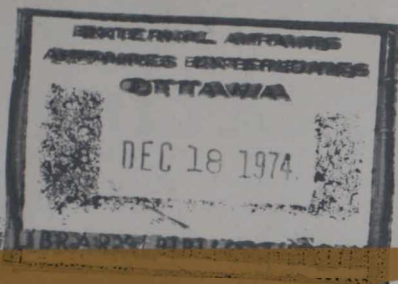
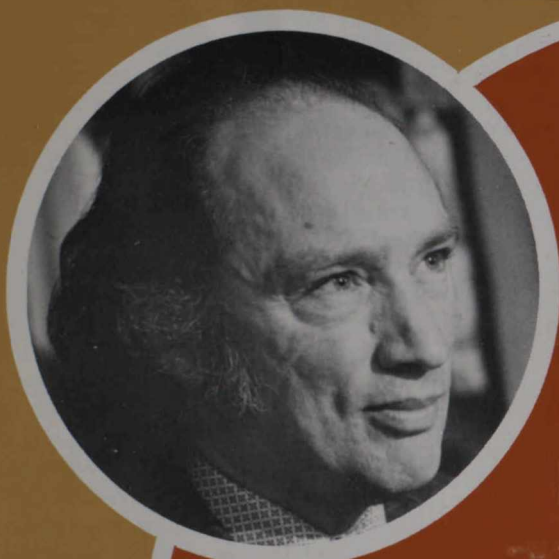


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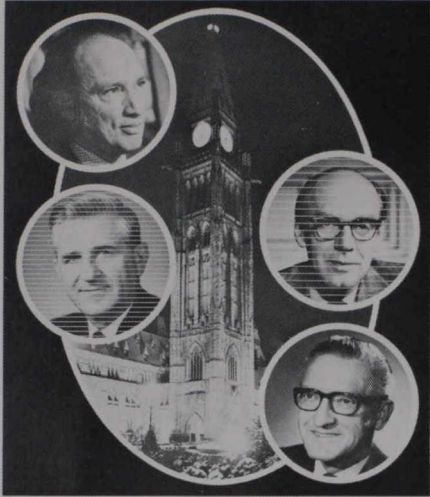


Volume 2 No. 3
September/October



Cover picture shows the leaders of the four political parties in Canada's Federal election last July. Clockwise from top: Prime Minister Pierre Elliott Trudeau, Progressive Conservative Leader Robert Stanfield, Social Credit Leader Real Caouette and New Democratic Leader David Lewis.

Canada Today



Contents

	Page
Did the ghost of J. M. Keynes smile on Canada's election? by Don Peacock	2
Canadian women demand rights and take on men's jobs	6
Scientist de-codes the language of bees	8
New film formula links Canada and Britain by Alan Harvey	10
British musician to conduct Toronto orchestra	10
Wiretapping equipment outlawed	10
Girl dives in the Arctic	11
Union members are 'happy' about pay cut	12
Marshal McLuhan pronounces on the Ethereal Society	13
Sixteen-year-old completes 32-mile swim	13
Heritage campaign keeps watch on progress by Jill Pound-Corner	14
Inmates approve of co-ed prison	14
Economic Digest	15
John Neville plans to stay in Canada by John Young	16

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'Canada Today'

Published by:

The Counsellor (Press),
Canadian High Commission,
Canada House,
Trafalgar Square,
London SW1Y 5BJ

IF YOU MOVE — please advise by mail at the above address.

Editor: Jenny Pearson

Design: Dennis Fairey, F.R.S.A. N.D.D.

Production: Osborne BC Public Relations

Printed in England by:

J. E. C. Potter & Son Ltd., Stamford

Did the ghost of J.M. Keynes smile on Canada's election?

By Don Peacock

The ghost of John Maynard Keynes, world-renowned British economist, may be forgiven if it smiled in satisfaction over the outcome of the Canadian election on 8 July 1974. The result was unquestionably a triumph for Prime Minister Pierre Elliott Trudeau. But it also deserves examination as something of a milestone in the long-running debate Keynes launched in 1936 about how best to manage the macro-economic forces in national economies.

(The election result may also be interpreted as further evidence that Canada, politically, is today one of the world's most liberal societies; it was the sixteenth time the Liberal Party has won this century, compared to six for the Conservatives. But this gives rise to the question: what is "liberal?" And that is an issue outside the scope of this article.)

