finished form or in rolls which can be cut by the customers to their specifications, Empro has created a market for its nylon and polyester pads which these same multinational companies are content to ignore in their marketing strategies.

For further information on the PEMD or on the federal government's Promotional Projects Program, please contact the nearest regional office of the Department of Industry, Trade and Commerce and Regional Economic Expansion (IT&C/REE).

Rolls of polyester and nylon cleaning pad material await shipment to overseas markets in Empro's warehouse at Bramalea, Ontario. Customers in 20 countries cut floor maintenance pads to their own specifications from the rolls. Empro also ships fully manufactured pads oversea in palletized bundles as seen in the background.

According to Peter Jardine, director of Ottawa-based Interesco, International Marketing Corporation, the People's Republic of China is a huge market just waiting for Canadians to take advantage of it. In this article, specially prepared for Canada Commerce, he tells of his personal experiences in investigating and breaking into this market.

Interesco in China — A Personal Viewpoint

Junks off the repair and construction yard in Xiamen. This yard houses one of the best development projects I have seen anywhere. In a joint venture with an American concern the yard is producing modern, luxury yachts for customers around the world. Building on ancient skills, the project introduced modern materials and concepts, and in the words of the Dutch yard manager is proving to be an outstanding success. Production is pre-sold three years ahead.

The People's Republic of China possesses, for the average Westerner, a unique mystique. It has been a magnet for travellers and culture buffs for centuries.

With one-quarter of the world's population, it should also be a magnet for the businessman. There are 1.2 billion people in a country of 9,597,000 km^2, with poorly developed infrastructure, vast but untapped natural resources and a tiny manufacturing industry, all of which offers an unparalleled potential market.

Canada enjoys a favourable position in the Chinese mind. We are politically acceptable, generous with our aid and a good source of that desirable commodity, North American technology. We do not sell guns to Taiwan, put battle fleets in threatening postures or colonize anybody.

We did give the world Norman Bethune for whom the Chinese have the greatest respect and affection and our grain fills a lot of bellies which would otherwise go empty.

Despite all this, Canadian businessmen stay away from China in droves and until 15 months ago Interesco was counted among the ranks of the missing.

I would like to tell you why and offer our story as a source of encouragement to those who cherish dreams of one day seeking business in this fabulous country.

Interesco is basically a project development company with 12 years of corporate experience both in Canada and offshore. Through an export marketing program subscribed to by more than 30 Canadian companies from the manufacturing, engineering and contracting communities, we make our offshore expertise available to other Canadians.

We also make available a network of working partners in Africa, Asia and the Middle East and Central America.

Our philosophy is simple. We work in countries where we have good, effective local associates, where finance is available, and where the things Canada does well are required.

In China we had no connections, so we kept away. Experience tells us that getting a foothold in a new country costs $150,000 and up. We knew that negotiations in China can be protracted, that it is a graveyard of hopes and that without knowledgeable, preferably Chinese, partners success was unlikely.

We had no pioneering ambitions and no door openers, until in November 1981, when we received a phone call from a friend of our Singapore partners. Were we interested in supplying navigation and communications equipment for a new airport project in China? Could we take payment on a barter trade basis? We were and we could.

The airport was to be built close to the Huli SEZ, between Xiamen and Jimei and the authorities were in the market for airport instrumentation.

It all sounded like an interesting prospect, particularly since the city of Xiamen and indeed, Fujian Province itself, offered other potential for a development organisation such as Interesco.

By early December I was in Hong Kong involved in meetings with Chinese representatives and clearly being put under the microscope. Four days later I was on a boat to Xiamen, without a visa but with a new Chinese partner and assurances that all the arrangements were made.

Indeed they were and 22 hours after leaving Hong Kong I was being ushered into China with the minimum of fuss and maximum of speed.

During that first visit I was shown glimpses of what might be available to the companies in our group and I was exposed to a good cross-section of the range of officials with whom a foreigner has to deal.

These range from elderly leaders to the young technocrats, with the inevitable interpreter in between. All of them were delighted at the opportunity to discuss their needs with a foreigner, all of them wanted to show off their country and all of them wanted to let me know what they knew of Norman Bethune.

When we travel on behalf of Interesco companies we do two things. Firstly we direct our attention to the specific projects on which we are working. Secondly we keep our eyes and ears open for other possibilities. Always we take every opportunity to explain the capabilities of companies in our marketing program and the response is usually a list of requirements.

In Xiamen and subsequently elsewhere in China, the list becomes a litany. The country has enormous development needs and, with the door open, the local officials are seizing the chance to present their plans to any foreigner who will listen.

In the last 15 months I have filled a passport with Chinese visas and taken into China eight representatives from six Canadian companies.

With Interesco's Chinese partners, I have negotiated four letters of intent and one memorandum of commitment covering hotels, mining and food processing. In the next few months several of these are expected to become contracts and several more companies will take the hovercraft up the Pearl River to Guangzhou or the M.V. Jimei to Xiamen.

I have been careful to avoid the mainstream, grand projects and to concentrate on the more remote areas where the leaders feel neglected by foreigners and their own provincial and central governments.

I have listened to and generally followed the advice of our Chinese partners and back in Ottawa we have carefully collated the advice and the feedback from the officials I have met.

At no time have I tried hard selling. From their origins in the dawn of history as a small tribe on the middle Yellow River, the Chinese have grown into one of the great peoples of the world. I respect their history, their intelligence and their own perception of what is good for them. I exchange ideas with them and work towards an amicable conclusion.

It takes time, it takes unbelievable restraint from promoters like us, but it is working. We are making excellent progress into the mining, food processing, oil exploration and infrastructure sectors. All are sectors in which Canada has a great deal to offer and in 1983 we anticipate being able to improve upon Canada's $800 million exports to the People's Republic.

