



CANADA

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CANADA'S NATURAL WEALTH IN A CHANGING WORLD

The following is part of a recent address by Mr. Robert H. Winters, Minister of Trade and Commerce, to the annual meeting of the Association of Professional Engineers of the Province of Ontario in Ottawa:

...The undertaking of gigantic projects has been a hallmark of Canada's economic progress. Confederation was confirmed as the railroads spanned the continent, penetrating through the Rockies, crossing the Laurentian Shield and stimulating growth and development along the way. Iron-ore bodies were developed to provide iron for rails and rolling stock. Non-ferrous metals were discovered at Sudbury and Trail. Lumber mills moved north from the St. Lawrence along the rails and later were joined by large newsprint mills. New metal finds included the rich gold mines of Timmins and Kirkland Lake, and the mixed metals of Rouyn-Noranda and Flin Flon. The water of the scenic Niagara cataract was converted to power as electricity became a new basis for industry. Meanwhile, the abundant forests of the Pacific Coast began to supply logs to lumber-mills which sprang up to process them. Gold in the Cariboo and in the Yukon brought adventurous men to these new frontiers. Later, Alberta's Turner Valley laid the foundation for future oil and gas development.

MORE RECENT DEVELOPMENTS

If these events seem too historic for some, I can move quickly to more recent names on the honour list. The discovery of oil at Leduc was followed by Redwater, Pembina and the Peace River fields. Uranium developments at Elliot Lake, Beaverlodge

and Bancroft were another turning point in Canada's energy evolution. Steep Rock preceded Knob Lake in a series of iron-ore projects. Lynn Lake, Manitouwadge, Gaspé, Thompson, Mattagami, Chibougamau, Bathurst, Craigmont and Bethlehem are names that ring bells for base metals. Kitimat brought aluminum to the Pacific and Baie Comeau was added to eastern output. Among other minerals were Cassiar and Advocate in asbestos, and Jefferson Lake in sulphur recovery from gas.

Big new pulp-mills have arisen at Prince Rupert, Castlegar and Hinton in the West, and on Canso Strait and at Rothesay in the Maritimes, and many places between. Hydro projects in recent decades have ranged from Shipshaw and Bersimis through Seaway Power to Kemano on the Pacific. And the scope of recent transportation undertakings will stand high in our history: the St. Lawrence Seaway; the Trans-Canada Highway; the Canso Causeway; oil and gas pipelines to the Pacific and to the East; railways to Pine Point, Chibougamau, and Quebec Labrador.

WIDESPREAD ENERGY EXPLOITATION

And now the pace has quickened again. Deep potash mines multiply in Saskatchewan, thanks to the triumph of engineers over shaft-sinking problems. The wide forests of British Columbia now shelter and feed a dozen big new pulp-mills. Tremendous hydro systems are being created on the Columbia and Peace Rivers in British Columbia, on the Nelson in Manitoba, on the Manicouagan in Quebec, at Mactaquac on the St. John, and at Baie d'Espoir in Newfoundland.

Development of Labrador's great Churchill Falls is within sight. These are only some of the pace-makers in a widespread and varied development of Canadian resources and energy. The world knows what we have done and are doing. I wish more Canadians were aware and shared my pride in what is being accomplished.

These developments represent sound and successful investment by private and public contribution to the Canadian economy. The resource industries, along with their related processing facilities, provide nearly 15 per cent of our total national product and about a quarter of the output of goods - this without counting agriculture and fishing, two of our great basic industries. The influence of resources and energy is even more prominent in our exports.

INVESTMENT IN NEW RESOURCES

Sales of wheat and secondary products have been breaking records in recent years, and this is very welcome. But it should be remembered that 55 per cent of all merchandise exports continue to be derived from products based on our forest, mineral and water resources. Their importance in the near future is indicated by the \$2.5-billion investment in new resource facilities in 1965. This is a third of all business-capital outlays and a half of all investment in commodity industries. It is little wonder that international corporations are sharing in this huge constructive effort. Its magnitude indicates why foreign capital is needed while this sector illustrates, at the same time, how well outside capital can be obtained, and combined with Canadian, without surrendering ownership and enterprise.