Friend and foe alike of Mr. Trudeau give him personally much of the credit for this latest victory of the Liberals. And for him what sweet thunder it was. In the election of October 1972 he had come within two seats of losing. He had governed on with the most precarious minority government in Canadian history. Then his government was defeated in the House of Commons and forced into another election. The general expectation was that he would either lose outright this time or return with no better than another minority of seats.

Instead the 54-year-old Prime Minister won a clear majority of the 264 seats — 141 compared to 109 in 1972. His main opposition, Robert Stanfield and his Progressive Conservatives, won 95 (down 12 from 107 in 1972); the moderate-socialist New Democratic Party 16 (decimated from 31 in 1972), Social Credit 11 (down from 15) and an independent the remaining seat. (Two seats went independent in 1972.) Nearly alone in a Western world of creaky coalitions and makeshift minorities at that moment in time, Mr. Trudeau had restored his majority government. He could look forward to as much as five years of stable support in Parliament.

The phrase "a stunning comeback victory" was to be found in many media

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evaluations of the election results for Mr. Trudeau. The *New York Times* said the election gave the world "an impressive demonstration of the health and vibrancy of (Canada's) democratic institutions and practices." It went on: "At a time when democratic institutions are in retreat or under heavy pressure almost everywhere and when weak, minority governments are the rule rather than the exception throughout the Western world, the significance of the decisive outcome in Canada's general election can hardly be exaggerated."

Opponents retire

For Mr. Stanfield, 60, it was his third defeat by Mr. Trudeau. He soon announced he plans to retire before the next election, on a date when it is convenient for the Conservative Party to choose a successor. The defeat for the New Democrats cost them more than their hold on the balance of power in the last Parliament, which they used to reject the Trudeau government's budget and bring on the election. Their leader, Mr. David Lewis, 65, was defeated in his own constituency and also announced his retirement.

But the outcome also settled in Canada, for the moment at least, a question still being debated in some other Western countries, including Britain. The central issue was indisputably inflation. The election campaign focussed on policies to manage it. The alternatives offered Canadian voters were the two main ones being debated in Britain and other Western countries — to have or to have not a compulsory prices and incomes policy of some kind.

The Canadian choice has been interpreted as a clear rejection of compulsory controls as a weapon against inflation, possibly the first such clear-cut decision on this issue by any Western electorate. The decision is of some international interest for another reason. By all indications, the Canadian economy looks like being one of the world's healthiest in 1974. Is this entirely due to the happy accident of an abundance of natural and industrial wealth? Or does Canadian economic policy deserve some investigation, too?

Were it listening at Mr. Trudeau's first post-election news conference July 16 in Ottawa, Keynes' ghost could hardly have been blamed for feeling his side of the debate, started so many trade cycles ago with publication of *The General Theory of Employment, Interest and Money*, had just won one of its bigger arguments. Mr.

Trudeau made it clear that the best-known element of Keynes' theory, monetary and fiscal management of aggregate demand — or "fine tuning" as economists like to put it — remained the foundation of his government's economic policy. His government's past budgets, he said, had tried to keep "the narrow balance... to ensure the right amount of stimulus and restraint in the right areas. And this will continue to be our policy. . . . Our approach to inflation is concerned with alleviating hardship on individuals. . . . We will continue to act on many fronts. . . . It's a matter of tuning your budget and your government action in a way which steers that narrow balance between over-stimulation and under-stimulation."

Keynes said years before that the main purpose of government intervention in the economy is to keep it operating as close to maximum potential as possible without pushing it beyond a boom into a recession. "The right remedy for the trade cycle is not to be found in abolishing booms and thus keeping us permanently in a semi-slump," Keynes wrote; "but in abolishing slumps and thus keeping us permanently in a quasi-boom." The micro-economic issues may have changed since then, but from Mr. Trudeau's post-election statement, the macro-economics are still basically as Keynes had defined them.

If, however, the election outcome may be interpreted as a milestone vindication of his theory, Keynes' ghost has Mr. Stanfield to thank as much as Mr. Trudeau. By advocating as a chief weapon against inflation a policy of compulsory controls, Mr. Stanfield gave Canadians the clearest alternative to choose from on a major economic issue in many an election campaign.

Controls rejected

Long before the campaign began, Mr. Trudeau had been saying Mr. Stanfield's approach was simply not on. Several years earlier, Mr. Trudeau had come to a conclusion similar to one the British House of Commons Expenditure Committee reached in August of this year, following its study of approaches to economic policy. During the campaign he put his position as succinctly as ever. A harsh compulsory controls policy in Britain and the United States had already been discredited as a "proven disaster looking for a place to happen."