We have just put in place programs designed to gain long-term access into the mining industry and the service side of the oil and gas industry. We are responding to the requests for assistance in the transportation, water resource and agriculture sector, and to ad hoc requests for participation in buildings and bridges. Having cast our net wide, we have picked out the fish we and our hosts most want.

The year 1982 was one of making friends, of observing, listening and learning; of acquiring a taste for Tsing Tao beer, which was not difficult, and pigs intestines, which are not a pretty sight but go down remarkably well.

I visited the Turtle Garden at Ji-Mei where the walls are lined with delicate relief carvings in solid blocks of green granite.

I took the long ride down the centre of Hainan Island from Haikou City to Tong Zha, capital of the Southern Autonomous Prefecture. I welcomed the relief from the heat and humidity of the coast, afforded by Tong Zha's vegetated mountain cradle.

I ate python in the guest house there, succulent and delicious but a sorry end for an 18 foot beauty which took a wrong turn out of the trees.

I visited a mining camp in the heavily mineralized southwest coastal plains and marvelled at the hospitality of these poor people living in the back of beyond. In an unlit, mud-walled hut I was treated to a 10 course meal of sea food, poultry and vegetables, washed down with Tsing Tao and interspersed with toasts and great good humour.

I tried to repair a Pontiac Parisienne, the only one between Tong Zha and Hong Kong. I came away covered in oil but with a part number and some brownie points.

I also came away with an agreement to develop a mining area and a book full of potential projects.

I visited the awe inspiring memorial to Dr. Sun Yat Sen in Guangzhou and listened to the clamour of work crews on the new 2,000 room hotel being built there.

I learned of the problems of the Nanhai Joint Oil Services Corporation, a fledgling body set up in mid-1982 to take care of the South China Sea oil industry service sector. In the first five months of its existence, this organisation was inundated with over 250 foreign firms offering equipment, services and supplies for the oil industry. With our Chinese partner, we found a way around the stampede and a carefully orchestrated approach to this enormous industry has been agreed with officials in Guangzhou.

This is but a glimpse of Interesco's first steps into this giant of a country. I hope there is something in it to encourage those of you who want to explore the potential to try. You must have patience; you must be creative; you must have the ability to undertake barter or compensation trade deals; and above all else you must have the best, preferably Chinese, partner you can find.

Japan is Canada's second largest trading partner and concerted efforts are being made to help ensure that this continues to hold true and even to improve. The following article, taken largely from a Department of External Affairs publication "Canada's Export Development Plan for Japan", shows some of the problems and opportunities for Canadians in this highly competitive market.

Canada-Japan Trade Opportunities

To the Japanese, Canada is a large, beautiful country with wide-open spaces and friendly people. But it is also a major source of many resource-based products such as metals, minerals, forest products and agricultural and food products. In fact, Canada has become Japan's seventh largest source of imports and Japan is Canada's second largest trading partner.

Canada's export objective in Japan is two-fold — to enhance Japanese perception of Canada as a reliable supplier of resource-based materials in order to increase the Canadian market share; and to promote sales of Canadian technologically innovative, high quality, fully manufactured products.

In 1981 Canada bought about $4 billion worth of goods from Japan while, in turn, Canada's exports reached $4.5 billion for that seventh-largest-supplier category (but in percentage terms this represented only 2.68 per cent of Japan's total imports).

The strength of this trade has been the resource-based products Japan buys from Canada which have consistently produced the trade surplus for Canada. However, Japan's purchases of fully manufactured goods have lagged while processed or semi-manufactured goods have shown a steady increase.

According to a recently published report on "Canada's Export Development Plan for Japan" from the Department of External Affairs, the proportion of Canadian exports to Japan that have undergone some degree of processing has grown steadily over the past decade, representing about 41 per cent of the total exports to Japan in 1981.

Canadian Ambassador to Japan, H. E. Barry Steers, meets the "grand old man" of Canadian hockey equipment fame, Jack Cooper, Chairman of Cooper Canada Ltd. Mr. Cooper is a regular visitor to Japan where his company has been doing good business.

On the other hand, fully manufactured end-products have only 4.6 per cent of that same export total.

Trade Liberalization

Recent Japanese efforts at trade liberalization, including the removal or reduction of a number of non-tariff trade barriers for manufactured goods, are expected to help ease this situation somewhat.

But, the report says, to respond to this development, "Canadian firms producing fully manufactured goods for export must concentrate on, and develop, their own technological edge. To be successful, such Canadian firms must approach the Japanese market with internationally competitive products of consistently high quality.

"They must show strong commitment to advanced technology and design, a willingness to adapt to Japanese requirements and the ability to provide technical follow-up support and servicing."

Since the strength of the trade with Japan remains the resource sector, the report continues, "it is important to build on that base and encourage joint ventures, equity investment and other forms of technology exchanges as well as to maximize the industrial benefits from energy-related projects."

Over the years, both provincial and federal governments have been fostering this increasingly important trade development with Japan. Among other things, they have been carrying out the valuable export service activities of gathering information and monitoring trade developments.

In addition, there are government programs (such as the federal Program for Export Market Development) at both provincial and federal levels designed specifically to help trade-oriented projects.

Overseas, the Canadian Embassy in Tokyo aids Canadian exporters in their pursuit of new market opportunities and services are also provided by offices in Tokyo of the provinces of Alberta, Ontario and Québec. Federal and provincial governments participate in promotional programs including missions, trade fairs and in-store promotions.

Trade publicity is also an important element of trade development activities in Japan. With the assistance of a Japanese advertising agency, the Canadian Embassy prepares Japanese language directories and catalogues, a Japanese language trade publication and publicizes the range of products exhibited at trade shows.