The role of resources and energy in our economy is further enhanced by the growing diversity of products and the evolution and impact of the resource-based industries. Every year, a new commodity joins the array or an old staple takes on a substantially new form, location or market. In some quarters there has been undue concern about the risks in resource development, the vulnerability of commodity markets. They point to the dilemmas of many developing or partially developed countries, dependent on one, two or possibly a half dozen basic commodities. Everyone involved in resource projects is aware of the risks - natural, technical and commercial - which must be taken in individual enterprises. But the Canadian economy, and nowadays most corporations, are not dependent on one or two commodities. Canada produces and exports on a major scale a score of materials, apart from our valuable agricultural and fishery products. Indeed it might be simpler to say we are producing, or will soon develop, all commodities except those of the tropics.

BALANCED GROWTH

There is more to this than spreading the risk. This diversity of output permits a balanced growth - a flexible use of raw materials, whether wood, minerals or water, and a steady effective deployment of manpower and capital. When we look over longer periods, we see how the development of one commodity leads

to another, at Trail from silver to lead and zinc to fertilizers and steel, at Sudbury from copper to nickel, then gold and the platinum metals, cobalt, iron and sulphur - from lumber to newsprint to kraft pulp and plywood in many forest areas, from oil to gas to sulphur and petrochemicals in the West. Railways built to minerals have encouraged forest production; pulp-mills or metal refineries have stimulated the development of power, which, in turn, has facilitated new developments. Established operations are the base for further prospecting and often discovery, as witnessed in the big Timmins copper find. In short, the diversity and the mutuality of Canadian resource development has smoothed out the short-term disturbances and provided a powerful momentum for long-term growth.

ROLE OF TRANSPORTATION

Resources and energy have not only played a decisive role as a distinct group of industries but their development has also stimulated and strengthened other major sectors of the economy. Transportation has already been mentioned, since it is inextricably involved in the development and distribution of our resources. The waterways from the voyageur's canoe and the squared-timber raft to the St. Lawrence Seaway, the railways from the first eastern lumber tracks to the Pine Point and Quebec-Labrador ore lines, the bush pilots serving prospectors, the mine and forest access roads, the oil and gas pipe-lines, the widening electric transmission grids - these are the vital links between resource areas and transport commodities to market centres.

PACE OF RESOURCE DEVELOPMENT

For many engineers, "resources" are synonymous with engineering construction. Indeed, the construction industry in Canada is heavily committed to the creation and installation of the large complex systems which nowadays extract, process and distribute resource materials and energy. Canadian contractors have also been busy building houses, manufacturing plants, commercial and social facilities, all of which are needed in increasing volume. But it is the pace of resource development which, to an important degree, sets the tone of the construction sector. Further, it is in resource specialities such as hydro-plants, pulp-mills and mineral operations that Canadian contractors and consultants have made their biggest impact abroad. I wish to commend the large number of consulting engineers who are carrying the Canadian flag and Canadian engineering skills to the nations of the world.

In the secondary manufacturing industries, the reflection of the natural-resource profile can also be seen. This is particularly true of the development of Canada's capital-goods industry, which now produces well over \$1-billion worth annually, not including transportation equipment. It is estimated that about half of this output of capital goods results from the stimulus given by primary-industry demands. Outstanding examples are power-generating equipment, with output valued at \$80 million in 1962, and machinery for the forest-based industries, and for mining, each valued in excess of \$50 million in

ARMED FORCES RE-ENLISTMENT BONUSES

The following statement was issued recently by Mr. Paul Hellyer and Mr. Leo Cadieux, Minister and Associate Minister of National Defence:

Approval has been given for the payment of re-engagement bonuses to non-commissioned officers and men in the armed forces. For a five-year re-engagement this will mean a bonus of \$1,000.