Mr. Trudeau's position, in a variety of speeches and interviews, is quite clear. He is not opposed to temporary control on specific prices; he arranged for that on the price of oil within Canada last winter. And his government has introduced legislation that would empower it to apply a special high tax rate to specific cases of "windfall profits" from inflation. It is compulsory controls as a blanket solution to inflation that he has rejected. They have, he says, been a failure wherever they were tried.

In the United Kingdom, he told an

interviewer in April 1974, they only caused the downfall of the Conservative government "and class warfare." In the United States they had reduced supply, but not demand, and only increased inflation. Canada, with no such policy, had one of the best records at managing inflation on comparative basis. He pointed out that Canada's inflation rate has usually been below the average of all countries in the Organization for Economic Co-operation and Development. The point was not that Canada's performance was outstandingly superior, but that it was as good as or relatively better than most countries' — without a compulsory controls policy.

Does this mean there is some inherent benefit from adhering to freedom and rejecting compulsion as a fundamental principle of government economic policies? When massive unemployment and business stagnation were the plagues of Western economies in the 1930s, Keynes believed the answer is "yes". Now that prosperity and inflation are the dominant problems in Western economies, Mr. Trudeau has made plain he believes the answer is still "yes".

Keynes did not advocate government intervention to manipulate overall demand and thereby produce full employment because he wanted to see free enterprise capitalism replaced. He feared capitalism would not survive without such intervention; his General Theory was developed, he said, to restore "capitalistic individualism" to health. And although he was intent primarily on seeing unemployment eliminated, he also foresaw the inflationary consequences of his theory's success — and had some ideas on what to do about that, too.

By the time Mr. Trudeau came to power in April 1968, the Canadian economy was rather thoroughly underpinned by policies which could, broadly, be described as flowing from Keynesian economics. In 1975 it will be thirty years since Canada was formally pledged to the kind of interventionist policies advocated by Keynes. The Canadian House of Commons in 1945 — for the first time and only nine years after the General Theory was published — unanimously approved as a fundamental goal of economic policy the pursuit of full employment. Mr. Trudeau is perhaps the first Canadian prime minister to be confronted with the full inflationary consequences of this decision. His predecessors were more preoccupied with bringing the Canadian economy to the healthy state Keynes had theorized was possible with the right policy mix.

Social welfare expanded

When L. B. Pearson turned over the office of Prime Minister to Mr. Trudeau, he also turned over responsibility for one of the most thoroughly developed social welfare systems in the world — a system expanded substantially since by Trudeau governments. Mr. Pearson said this social welfare system was an essential part of the

foundation under Canada's rapidly expanding national wealth. In this he was not out of tune with Keynesian economics.

It is sometimes overlooked that Keynes did not advocate broad monetary and fiscal management alone as a remedy for the unemployment of his day. He also advocated the use of taxes, including death duties, to raise the general level of consumer demand by redistributing income on a less inequitable basis. He disputed the belief, still held in some circles today, that capital investment depends mainly on the savings of the wealthy. As long as there was not full employment, he argued, the growth of capital depended more on consumer spending than individual savings. Up to the point where full employment prevails, he wrote, "measures for the redistribution of incomes in a way likely to raise the propensity to consume may prove positively favourable to the growth of capital."

Boosts for consumer

Keynes envisaged the state "exercising a guiding influence" on consumer demand partly by tax policy, partly by influencing interest rates "and partly, perhaps, in other ways." He also thought it likely that "a somewhat comprehensive socialization of investment" would be needed to bring about "an approximation of full employment." But that need not exclude "all manner of compromises and of devices by which public authority will co-operate with private initiative." The various programmes, gradually developed since World War II (and some from before), which comprise Canada's social welfare system readily fall into the "other-ways" category of Keynesian policies for strengthening consumer demand. It would be easy, also, if space were available, to list "all manner of compromises and of devices" by which public authority has co-operated with private initiative in Canada, both to encourage investment and sustain demand.

The establishment of the Canada Development Corporation by a Trudeau government to use public funds for large capital investments in new and existing enterprises is a ready example. Announced plans to establish a government-owned oil company is another. Government tax and other incentives to encourage regional economic development are one more, as is the existence of the government-established Industrial Development Bank. There are others.

There is no more dispute in Canada now than in other Western countries with Keynes' interpretation of how an economy works. Full employment — and the income in the form of profits and wages accompanying it — flows from production, which is determined by demand, either in the form of capital investment or of consumer spending. "Any fluctuation in investment not offset by a corresponding change in the propensity to consume will, of course, result in a fluctuation in employment," Keynes wrote. While attaching importance to investment, he advocated "at the same

time all sorts of policies for increasing the propensity to consume," including "the redistribution of incomes or otherwise."