Canadian Trade Centre

Specialized trade exhibits and solo shows are held in the Canadian Trade Centre (CTC) in Tokyo which,

since it opened in 1979, has proved an excellent market entry and support vehicle for numerous Canadian companies.

An attractive showroom of 300 m^2 (3,230 sq. ft.), the CTC is managed by the Canadian Embassy and operates at almost no cost to the Canadian taxpayer. It was established in 1979 at the invitation of the Japanese government using facilities provided through a semi-government organization, the Manufactured Imports Promotion Organization.

Since the CTC opened, it has held 34 group trade shows plus another 23 individual company (or solo) shows, in which more than 300 Canadian companies have participated. Shows have included virtually all major trade sectors from furs and jewellery to high technology telecommunications equipment and computers and thus represent all aspects of Canada's manufacturing industry.

CTC shows have attracted more than 13,000 trade visitors and media representatives, and have generated sales of approximately $110 million, helping significantly in the increase of exports of manufactured goods to Japan.

Located in the World Import Mart building near subway and railway stations in northwest Tokyo, the CTC has a display area of modular, flexible design plus a meeting room with a seating capacity of 100.

Trade fairs are arranged approximately once a month with 10 to 15 exhibitors in a specialized field participating in a single show. Solo shows can be arranged to display large quantities of sample products or to conduct technical seminars in conjunction with a product display.

The CTC was designed to broaden Canada's image in Japan by showing the nation's thriving industries, some of which lead the world in advanced technology. To date, the CTC has helped to correct and balance the Japanese perceptions of Canada, and has helped to demonstrate to Japanese trade and industry in particular and consumers in general, Canadian leadership in certain fields.

Investment Important

Investment is also an important facet of two-way trade between nations and in Canada-Japan trade relations it is of growing significance. In the past, investment has not been strong but relatively recent changes are bringing about a decided improvement.

According to the External Affairs report, Japan's strict controls on inward flowing investment "have been liberalized to the point where foreign investors normally do not experience difficulty or delay with new business ventures."

Much Canadian investment in Japan has been concentrated in the resources processing sector for such materials as nickel, aluminum, lead and zinc and primarily in the form of joint ventures. Most recent investments have been smaller in scale and more varied and have involved the manufacturing service industries and distribution/sales outlets. The Japanese partner in a joint venture "usually contributes valuable local experience, trained labour, management and land, all of which may be in tight supply."

The report states that there continue to be investment opportunities for Canadian firms in Japan including substantial investment by Canadian banks. "Other companies may find it profitable to invest in sales and distribution, particularly for food products and resource materials. Canadian companies offering high technology products could find it advantageous to manufacture in Japan, particularly as their market grows and as the requirement for close liaison with customers in new product development increases."

In addition, the report says that some companies may find it profitable to "enrich their stock of technical, managerial and labour skill and to keep abreast of the latest technological developments in Japan, both made possible by technology exchanges and by setting up an operation in Japan."

In Canada, Japanese investments are relatively small but of increasing importance to the economy of Western Canada. Most investment to date has been in the resources sector, in either resource exploitation or resource processing which Canada welcomes.

The Japanese have been reluctant to make investments in non-resource-related manufacturing in developed countries and Canada has been no exception. The Canadian market alone is not regarded by the Japanese as large enough to justify the scale of production required nor does production in Canada for foreign markets meet Japanese requirements for overseas investment, the External Affairs report states.

In the long term, the report recommends that Canada may be best served with specific Japanese investments in high technology manufacturing which could fill gaps in industrial capability or could launch Canada as a world source for a particular product. However, this assumes that Japanese multinational corporations would entrust research and development, production and marketing of a specific product line in Canada for world markets, including Japan.

There are opportunities for joint ventures between Canadian and Japanese firms to manufacture specifically for the Japanese market, the report suggests. "This would apply to further processing of resource materials, as well as finished products such as processed consumer food items, telecommunications equipment, auto parts, ocean industries equipment, consumer goods (furs, jewellery, sportswear/sporting goods) and industrial goods (health care products)."

In essence, the report suggests that trade between Canada and Japan is improving but that Canadians still have much to do and learn about breaking into the Japanese market. It points out that the most promising trade prospects for Canada in Japan are in forest products, petrochemicals, nuclear reactors and uranium, electronics, agriculture and food products, marine industries, automotive parts, coal, non-ferrous metals and minerals, manufactured products.

Consultation Service Fosters Trade

Japan has become one of Canada's major trading partners, a fact emphasized by the introduction of a new consultation service announced recently by the Japan External Trade Organization (JETRO) Toronto office. This service has been designed to help Canadian exporters in entering Japanese markets and uses Japanese executives.

"The expert consultants are Japanese staff members of major trading companies with operations in Canada," explains Jun Sasaki, executive director of the Japan Trade Centre in Toronto. "As businessmen themselves, they are well informed about distribution channels, merchandise and markets in Japan."

The service is provided free of charge by qualified executives from Japanese trading companies including Chori Canada Ltd.; C. Itoh & Co. (Canada) **Ltd.; Marubeni** (Canada) **Ltd.; Mitsubishi** (Canada) **Ltd.; Mitsui & Co.** (Canada) **Ltd.; Nissho Iwai Canada Ltd.;** and **Sumitomo Canada Ltd.**

For Canadian companies wishing to receive the consulting services, a prescribed application form is available from the JETRO Toronto office. Filled in, this form, together with catalogues, descriptive materials, price lists and other information relevant to the potential export item, should be presented to JETRO.

JETRO staff will screen each request and forward it to the most appropriate consultant for handling and that consultant will contact the company requesting the service within a month.