Effective February 1, 1966, all serving men and women of the Canadian forces (regular), will receive a re-engagement bonus of \$200 a year for each year for which they re-engage.

The re-engagement bonus applies whenever men re-engage. Thus, when a man now in his first engagement elects to sign for a second, he receives a bonus of \$200 for each year for which he re-engages. If the re-engagement period is five years, he will receive \$1,000 and this will be payable at the time of re-engagement.

In the interest of equity, all men and women of the regular forces now serving re-engagements will be paid the re-engagement bonus pro-rated according to the balance of their engagement. For example, a man who re-engaged on February 1, 1965, and still has four years to serve in his engagement, will receive an \$800 bonus. For part-years the bonus will

STRATFORD FESTIVAL 1966

The varied activities of resident musicians ensure that members of the National Festival Orchestra will play a larger part in planning the programmes for the 15 concerts scheduled for the 1966 season at Stratford, the Festival Director of Music, Oscar Shumsky, said recently.

A number of outstanding guest artists have been engaged for concerts to be held in the Festival Theatre on eight Sunday afternoons, from July 10 to August 28, which will emphasize the full orchestral and chamber music combinations.

The success of last season's jazz programmes has led to the engagement this summer of two major jazz groups of contrasting styles, the Duke Ellington Orchestra and the George Shearing Quintet, which will perform on Friday and Sunday afternoons of the August 5-7 weekend.

GUEST ARTISTS

The following artists will appear, mainly with the National Festival Orchestra: Leon Fleisher, and José Iturbi, pianists; Phyllis Curtin, soprano, who will perform with pianist-conductor, Mario Bernardi; Leonard Rose, cellist; and Jean-Pierre Rampal, flutist.

The Festival singers of Toronto, with Elmer Iseler conducting, will compare the choral styles of Bach and Stravinsky. The National Youth Orchestra of Canada, under its conductor Walter Susskind, with soprano Mary Simmons, will appear before their

be pro-rated at one-twelfth of \$200 for each month of eligible service.

COSTS TO BE OFFSET

It is estimated that the cost of the re-engagement bonus will be largely offset by savings in training costs accruing from a reduction in the turnover in service manpower.

A further important benefit to the forces and to the nation will be the increase in efficiency and effectiveness resulting from the retention in the services of a higher proportion of skilled, experienced men.

It is estimated that the re-engagement bonus will cost approximately \$27,600,000 in the present fiscal year, and will cost approximately \$19,400,000 in 1966 to 1967.

The normal cyclical pay review for all members of the forces will take place October 1, 1966, and, in accordance with the recently adopted policy in the public service, interim increases will be granted on that date pending a decision on the final increases.

Re-engagement incentives have been introduced in the armed forces in Britain and the United States in recent years and have met with considerable success.

European tour. Their performance of the orchestral version of Berg's seldom-heard *Der Wein* will be one of two performances of this work to be given by the Orchestra. The other is scheduled for the appearance of the National Youth Orchestra at the Edinburgh Festival.

FISHERIES TRADE MISSION

A Canadian fisheries reconnaissance mission left Vancouver, British Columbia, recently to study markets for Canadian fisheries products in New Zealand and Australia. The seven-man group comprises representatives of the fisheries trade in Nova Scotia, New Brunswick and British Columbia, as well as officials from the New Brunswick Department of Fisheries, the federal Department of Fisheries and the federal Department of Trade and Commerce, which is sponsoring the mission.

New Zealand and Australia are traditional customers for Canadian canned salmon and sardines. During the past year Australia has shown interest in importing Canadian frozen fish also.

In carrying out a detailed examination of the market potential, the mission will visit leading importers and discuss fisheries developments with government officials connected with the industry in New Zealand and Australia. It will also visit fish plants to study at first hand the processing methods

in use. It will take every opportunity to stress to importers Canada's reputation as a dependable source of top-quality fisheries products.