As Keynes advocated a less unequal distribution of income as an essential policy for restoring the health of capitalism, Mr. Pearson interpreted the welfare system he helped build in Canada as an essential improvement in the free enterprise system. In a speech in December 1966, Mr. Pearson said: "Sound and responsible social welfare measures do not tear down but rather build up our national wealth and our strength." Such measures were not the result of high moral intentions, or the work of impractical do-gooders or "revolutionaries plotting to destroy the free enterprise system." They serve "the most practical of national interests because, responsibly put into force, they add to the strength of our economic base and to the stability of our country."

The point was not to tear down free enterprise, but to build under it "a secure foundation for a good life for all Canadians — a foundation which will serve not as a resting place... but as a launching platform for greater personal achievement... With basic security provided, personal enterprise is freer than ever to carry individuals as much further as their own capacities and efforts will take them."

Income protection

Mr. Trudeau, since coming to power, has carried Mr. Pearson's argument further. He has advocated the use of the social welfare system to provide a secure minimum of income protection for individuals without employment income — usually temporarily — because of the operation of the free market system. His first government experimented with voluntary wages and prices guidelines. They fell short of complete success. Since then Mr. Trudeau's approach to economic management has been to use demand manipulation policies, largely according to the Keynesian pattern, and a variety of other policies to minimize income inequalities up to a basic level. In this Mr. Trudeau has been as much in tune as Mr. Pearson with Keynesian economics.

(The idea of government providing an income cushion for the unemployed was supported by the well-known economics professor, Harry Johnson, in testimony before a committee of the Canadian Senate in May 1971. Johnson, a native Canadian then commuting between lectures at both the London School of Economics and the University of Chicago, suggested too much stress is still put on the unemployment rate and not enough on the income security for the individual in today's society. Prof. Johnson said: "I would put more stress on the social security aspect and also on labour market mobility policies, better employment exchanges, assisted (worker) migration from one place to another" — all ideas already incorporated in Canada's social welfare system by then, along with a variety of others including a legislated minimum level of wages and working

hours. Worker income could be guaranteed through employment or a cushion if employment fluctuated, he said. Rather than depend only on our skills at walking "the tightrope" of monetary-fiscal fine tuning, he added, "we might put a net underneath so that if a guy falls off, he does not bash his brains out on the circus floor... A little investment in nets might make life a lot easier.")

Keynes did not dispute the classic theory of the free market economy; he disputed the circumstances in which it applies. Left to itself, without government intervention to manipulate demand and output, the free market economy was not self-correcting. It could reach an equilibrium of demand and supply well below full employment and output. Only in a condition of full employment — which Keynes identified with maximum output — did the classic theory of a self-regulating free market come into play.

But as long as government did intervene to ensure an aggregate output corresponding to full employment, Keynes argued, "then there is no objection to be raised against the classical analysis of the manner in which self-interest will determine what in particular is produced, in what proportion the factors of production will be combined to produce it, and how the final product will be distributed between them." Or put in more current terms, perhaps: as long as government manages the macro-economics effectively, the market place can be left to manage the micro-economics. Keynes advocated his theory as a supplement to, not a replacement of, the old classic free enterprise theory. His purpose, he wrote, was "to indicate the nature of the environment which the free play of economic forces requires, if it is to realize the full potentialities of production."

In Canada, as Mr. Pearson noted, that "environment" for full potential output now includes a social welfare foundation — or, if preferred, Prof. Harry Johnson's "net" — under the combined balancing act of demand fine-tuning and market competition. If the relativities of earnings in Canada have changed little more than in other countries, the basic income available to the average individual has risen substantially, both from employment and social welfare.

Mr. Pearson's argument that reinforcement of individual incomes through the social welfare system also reinforces demand may be compared to Keynes' advocacy of income redistribution to stimulate full employment — and along with it maximum output and prosperity. If Mr. Pearson's argument holds, then in addition to capital investment and consumer spending, which Keynes identified as the two pillars supporting demand in his day, what may be considered almost a third pillar has now been constructed under demand in the Canadian economy and others providing social welfare. It is the income redistribution pillar provided by the social welfare system.

By the time Mr. Trudeau became

Prime Minister, the issue in Canada as elsewhere in the Western world was no longer whether the Keynesian prosperity tap worked or how to turn it on. The issue was how to manage the affluence that flowed from it. And underlying this was another issue, fraught with political delicacy and critical importance to the management of an affluent economy: what is the most beneficial definition of full employment?