"Japan-Canada trade has been developing for over a century, providing products and technologies of benefit to both countries," says Mr. Sasaki. "Although Canada has traditionally enjoyed a trade surplus with Japan, we understand the Canadian desire to diversify and increase its sales of manufactured and processed goods.

The Canada Sports Show held January 12-14, 1982 had 27 Canadian exhibitors — the biggest ever hosted by the Canada Trade Centre in Tokyo — and plans are already underway to make it even bigger in 1983. In the three years the CTC has operated it has helped introduce over 250 Canadian companies to Japan who have made sales over $100 million to date.

"In response to this stated Canadian goal, JETRO has launched the consultation service along with other programs" emphasizing Japan's import liberalization measures, according to Mr. Sasaki.

Mr. Sasaki adds that the various Japanese initiatives combined with heightened marketing activities from governments and the private sector in Canada should result in more successful market penetration by Canadian companies.

For added information regarding the JETRO consultation service, please contact:
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Sri Lanka Accedes to ATA Carnet Convention

Sri Lanka has acceded to the ATA Carnet Convention and the Exhibition and Fairs Convention with effect from August 1981.

The Sri Lanka National Council of the International Chamber of Commerce has also been approved by the appropriate authorities in Sri Lanka and the International Bureau of Chambers of Commerce as the guaranteeing and issuing body for ATA Carnets for Sri Lanka.

It should be noted that the ATA system has been entered into force by Sri Lanka from December 1, 1982, from which date the Sri Lanka National Council of the International Chamber of Commerce has been authorized to issue carnet certificates.

Minerals Are the Making of Western Australia

From impoverished colony to prosperous state — the economy flourished as the mining industry developed. The discovery and exploitation of Western Australia's diverse mineral wealth is traced in this article, specially prepared for Canada Commerce by Peter Jones, Minister for Resources Development, Mines and Fuel and Energy for the state.

Water, greenery and tall buildings — Western Australia's capital Perth.

Minerals have been the catalyst in Western Australia's development since early in its history, changing it from an agriculturally impoverished run-down colony to a relatively wealthy state. In just 10 years the population grew from 48,000 in 1890 to 180,000 at the turn of the century.

The beginning was in the Ajana-Northampton area north of Perth, the state capital, where lead was found by the explorer A.C. Gregory in the bed of the Murchison River in 1848, just 19 years after the colony was first founded.

But it was the discovery of gold at Halls Creek in the State's northwest in 1885 that fired people's imagination. Although short-lived, that gold rush sent prospectors searching throughout the state and led to the rich gold discoveries in the Pilbara, Murchison, and Southern Cross districts over the following five years. Then came the huge discoveries at Coolgardie and Kalgoorlie in 1892-93, the news of which spread around the world and brought a rush of immigrants from overseas and from the eastern colonies of Australia.

Gold production fell sharply from 1910 to 1930, but during the depression there was a sharp revival which actually kept Australia solvent. Gold dominated the mining industry in Western Australia for more than 70 years.

New Boom Starts in 60s

The main turning point for mining in Western Australia came in the 1960s when production rose spectacularly. The giant Pilbara iron-ore deposits began producing in 1966, and that same year the Kambalda nickel deposits and the Dongara gasfield were discovered.

The early 1970s also saw sustained growth in the production of nickel concentrates, alumina, and heavy mineral sands; the latter was the result of the commissioning of ilmenite beneficiation by an Australian-developed process.

Exploration activity was stimulated by the giant gas discoveries on the North West Shelf in 1971-72, the discovery of uranium at Yeelirrie in 1973, further discoveries of heavy mineral sands at Eneabba in the early 1970s, base-metal discoveries in the mid 1970s, diamond discoveries at Ellendale and Lake Argyle in the late 1970s and, most recently, the Blina oil find.

Primary production from mining and agriculture has long been the mainstay of the Western Australian economy, especially of its exports. In 1960, the value of agricultural production was some seven times that of mining. Today the gross value of mining has surpassed agriculture. During the 1980s, with the steep increase in mineral production, mining will further outstrip agriculture as a major contributor to the state's economy.

In making comparisons between mining and agriculture it is worth noting that the major portion of the state's agricultural produce is also directed to the export market.

Major World Supplier

A number of the products from Western Australia's mineral resources rank as major contributors to world supplies, and others show promise of becoming so. The development of these commodities is central to the economic viability and rising living standards of Western Australia.

Iron ore contributes about 25 per cent of Western world supplies, alumina 16 per cent, heavy mineral sands 20 per cent, and nickel 12 per cent. In the long term, industrial diamonds, natural gas and tantalum should become major contributors.

To place Western Australian mineral commodities in true perspective, it should be noted that production of copper, lead and zinc, which are the mainstay of the world mining industry, has not been great despite the favourable geological conditions for their occurrence.

Iron Ore

Iron ore is pre-eminent in Western Australia, contributing some 44 per cent of the value of all mineral production. This enormous contribution, which is comparable to the value of coal produced in the eastern states of Australia, is almost entirely due to the phenomenal resources of the Hamersley iron province. There are currently five working mines in the Hamersley iron province and this has required the construction of townsites, railways and ports, and has attracted a resident population of 45,000 people. Total capital investment by industry is about $500 million.

The world steel industry is presently in a recession which has had repercussions in the whole mining and mineral processing scene. United States steel mills are currently running at 50 per cent of capacity and Japanese mills at 75 per cent. Consequently, the plans for major mine development in the Hamersley iron province by 1990 will be determined by the availability of export markets.

As a result of iron ore development, Western Australia handles by far the largest amount of shipping of any Australian state and it possesses the two largest tonnage ports in the country — Dampier and Port Hedland.