On its return to Canada, the mission will prepare a report on its observations, which will be published by the Department of Trade and Commerce and made available to the Canadian fisheries industry.

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NATIONAL SKI WEEK

Canadians were recently invited by the Minister of National Health and Welfare, Mr. Allan J. MacEachen, to observe the third week of February as National Ski Week. In making the declaration, the Minister cited his own interest and his Department's support of skiing through the Fitness and Amateur Sport Directorate. "In a country such as ours, much of which is covered with snow for at least a third of the year, it is only natural that a sport such as skiing should flourish," he said. "We have the natural terrain for any and every type of skiing."

Mr. MacEachen observed that his Department recognized the value of skiing, and was at present producing an instructional book on the sport. A compendious "How-To" kit on skiing, he added, encompassing promotional and instructional films, had already been issued. The comprehensive manual would soon be available in English and French. Through grants under the Fitness and Amateur Sport Act, the Minister said, his Department had supported the Canadian Amateur Ski Association in its efforts to develop "a broad-based pyramid of amateur and expert skiers".

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PROTECTION OF SEAL HERDS

Expressions of international goodwill and a determination to conserve and rationally "harvest" a valuable marine resource keynoted the recent opening session of the North Pacific Fur Seal Commission's ninth annual meeting in Ottawa.

Mr. H.J. Robichaud, Minister of Fisheries, observed that the Commission had done an excellent job of protecting the fur-seal herds. "Sensible harvesting practices have been established in place of the reckless exploitation of earlier years", he said.

The four member nations — Canada, Japan, the U.S.A. and the U.S.S.R. — have co-operated on conservation measures affecting fur seals for many years. These measures are now embodied in an Interim Convention signed by the participating nations in 1957.

Opening the session, the Commission Chairman, Dr. S.G. Fedorov of the U.S.S.R., said that the Commission was distinguished by a spirit of close co-operation and mutual understanding. Dr. Fedorov mentioned new investigations undertaken by the Commission on the quality of seal-skins, and said that the meeting should decide on further efforts to be made in this field.

DIPLOMATIC APPOINTMENTS

The Secretary of State for External Affairs announced on February 24 the following diplomatic appointments: Mr. Albert Edgar Ritchie, at present Deputy Under-Secretary of State for External Affairs, as Ambassador to the United States of America; Mr. Charles S.A. Ritchie, at present Ambassador in Washington, as Permanent Representative and Ambassador to the North Atlantic Council, Paris; Mr. George Ignatieff, at present Permanent Representative to the North Atlantic Council, as Permanent Representative and Ambassador to the United Nations, New York.

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MET. POSTS MONITOR SATELLITES

Mr. J.W. Pickersgill, Minister of Transport, recently announced that Canada's weather service had set up test stations at Toronto International Airport and in Halifax, Nova Scotia, to receive information and pictures from orbiting United States weather satellites. The operation of these stations will help establish how many will be required.

The automatic picture-transmission receiving stations are equipped to receive signals from a series of *Tiros* operational satellites that the United States Environmental Science Services Administration plans to place in orbit.

The first satellite in the series was recently launched in to a polar orbit at a height of about 750 miles, circling the earth once every two hours. The satellites will take pictures by means of television-type cameras every six minutes or so. These pictures will cover an area about 1,500 miles wide; each time the satellite is within 1,000 miles of the Canadian stations, a series of pictures will be received.

MANY USES

The pictures, which will be used by the Canadian weather service to show clouds over a large part of North America and the Atlantic Ocean, will supplement the weather-observation network and will be particularly valuable where gaps occur in the existing networks, such as those in the Canadian North and over the Atlantic. In addition, they will provide a bird's-eye view that is difficult to obtain from a large number of separate reports. The photographs will also indicate the location of ice, information of vital importance to Arctic shipping. They can reveal large-scale geological formations otherwise difficult to detect. In addition, they may be useful in forestry, agriculture and oceanography. All these potentials will be examined to make maximum use of this new tool of the space age.