Inflation problem

Less than two months after Mr. Trudeau's first majority election victory, in June 1968, consumer prices in Canada registered their tenth consecutive monthly increase — the sharpest in years. At the same time the unemployment rate was higher than usual — and still rising. A White Paper on the inflation problem, issued in December of that year, pointed out that this combination of rising prices and declining employment was part of a new pattern of experience, in Canada and elsewhere in the Western world. In summarizing the issue now confronting Canadian policymakers, the paper summarized the challenge that still faces Western government: "The problem confronting Canada is how to restore and maintain price stability without sacrificing economic growth and employment and without inhibiting basic freedom."

It is the last phrase which has preoccupied Mr. Trudeau most when he has discussed compulsory controls. His fundamental worry, aside from his expressed belief that compulsory controls simply haven't ever done the job intended, is similar to an objection about them expressed by the British Commons Expenditure Committee last August. Won't they lead inexorably toward a more authoritarian society and ultimately to loss of freedom itself?

During an exchange with students in April 1971, Mr. Trudeau drew a frightening picture of "the alternative to an economy which adjusts freely."

To have full employment on a constant basis, he said, "you would need to have a dictatorial government." It would not only tell industries to keep operating regardless of profits, it would tell workers to keep working at stipulated wages, so that their products could be sold at low prices on world markets. "You would need a government which is able not only to fix the prices, but fix salaries, fix incomes and direct how much everyone will gain in the economy." His preference was "to let the market forces adjust for us." This would bring hardships to some people temporarily, but these could be offset by generous government social welfare measures.

What is full employment?

During a television interview in May 1971, he questioned the realism of maintaining that a certain percentage of unemployment in the labour force was an accurate definition of full employment. At that time, it was still generally considered that three per cent of the labour force

unemployed represented virtual full employment in Canada. That might be acceptable if the unemployment rate were treated only as a yardstick of the economy's performance, Mr. Trudeau argued. But if it were going to be treated (as government critics almost invariably do) as "an indication of social misery," then realistically government should aim for zero per cent unemployment. "But if you're looking for optimum economic performance," he said, "it can't be zero per cent."

What then should it be? Facts pointed out by the 1968 White Paper on inflation also questioned the validity of the three-per-cent concept. The paper noted that during the thirteen-year period between 1952 and 1965, when Canada had its best price performance since World War II, the rate of unemployment had averaged five per cent. In 1972 the Economic Council of Canada suggested 4.5 per cent was a reasonable unemployment rate. In its 1973 annual review of the Canadian economy, the council examined the shortcomings of the unemployment rate as a precise measurement tool at some length. It concluded that it is "questionable whether the aggregate unemployment rate, alone, is adequate as a measure of the state of the labour market or of the well-being of the population." It was doing an in-depth study that might turn up an alternative yardstick.

There is no precise definition of full employment in Keynes' General Theory, neither in numbers nor percentage of labour force employed. He seems rather to suggest that full employment, as an index of the performance of the economy, can best be identified by what's happening to prices and wages. He identifies full employment with full potential production — the point at which tension between overall supply and demand in the economy is approaching its maximum level.

"Legitimate" price increases

The immediate object of his analysis in 1936 was the high rate of unemployment. But he also argued that there is a clear distinction between legitimate price increases and inflation. As employment increased and output with it, prices would gradually increase, too, because increasing competition for capital and labour would push up costs. But these would be legitimate price increases, Keynes argued, brought about by the effective working of the forces of supply and demand. "No one has a legitimate vested interest in being able to buy at prices which are only low because output is low," he said. Only when a further increase in demand produced no further increase in output, but went entirely into an increase in price would a condition of "true inflation" exist.

During the election campaign, Mr. Trudeau displayed a similar attitude toward some price increases. He suggested that some are quite proper and probably long overdue, arguing that one consumer's

price increase may be another producer's legitimate gain. During a day of speeches in Edmonton, Alberta, he said at one point: "So okay, inflation is a problem, but let's not get obsessed about it." Farmers had been getting too little for their products. Products from under-developed countries had probably been under-priced for years in some cases. "Some of what we're bringing in is probably still too cheap to keep some of those under-developed countries alive," he said.

At another stop he said consumers complaining about high prices overlooked the fact that "some of these high prices are going to countries who for decades have been getting low prices for their products. . . . We were selling them our tractors and our automobiles at high prices, prices going up all the time as our prosperity increased, as wages and profits went up in Canada, and they were still getting very, very low prices for their coffee, for their oil, for their peanuts, for their cocoa and so on. . . . We should keep in mind that some of these countries are beginning to be helped by the increase in costs."