Alumina

Australia has the world's largest resources of bauxite and is currently the leading producer contributing 27 per cent of the world supplies. Western Australia provides half of that production. The producing bauxite mines are located in the Darling Range and Alcoa's operations are now the biggest in the world, providing some 16 per cent of the world's alumina requirements. The total of bauxite resources in the Darling Range is at least 2,000 million tonnes; it is noteworthy that Alcoa began operations in 1963 on an established reserve of 37 million tonnes, and further that this is one of the lowest-grade bauxite reserves in the world.

Two new bauxite mines will soon be opened, one by Alcoa near Wagerup, and the other by Worsley Alumina (formerly Reynolds and Alwest) near Worsley where alumina refineries are now being constructed. Current world demand for aluminum metal is weak and prices are low. Consequently Alcoa has recently announced the mothballing of its new alumina refinery. The establishment of at least one aluminum smelter in the southwest can be expected when markets improve.

The Kimberley bauxite deposits at Michell Plateau and Cape Bougainville represent major resources by world standards. They are higher grade than those of the Darling Range but are chemically different. A further alumina refinery may be established near Geraldton, but this again is dependent on world markets.

Nickel

In 1964 Western Australia had identified virtually no reserves of nickel, but today has 2.9 million tonnes of contained nickel *metal*, with resources totalling 10.8 million tonnes. The state now ranks fourth in the world as a nickel producer. Nickel was discovered at Kambalda fortuitously at a time of rising prices, a prolonged strike at the giant INCO mine at Sudbury, and when the future trend seemed to lie with treating the costly lateritic deposits.

The immediate success of Kambalda heralded another golden age for prospectors. Following the release of aeromagnetic maps identifying the position of the ultramafic host rocks, a multitude of further small and large discoveries were made in the area between Norseman and Wiluna. Some of these ore bodies which had reserves of one to six million tonnes of ore are already depleted, leaving Nepean, Windarra, Perseverance and Kambalda as the main operating mines. With the exception of the undeveloped deposits at Forrestania, the nickel resources lie with the linear belt between Norseman and Wiluna, which constitutes one of the major nickel provinces of the world.

Gold

Gold now ranks fourth in importance, or fifth if petroleum is included. In recent years it has been as low as seventh, behind beach sands and coal.

With the recent movements in the price of gold, many old gold centres have become active again and support medium to small operations. But of the traditional goldfields Kalgoorlie and Norseman remain the main operations. Gold, more than any other metal is subject to the economic dictates of the fluid concept of reserves and the resources of the Mt Charlotte-Golden Mile can be broadly said to be in excess of 20 million tonnes at grades comparable with current mining grade (five grams per tonne).

The history of gold mining in Western Australia is characterized by re-appraisal and redevelopment of Archean deposits that have been known for at least 50 years. The new Telfer Gold Mine, which came into production in 1977, is in a completely different geological environment. This deposit in the Great Sandy Desert (which largely explains its late discovery) is now the state's biggest producer. It occurs in Proterozoic sediments and its reserves are stated at 3.83 million tonnes of 9 g/t. Western Australia mines still contribute more than 60 per cent of Australian gold production, and will surely continue to be an important part of the state for many years.

Heavy Mineral Sands

Many of the old coastal sands around Australia contain small quantities of grains of the indestructable heavy minerals — ilmenite, rutile, zircon, monazite and xenotime. In special situations these minerals became concentrated by the winnowing action of waves and then constituted ore bodies. Such concentrations exist at Capel to the south of Perth and Eneabba to its north, ranging in age from 200,000 years to quite recent, and mark ancient shorelines when the sea was at a higher level than it is today. Production started in the Capel area in 1957, and large deposits at Eneabba were brought into production in the early 1970s. Resources of 32 million tonnes of 14.4 per cent heavy minerals have been identified at Capel and 36 million tonnes at 9.3 per cent at Eneabba.

Until 1979, Australia supplied 90 per cent of world requirements of heavy mineral sands, the bulk from Western Australia. With depressed metal prices and the entry of overseas producers into the market, particularly government-backed South African producers, Western Australia no longer enjoys pre-eminence, although it is still of major significance in world markets.

Salt

Western Australia is admirably suited to produce salt from solar evaporation ponds and supplies more than 80 per cent of Australia's production. During 1960-1970 the completion of Western Australia's salt industry underwent a complete change as a result of the commissioning of large-scale evaporation ponds using sea water and lake brines. Evaporation ponds at Lake MacLeod, Port Hedland and Shark Bay together produced 3.6 million tonnes in 1981 and the cumulative production of more than 30 million tonnes.

Tin and Tantalum

Tin was discovered at Greenbushes in 1888 and shortly after around Marble Bar. Early production was from alluvial deposits in gravels and sands shed from tin-bearing granite. Open-cut mining of deeply weathered tin-bearing pegmatite began in the mid-1960s at Greenbushes which became the state's major production centre. Rising tin prices in the late 1970s, peaking in 1980, stimulated exploratory drilling at Greenbushes that outlined reserves of 7.9 million tonnes of 0.15 per cent tin.

Of greater importance, however, was the discovery at Greenbushes of a resource of 9.7 million tonnes of 0.065 tantalum, the world's biggest. This discovery was made at a time of world shortage and high demand for tantalum. Although the market is currently depressed, projections still indicate a world shortage of tantalum in 1985 at which time Greenbushes should be a major world producer.

Twin covered conveyors carry bauxite ore the Darling Range in Western Australia to an Alcoa alumina refinery.