The Canadian stations are of an advanced design, manufactured by a Canadian firm with the assistance of experiments which are the continuing work of the National Research Council. The studies in the design and use of this equipment are expected to keep Canada in the forefront in the application of weather information from satellites.

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NEW PARKS FOR NEWFOUNDLAND

Newfoundland is to have 12 more provincial parks, under the federal Agricultural Rehabilitation and Development Act programme. Federal Forestry Minister Maurice Sauvé, and Premier J.R. Smallwood of Newfoundland, in the capacity of provincial Economic Development Minister, have announced that the cost of this undertaking, approximately \$312,000, is to be shared equally by the two governments.

FACILITIES

The parks, which will be located in various sections of the province, will be created over the next two years by the Parks Division of the Newfoundland Department of Mines, Agriculture and Resources. Each will have 25 camping areas, 25 picnic areas, and swimming facilities, together with such associated roads, trails, clearings and bridges as are needed.

With the completion of the Trans-Canada Highway in Newfoundland late last year and the province's current promotional campaign to increase its tourist trade, the need has become evident for more wilderness parks.

Besides providing facilities for tourists and the Newfoundland travelling public, the ARDA park network will create employment opportunities during the construction stage and permanent seasonal employment afterwards for operating staff.

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that year. A parallel situation exists in the output of agricultural implements valued at over \$100 million annually.

In some cases, the volume and skill derived from equipping resource industries in Canada has enabled firms to compete in the export market. About one-third of logging, sawmill and pulp machinery is currently being exported, and a large volume of basic mining equipment is also sold abroad.

OTHER INITIATING FACTORS

There are other sectors of manufacturing where the products or by-products of resources have been the initiating factors. Many of these are found among the chemicals — petrochemicals, fertilizers, synthetic rubber, to mention a few. Generally speaking, in most of our manufacturing processes the availability of good materials and energy at reasonable cost is, or can be, a key advantage.

And it must not be overlooked that a large part of Canada's financial, management, planning, research and commercial services are geared to the development and distribution of resources and energy. These services have attracted a substantial foreign partici-

pation and, at the same time, Canadian skills and knowledge are being used abroad....A great share of the participation has come from metal, mineral, fuel and other resource-based enterprises.

Some have expressed concern over the large share of primary products in our export sales. They point to the rapid rise in world trade in end-products, the increasing sophistication of industrial production and of consumer requirements in the modern world. These trends are true, and we hope that Canadian secondary industry will continue to gain an increasing share of world markets. The fact that world trade in manufactured goods has been rising faster than trade in basic materials in no way, however, diminishes the importance of sales of such materials and resource-based products. Quite the contrary; Canada needs the best possible export performance from all sections of our economy, and we must continue to work for the best possible access to foreign markets so that the scope for export expansion can be enlarged.

This is why we attach such great importance to the "Kennedy round" of tariff negotiations at Geneva. From these negotiations, and in other ways, we are striving to open up the channels of trade, to the benefit of our trading partners and to ourselves. To take advantage of the new opportunities, we must ensure that our efficiency and productivity, whether in resource production or in manufacturing, are right up to the mark, or ahead of it, if we are to hold our own in the tough world of international competition and if our investment is to yield an acceptable profit return.

A UNIVERSAL TREND

Two aspects of modern trends in international demand for resource commodities are of special interest to Canadian engineers. Many of us are aware of the rapid technological change in material specifications and also in the techniques of processing and distributing materials. These are not isolated or limited occurrences but a universal trend. Bleached kraft pulps, iron-ore pellets, and the various non-ferrous metals and hydrocarbons are highly-processed products, often tailored to individual customers' needs. They come from complicated, expensive plants, with many inputs and many products and by-products. Distribution systems have shared this trend as evidenced by the spreading oil and gas pipe-lines and the technical advances in extra-high voltage power transmission. Specialized rail equipment and unitized trains are parallel developments often geared to the flow of resources. Pipe-lines for pulp chips and potash slurry are also under study. This picture differs greatly from the uniformed and erroneous view that sees the resource section as being engaged in the simple task of extracting our national wealth at minimal expenditure by unskilled labour.