There is other evidence that Mr. Trudeau, as Keynes did, believes the free market system, for all its uncertainties and imperfections, is still the fairest and best available way of allocating income throughout a national economy — but that extensive government intervention is required to ensure a healthy balance between supply and demand and a healthy minimum of income security for the individual. His 1968 government's inflation White Paper, for instance, rejected any attempt by government or its agencies to direct or arbitrate pay relativities. This must be worked out as freely as possible in the economic marketplace. "While it is desirable to keep the rate of growth of money incomes from exceeding productivity growth in the economy as a whole," the paper said, "it is neither possible nor desirable to lay down specific guidelines about the *shares* of national income going to different economic groups." (The paper underlined "shares" for emphasis.)

Looking to the future, in the transcript of an interview published in March 1972, Mr. Trudeau reflected that employment may eventually become less important as a source of income than it is today. "Is it the purpose of industrial growth to produce more jobs in the classical sense, or to produce more wealth? . . . Perhaps our society wants a different mix. Perhaps more jobs is not the first thing we want in the long run. Perhaps it's more wealth with more leisure and less jobs, less hours of work for less people. . . . There is perhaps a different work ethic emerging in our society. Perhaps there is a growing percentage of people, though I'm sure it's still very small, who don't want to continue looking to work in the traditional sense in order to fulfill themselves as human beings. They would like to see a society develop in which access to happiness or to self-fulfilment isn't necessarily through the labour market, but through other

concepts." This attitude was developing slowly, but young people accustomed to affluence were less interested in the pay from a job now than "the kind of fulfilment they will get as human beings."

Canadian governments, especially those of Mr. Pearson and Mr. Trudeau, have concentrated on building a network of safeguards under, instead of controls above, earnings from Canada's free enterprise system, in the expressed belief that the system can best manage prices and incomes from there on its own. If it does so imperfectly, as it does, it is plain from his statements that Mr. Trudeau believes the free market system works less imperfectly than blanket government controls.

In Keynesian terminology current Canadian economic policy may be summed up along this line: To maintain an environment in which the free play of economic forces can sustain an approximation of full employment (synonymous, for Keynes, with full production), government has intervened with a variety of policies to protect the income of the individual in Canadian society at a reasonable level. The interest of the individual, not the state, remains the focal point. This protection is provided in cash through various programmes, including unemployment insurance payments of up to \$100 (£40) per week, family allowances averaging \$20 (£8) per month for every child, and state pensions of up to \$366 (£155) per month for a couple. It is also done in kind through various programmes, including state hospital and medical insurance coverage.

Ultimately the test of economic policy is the result. In a national economy, because it is in constant motion — a process, not a permanence — the result is never final; so the test must always be inconclusive on any absolute basis. But the result of economic policy can be measured at given times. By every measurement in this year of inflation 1974, Canadian economic policies have been as successful as other countries'. This suggests that maintaining the emphasis on freedom works at least as well as turning toward compulsion.

As this article noted at the beginning, there is a rich resource and industrial base for Canada's prosperity. But there is economic policy managing that prosperity. If the British Commons Expenditure Committee had a point in August, when it dismissed compulsory controls as "a fashionable idea which is politically dead, only remaining to be interred," as much evidence to support this interment is perhaps to be found in Canadian economic experience as anywhere. ♦

Canadian women demand rights and take on men's jobs

by Jenny Pearson

The Government of Canada is preparing to play its part in the promotion of women's rights in 1975, which has been designated International Women's Year. Meanwhile, at ground level, it is as though Canadian women are by wide consent going out to prove their equal worth by taking on jobs normally done by men — even the unpopular jobs, where employers are only too glad to take them on the work force.

Girl labourers

The city of Vancouver a few months ago hired a dozen young women to work with men on a breakwater project at False Creek — the first women ever employed by the city on labouring work. Jim MacArthur, the superintendent of works, commented: "Girls applied on the site. They said they could work alongside the men and do as much. These days, who'd argue?"

Mrs. Danielle Trush, 26, one of the dozen women labouring alongside some 400 men on the site, previously worked in a shop selling diamonds and jewellery. At False Creek she spends her days splitting rocks with a jackhammer. Why? Because she wanted to work outdoors "and this is a sort of a challenge!"

Asked if she intended returning to her old job she said no, because the benefits of outside work were so appealing: it was well paid and there was "no need to dress up for the job."