Copper and Zinc

Small copper deposits are widespread, and those that promise production in the future are the volcanogenic copper-zinc deposits of the type found at the newly-opened mine at Teutonic Bore where the deposit is sufficient to carry a mining operation for five to seven years. The exciting Golden Grove deposit discovered near Yalgoo is one of the largest of its type in the world, containing two adjacent ore bodies totalling at least 19 million tonnes. It is, however, smaller than the world's large copper deposits such as Mount Isa. The history of Golden Grove illustrates the difficulties that explorers face with this type of ore body. Since the initial discovery in 1971, three major overseas companies have contributed risk-funds exceeding AU$9 million, involving nearly half a million metres of drilling, and yet an ore body worth about AU$1,000 million still lies in the ground. It is hoped that this deposit will be developed in the next two years; a new town, a concentrator at the site, and transport facilities to Geraldton are planned. The exploration potential for copper-zinc deposits of this type in Western Australia remains high.

Lead and Zinc

Deposits are found in Western Australia at Sorby Hills near Kununurra and at Pillara near Fitzroy Crossing where intensive ore-reserve drilling has been undertaken in the last few years. Mining conditions at Sorby Hills are difficult and it cannot be said with any certainty when either of these deposits will be exploited.

Evaluation work continues on a section of the diamond-bearing kimberlite pipe in the far north of Western Australia.

Diamonds

Alluvial diamonds were first discovered at Nullagine in 1895, but modern exploration did not begin until the mid-1960s when it was concentrated around the Ellendale area where lamproite (rock genetically related to kimberlite) was known. In the following decade systematic but unsuccessful stream-sediment sampling was conducted over virtually the whole of the state. The discovery of diamond-bearing kimberlite by the Ashton Joint Venture at Ellendale in 1978 again focused attention on the Kimberley region. This led to the discovery of diamond-bearing gravels near Lake Argyle in 1979 and the nearby AK-1 kimberlite pipe the following year. Mining is due to get under way on the Smoke Creek alluvials which represent a resource of four million carats. Further alluvial deposits have been discovered in Limestone Creek which drains away from the AK-1 pipe.

AK-1 is a large and rich diamond resource by world standards, although present indications are that as much as 90 per cent is industrial quality. Current predictions are that AK-1 will contribute up to half the world's requirements of industrial diamond. Total reserve figures have not been announced, but recent bulk tests recovered 56,890 carats from 9,255 tonnes of kimberlite — an incredible 614 carats per 100 tonnes. Average South African kimberlite recovery grade is about 28 carats per 100 tonnes.

Uranium

Dissolved uranium occurs in the Northeastern Goldfield where it has precipitated out in certain places to form ore bodies, such as at Yeelirrie and Lake Way. Both are small in comparison with the Alligator River deposits in the Northern Territory, but are nevertheless scheduled for development in the near future. A pilot plant for the Yeelirrie deposit has been built in Kalgoorlie as a forerunner to commercial extraction of yellowcake at the mine site. Up to $400 million will be invested in this project.

A different type of deposit occurs at Manyingee in the lower part of the Ashburton Valley. Resembling the major uranium ore bodies of the United States, it has no surface expression. The chances of further discoveries are good. Ore occurs below the groundwater table and presents formidable mining problems.

Leader in Value and Exports

The value of Western Australia's mineral production for 1981 was $2,692 million, 38 per cent of the gross value of commodities, well exceeding that of agriculture. Manufacturing, which includes mineral processing, amounts to 28.4 per cent, and total non-mining primary production is 33.6 per cent.

The real value of the mining industry is its exports which provide 57 per cent of the state's total exports. Another primary industry accounts for 38 per cent and manufacturing for five per cent.

WESTERN AUSTRALIAN MINERAL PRODUCTION AND VALUE, 1981

Western Australian Mineral Production and Value, 1981

Mineral	Quantity	Unit of Quantity	Value $ Million
Iron ore	75 302 640	tonnes	1,129.63
Alumina	3 678 480	tonnes	1,109.90
Petroleum-oil	1 439 274	kilolitres	307.54
	831 929	$m^3 10^3$	
Nickel (conc)	405 946	tonnes	306.48
Gold	12 046	kg	153.31
Heavy minerals	1 277 745	tonnes	72.29
Coal	3 252 403	tonnes	68.25
Salt	3 624 031	tonnes	39.07
Tantalite	83 742	Ta_2O_5 kg	13.18
Tin	673	tonnes	10.26
Cobalt	608	tonnes	7.69
Copper	3 641	tonnes	4.39
Silver	10 627	kg	3.82
Zinc	3 613	tonnes	2.90
Platinoids	466	kg	2.12
Limestone	637 350	tonnes	2.03
Gypsum	345 836	tonnes	1.44
Barytes	3 678 482	tonnes	1.11
Others			0.58
Total			**2,692.15**

Continuing its series of articles for Canada Commerce on "Preparing for Recovery", the Federal Business Development Bank (FBDB) describes its Counselling Assistance for Small Enterprises (CASE) program and how it can be best used.

CASE Counselling for the Recovery

All indications point to the resumption of real growth in the economy this year. The benefits of growth, however, do not flow either uniformly or automatically. They must be actively pursued to be fully realized. That means, for small and medium businesses in particular, a change in course from management for survival to management for recovery.

Such a pronounced change in direction is not easily made. The habits of cautious budgeting and other aspects of management for survival are not quickly put aside. Nor should they be. But if a small business is to fully benefit from economic renewal, if it is to increase in size and profitability, now is the time to start. To wait until recovery is fully underway is to risk losing market advantage to more enterprising competitors.

Most small business managers have at least a general idea of where to look for new growth. They are not always sure, however, of the proper steps to achieve that growth with the least risk. A decision to relocate a business, or to take on new lines or to add to staff isn't lightly made, not when tight operating margins leave so little room for error.

The small or medium business manager looking for growth but uncertain as to the best way to obtain it should seek outside advice. His or her banker can be helpful. So can trade or business organizations, customers and suppliers. And, of course, so can the Federal Business Development Bank (FBDB).