Allied with the growing sophistication of international demands is the increasing awareness of comparative cost. Nations cannot stay competitive in secondary products if they pay high prices for major material and energy requirements. Certainly, there is a reluctance in some foreign quarters to abandon traditional ties and practices. But the

brisk winds of competitive pricing are at play in commodity markets, and resistance to competitive pricing is declining. Canada, as an economic and efficient producer, should benefit from these trends.

On both counts (increasing sophistication of products and competitive costs), Canadian resource industries appear to be in a favourable position. Canada's share of the steadily growing world trade in many materials may increase substantially. So the opportunities for Canadian growth through development of resources are not limited by any arbitrary ceiling. An important illustration of this has been in our exports to the United States. In recent decades, other sectors of American demand have grown faster but the share of American commodity requirements met from Canadian sources has multiplied rapidly. As resources elsewhere are pushed to depletion or beyond their economic limit, opportunities for Canadian suppliers will continue to grow much faster than overall usage.

OPTIMUM USE OF RESOURCES

We have gained a key position as a supplier of industrial materials and energy to Canadian industry and to world markets. If we are to maintain this central role in the future, we must practise conservation of our natural resources in the best sense of the word. We must aim at the optimum utilization of these resources, the highest degree of processing and manufacturing consistent with international competition, always measured by the total benefit to the people of Canada.

Canada's productive potential is expanding across a wide array of resources. But no demand is more pressing than that of energy. Moreover, as world demand for energy mushrooms, requirements for nuclear power multiply. After the dark period of decline, uranium is facing a bright future of domestic and international need for nuclear fuel. In this field we must have regard to our international obligations concerning the use of nuclear materials, but the demand for this source of energy for peaceful purposes is potentially great and, if we can be assured of adequate safeguards by user countries, Canada is in a position to enjoy increasing sales of uranium before too long. In addition, Canada's leadership in nuclear-reactor development is the basis of foreign sales of nuclear equipment and of future demand for heavy water.

WATER POWER POTENTIAL

Big hydro-projects have always held the attention of engineer and layman alike. But, spurred by new techniques of construction, generation and transmission and with the new national power policy, hydro development has entered a new era. This policy was stated in October 1963, indicating the priority placed on it by the Government. It encompasses a flexible export policy which permits the transmission of large blocks of power to the United States under suitable conditions, which ensure that exports are surplus in relation to Canadian requirements. This permits the development of the tremendous potential of the Columbia, the Peace, the Nelson, the Manicouagan, and Churchill Falls, which for some time to come, will together exceed Canada's needs.

At other times, I have spoken of the plan for harnessing the 6 million horsepower of the Churchill Falls on the Churchill River in Labrador. If my responsibilities have changed since then, my appreciation of the engineering and market potential have not. The engineering advances that make it possible to contemplate this enormous project make a great story in themselves. Each generator will produce 600,000 h.p. and the power will be transmitted at very high voltage and over long distances. The financing also is a fascinating story and I trust that it will have a happy ending.

In closing, let me re-emphasize that the Government is keenly aware of our heritage of resources - water, minerals, land and forests. None will be given away or wasted. The aim of Government programmes will be the optimum usage of resources here and through trade to provide the best return for all Canadians in the present and the future....

NEW SENATORS

The Prime Minister announced recently that the following prominent Canadians had been summoned to the Senate of Canada: Mr. Jean-Paul Deschatelets, Mr. Harry Hays, Mr. Hazen Argue, Mr. Keith Davey, Mr. Earl Hastings, Dr. Norman A. MacKenzie, Q.C., Mr. Charles McElman, Mr. John Nichol, Mr. J. Harper Prowse, Mr. Earl Urquhart, Q.C.