The women at False Creek supplied their own work clothes, but the city provided leather gloves, hard hats and all safety equipment. Jackie Carter, 24, whose husband also worked on the project, said her brickmaking job is the best-paying employment she has ever had. "It's a lot better than working in factories or as a waitress."

Deborah Koenker, 24, said that before she came to the site she earned between 60 and 80 dollars a week: now she was earning \$180 (about £70). Lucille Pica Jolicoeur, 21, employed as a brickmaker, said the job was "really different and not all that hard, but you get your clothes full of cement." Bernice Goff, 22, whose previous job was in a bank, commented "There's a certain satisfaction from physical labour. You are physically exhausted at night, but not mentally tired."

Down the mines

A mining company at Leaf Rapids,



Danielle Trush uses a jackhammer to break up rocks. The girls were among a dozen young women working on Vancouver's False Creek breakwater project, the first women labourers the city has ever hired.

Manitoba, has also made a new departure by employing women in jobs previously done by men. The company, Sherritt Gordon Mines, has adopted this policy in the belief that it may help solve the problem of finding people to work on a remote mining operation.

Peter Cain Sass, their vice-president, says the experiment is going well. It was he who suggested at the end of last year that women should be given equal opportunities with men in mining. Since then the firm has been using women in jobs requiring both skill and strength. The firm maintains that women's liberation is not the issue: what they are concerned with is maintaining a good work force in the face of tough competition from other jobs.

Mr. W. F. Clarke, another official of Sherritt Gordon Mines, commented: "We knew that women could do the job. We have seen them do it in wartime and in other countries. So why not give them the chance in the mining industry?" At the Ruttan open mine near Leaf Rapids, women were reported to be tackling their assignments with enthusiasm, determined to prove their worth in a male-dominated field. Mrs. Donna Mahler, 20, who worked as an assistant post mistress until she married and came to Leaf Rapids, said she was bored before she started work at the mine as a painter. Coming from a mining family in the Yukon territory (her father was an assistant mill superintendent of a mine), she admitted that one of her drives is to make more money than her husband, who also works for Sherritt Gordon.

Mrs. Amy Faid, who has four sons aged between 18 and 4, repairs mining vehicles in the Ruttan mine, where her electrician husband also works. Before coming to Manitoba she was a laboratory assistant in Halifax, but declared "I would not go back to being a technician. I've always wanted to do the kind of work men do."

The woman with the most demanding job at Ruttan in terms of strength and skill was Mrs. Darlene Clarke, who started as a labourer in the mill and worked up to the position of third operator in the de-watering section, looking after a concentrate that passes through thickeners and filters. She said she enjoyed the work and the chance to go on learning. Two women labourers had joined her in the mill and Mr. Gerry Hughes, the superintendent, said he was very pleased with the women's work.

Staffing prisons

The penitentiary service has also reported increasing numbers of women entering the tough world of prison work. There has been no conscious effort to recruit women, but they have been applying for and passing public service examinations open to both sexes. This development has come about so quietly that it took Mona Ricks, a prison information officer who is a keen advocate of women in the service, a week to discover that there were 412 female employees, 123 of whom were in frequent contact with male inmates. They are employed as classification officers, psychologists, psychiatrists, nurses, and in the middle management level.

Mr. Paul Faguy, Commissioner of the

Canadian Penitentiaries Service, said that more women are needed to help implement the new treatment programme being brought into action within Canadian prisons. On the subject of the dangers facing women in the prison service, he declared. "It has been suggested that females are more vulnerable to being taken hostage or to being physically or sexually assaulted. The findings of other countries do not support this. . . . If females wish to seek employment with us and to

Looking back on her ordeal as hostage to two prisoners at the British Columbia Penitentiary, New Westminster, where she still works, she commented that she did not feel she was in danger.

Another enthusiastic supporter of women in the prison service is A. Ronald Arrowsmith, head of what used to be their all-male nursing service. He says the old feeling that women are fragile is poppycock. "I've worked with women all my life.

but hardened criminals will weepingly call you mother." And don't be nervous, says the article: male staff will give a female employee more solicitous attention than the guest speaker at a church social.

With such industrious women as these in the vanguard of changing attitudes toward the role of gender in jobs, the Canadian Government plans more official support for this trend. The Women's Bureau of the Department of Labour has



While Deborah Koenker stacks bricks (left), Cathy Newsome, 19, throws a switch in a railway yard in Winnipeg where she was one of two young women in a class of 21 students trained by Canadian National Railways. Cathy says she chose her career because she loves trains.

enjoy equal pay and equal benefits, they must accept the risks which are encountered by all our staff."