The Bank offers a broad range of management services to small and medium businesses, a key element of which is its business management counselling program known as CASE. The Bank has enlisted as counsellors some 1,600 retired business people who have been selected for their experience in and mastery of management disciplines. The services of CASE counsellors are available, for a modest fee, anywhere in Canada.

What, precisely, does the CASE program offer the small and medium business manager? Basically it is a means of remedying specific managerial weaknesses. Here is an example of the way it works.

A small manufacturer has the opportunity to obtain additional production equipment at a bargain price. Skilled operators can be found to run it. But buying the equipment and hiring the operators will double plant capacity. Will it be possible to sell that additional output? The manufacturer thinks so but isn't sure.

The small manufacturer is an efficient production manager. The problem being faced now, however, is a marketing one. The potential market has to be re-surveyed and sales projections have to be revised. The price list has to be reworked, displays have to be redesigned, and new means of distributing the products have to be found. These are all aspects of the marketing function and a highly specialized aspect of management.

CASE counselling makes the experience of retired business people available to small businesses.

The object of CASE counselling in this instance is not the overnight conversion of the efficient production manager into an equally efficient marketing manager. That will come in time. The object, rather, is to provide advice and direction in an area of management in which the manager's own experience and skills are wanting.

The motivation for expansion, in this instance, came with the unexpected availability of production equipment at a bargain price. Let's turn it about. Let's assume the small manufacturer is more efficient at marketing than production and that, as the economy begins to recover, sales begin to increase.

Now here is a situation where the increase in sales will begin to put a strain on production facilities. Should the manager look about for more production equipment and the people to operate it? If this is done, additional costs will have been incurred which rising sales might not justify. What then?

A CASE counsellor, in this instance, would look at the plant to see whether new ways can be found to increase its efficiency. Or look at pay scales and related employee payments. The plant might be more productive if employees were offered bonuses. There are numerous possibilities here, all directed towards achieving maximum efficiency from the existing plant before undertaking costly new additions.

In this instance, CASE counselling is remedying a weakness in production management as in the earlier instance it was remedying a weakness in marketing management.

The CASE program, in other words, is a support system for small and medium businesses. It is a resource upon which managers can draw when confronted with problems for which they are not equipped to solve on their own. It is a resource which should be very much in demand now as the economy moves into its recovery phase with all that this implies of new opportunities for growth and diversity.

Counselling can give new insight into increased efficiency and productivity.

The procedure for obtaining CASE counselling is a simple one. Any type of business employing up to 75 can apply for it. Applications are made through the FBDB or the nearest CASE office. A CASE co-ordinator reviews the application and then assigns a counsellor with experience in the applicant's problem. Applicants, of course, should discuss their plans first with their usual advisors.

Counsellors work directly with the applicants, submitting their findings in the form of confidential reports. When, as sometimes happens, questions arise which are unique to the business, the counsellor in turn is able to draw on the experience of other counsellors in finding the right answers.

Every aspect of management is represented among the counsellors enlisted in the CASE program. This advantage is particularly pronounced when application is made for counselling by an entrepreneur who is planning a new business or a spin-off of an existing one. Some 20 per cent of 12,000-odd counselling assignments done annually are related to start-ups. Two other areas in which CASE counselling is particularly in demand are financing and employee motivation.

The CASE program is designed to continuously enhance the management capability of small and medium businesses. As such it is a readily available tool for the new growth to which the business community can now look with increasing confidence.

Economists' Corner

Interest Rates and Economic Revival

Five years ago, in the fall of 1978, a wide range of interest rates in Canada and the United States rose above 10 per cent. Double-digit levels had occurred before, in conventional mortgages for instance, but the extent of the rise, its dispersion and the duration of the trend were unprecedented. Rates reached their crest in August 1981, when the Bank Rate (tied to the weekly Treasury Bill auctions) rose to 21¼ per cent and the chartered banks charged 22¾ per cent on prime business loans.

Since then, these huge waves on financial markets have subsided, but only recently have the shores of single-digit rates come within sight again.

Both the height and the volatility of interest rates have greatly affected what is sometimes called "the real world", meaning the non-financial or goods-producing and distributing sectors of the economy. Some of these sectors are particularly interest-sensitive in their operations or capital investments. Traditional examples are housing and related manufacturing, small businesses (including those in tourism) and regional development, but recent experience has shown that high interest rates can also hurt debt-financed capital projects of large corporations and even at some point endanger the solvency of sovereign risks, if an emergency is not dealt with promptly.

The old bromide of economic textbooks that large borrowers benefit from a stiff dose of inflation has in several cases proved to be bitter medicine. Instead of being able to pay back with money of lesser value (a situation of savers subsidizing borrowers), some prominent debtors have had difficulty in meeting their obligations.

Let us explore some of these interest-sensitive areas, starting with housing. For most of the 1970s, annual housing starts ranged from about 200,000 units to nearly 275,000 in 1976, a new record. There may have been an oversupply and some builders went out of business. Over this period, conventional mortgage rates were usually in the 10 to 12 per cent range. Even when rates went up towards the end of the decade, many prospective homeowners continued buying, as they expected rising incomes to lighten their mortgage payments and anticipated ultimate capital gains through home ownership. Like many other groups in society, homeowners had come to consider continuing inflation as inevitable and homeownership a favourite hedge.

When mortgage rates rose above 15 per cent in 1980 and well over 20 per cent in 1981, consumers found themselves suddenly "mortgage poor". The extreme volatility of rates and terms also created confusion. People no longer knew where they stood, as some lending institutions changed rates and other conditions 10 or 20 times during 1981, to conform to their own access to and cost of funds. This trend aggravated the effect of worsening economic conditions and caused housing starts to drop from almost 180,000 in 1981 to just over 125,000 in 1982.

The decline inevitably affected the supplier industries, especially lumber, plywood and waferboard. The lumber industry, industry officials estimate, operates at about 20 per cent below normal, and plywood shipments are down substantially more.

As regards the outlook, some improvement is expected this year, with housing starts now estimated to reach some 175,000 this year, according to a recent Conference Board estimate. Housing is also likely to improve in the United States, which will boost our lumber exports. Residential construction is significant for employment, too, and this should help consumer goods industries generally.

As interest rates fall, housing starts are predicted to show increase.

With increased house construction, lumber industry should improve.

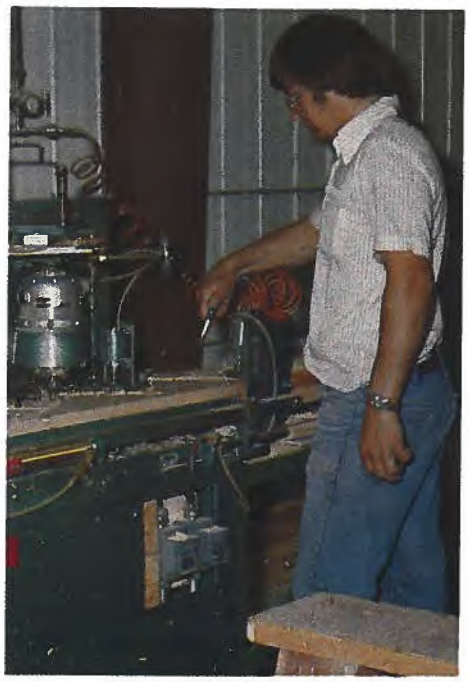
Small businesses are another area typically affected by high interest rates, for the simple reason that they often start out with little equity. The owner, his relatives or friends often supply nearly all of the initial financing — a slender cushion against any mishaps in the risky early years.

An Economic Council study ("Intervention and Efficiency") has established that the high risk of losses in small firms with assets of $250,000 or less is counterbalanced by a slightly higher (30 per cent) chance of doing very well — the lure attracting the enterprising individual. With high dependence on funds borrowed from banks or other financial intermediaries and often unable to offer substantial collateral, the small entrepreneur is, however, liable to run into problems when the cost of financing current operations or expansion rises unexpectedly.

The effect of high interest on regional development is more complex, partly because being a region by itself is not a problem — all parts of Canada are regions, after all. Canadians from coast to coast have access to the services of chartered banks. They can earn interest from deposits at the same rates as people in Toronto or Montreal. If they wish to borrow, the same principles of approval apply. If one bank manager does not satisfy them, there is usually another bank in the vicinity or credit can be obtained elsewhere (credit unions, sales finance companies). Small businessmen can turn to the Federal Business Development Bank (FBDB) when commercial credit is not available on reasonable terms and conditions for projects of promise.

Admittedly, high interest rates will tend to reduce the number of creditworthy projects anywhere. This may indirectly affect regions with economic disadvantages, such as depletion of natural resources, distance from industrial or consumer markets, transportation costs, lack of skilled labour or managerial competence. In this way, rising interest rates may for a time become an additional aggravation, but the roots of the problems are more permanent and elsewhere.

The establishment of the new Department of Regional and Industrial Expansion is evidence of recognition by the federal government that regional problems cannot be solved in isolation. They have to be integrated with other government policies, including industrial expansion. It will require some readjustment of the new partners, as regional development programs have tended to be regional and employment-oriented, while the old Department of Industry, Trade and Commerce (IT&C) tended to focus on manufacturing and trade.



Millwork turns out quality products for construction industry.

High technology, such as computer assisted design (CAD), a steady winner.

The current priorities of the new department include higher productivity and innovation, forceful marketing efforts at home and abroad, industrial adjustment where required, small business viability and aid for industrial projects of particular interest to specific industries or regions.

It is obvious that progress toward these objectives would benefit from a continuing decline in interest rates. This depends on progress on the inflation front. Here again, monetary policy cannot do this job alone. It needs to be complemented by inflation-reducing attitudes and practices of various branches and levels of government, of business, of labor unions and of consumers and the public at large. Fortunately, there is some evidence, both here and abroad, that this is happening.

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Market Research Handbook 1982 (Revised Edition) Now Available

Statistics Canada has recently published the 1982 version of its highly successful **Market Research Handbook**. The 882-page Handbook provides the most comprehensive array of Canadian marketing information available in a single volume.

Containing more than 300 tables and charts, the Handbook can be used for analysis of markets of all sizes ranging from local or regional in scope to national. It brings together a wide selection of the data most needed by market specialists for sound decision-making.

In order that trends can be identified, the publication includes data for previous years tabulated with the most recent statistics. Where possible, projections of population, family and household growth and international comparisons are included. A new feature in this edition is a data series of particular interest to local market analysts, supported by graphics to highlight significant developments in the marketplace.

Priced at $30 a copy in Canada ($36 elsewhere), the **Market Research Handbook** (Catalogue #63-224) can be ordered from any of Statistics Canada's regional reference centres or from Publication Sales and Services, Statistics Canada, Ottawa, Ontario K1A 0V7. For further information, contact Maurice Massaad, Tel: (613) 995-4198, Merchandising and Services Division, Statistics Canada, Ottawa, Ontario K1A 9Z9.

Trade Accreditation for Bangladesh

As of January 18, a Canadian trade office in Dhaka, Bangladesh, has been officially granted accreditation to handle all trade and industrial development matters for Bangladesh.

Interested Canadian companies may now contact the office in Dhaka directly regarding projects in Bangladesh. Previously, contact had to be made through the Canadian trade office in Bangkok, Thailand.

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The Hon. Ed Lumley, Minister of Industry, Trade and Commerce and Regional Economic Expansion at the opening of INNOVATION 83

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