Mona Ricks, whose work frequently takes her into the prisons, says that of course there is danger — but not so much as males would have you believe. And she believes there is a special rapport between female staff members and prisoners: "They (the prisoners) are people when we are talking to them. We do not consciously condemn them again. Men condemn and condemn and condemn."

Jean Young, who last year was the first and only woman ever to be held hostage in a Canadian prison, said recently: "I still enjoy working with inmates. I'm convinced females are needed. . . . Perhaps because inmates are segregated from regular female company, they talk easily to a female in a counselling role. Whatever it is, women have a definite place in the rehabilitation of inmates." In her work she is a classification officer, which means that she looks after the social welfare of prisoners — ranging from what they do in prison to what they will face when they leave.

They are stronger than we are." He first brought in female nurses to fill in gaps when male nurses were sent off for training. This training was necessary because many of the male nurses had worked in the service for years with no professional qualifications. Some will have to leave when the men return with their qualifications, but Mr. Arrowsmith sees no chance that the prison nursing service will ever again be an all-male profession. The development is reported to have met "little prisoner hostility"!

Advice to prison workers

Meanwhile the penitentiary service magazine *Discussion* has some light-hearted advice for women working in prisons. "If you feel you are going to be raped or held hostage, wear something suitably protective. Otherwise stay fashionably feminine (but be prepared for a crowd to gather every time you climb metal stairs, or borrow a uniform from a female correctional officer). A pair of brown Oxfords, hair drawn back in a bun, and horn-rimmed glasses will not only ensure that you are not sexually assaulted,

confidently declared that more change is on its way.

In April of this year its official publication *Women at Work* opened with the statement that "The federal government's proposed programmes to mark International Women's Year, 1975, will concentrate on promoting equality for women in all areas of society and on educating the general public concerning changing attitudes towards the role of women."

The programmes included an international seminar of experts, to concentrate on preparing a model for the establishment of permanent national machinery for improving the status of women; special measures by federal government departments and agencies to promote equal opportunity for women in programmes affecting the public and for women employees; introduction of new legislation or amendments to existing legislation to provide equal treatment of men and women (new legislation to create a Commission on Human Rights and Interests and to prohibit discrimination on grounds including sex and marital status).

It is a hopeful-sounding document, full of encouraging thoughts and local progress reports. But one small section highlights the more depressing side of the picture — the backdrop of apathy and the vast area of entrenched attitudes against which these brave new departures and gestures are made. It reports:

"Women and Work as the theme of a conference of McGill University's Industrial Relations Centre failed to attract men in the top management positions of Canadian industry who are the usual participants in the annual seminar. The conference, held April 3 and 4, 1974 was attended by about 150 women and 25 men."

Scientist de-codes the language of bees



Scientists are on the threshold of talking to insects and programming them to do man's will.

A Canadian agricultural scientist whose work on communicating with honey bees may hold one of the keys to exercising control over the insect kingdom is Dr. Rolf Boch, an entomology researcher with the Canada Department of Agriculture.

Dr. Boch says scientists are now in the early stages of understanding insect communications. "We have been pushed around by the insects. We will soon talk to the insects and order them around."

"In dealing with bees, as I do, I am dealing with a wild animal — well, a wild insect, anyway," he says smiling. "Bees are mostly unchanged by their contact with man. Even honey bees from a man-made hive are not domesticated and they could make their life in the wild."

The reason man has not altered bees and other insects very much is that until recently he couldn't selectively control

their mating and reproduction. He couldn't breed this insect for desirable characteristics, or, conversely, breed out undesirable characteristics.

At present, beekeepers and researchers can use artificial insemination to breed better bees, but with increased knowledge of insect communication, selected bees could be mated naturally to produce hybrid bees.

And, in somewhat the same way that hybrid varieties have revolutionized the corn-growing industry, hybrid bees could mean a big boost in honey production, Dr. Boch says.

But before that can happen, man has to be able to talk the bees' language and tell them what he wants. That's where Dr. Boch's research comes in.

"First understand that bees do not only communicate by dancing and going buzz-buzz. Bees and other insects also talk to one another by the sense of smell," explains Dr. Boch.

"They produce pheromones — chemical

Dr. Rolf Boch marks dancing honey bees as part of his research into the behaviour of swarming bees.

substances which they secrete and which cause a specific response in other insects of the same species.

"Most insects produce sex pheromones and by studying these pheromones and producing them synthetically, man can interfere with insect communication. This can be used to control insect population by attracting and trapping insects of one sex. At present, these traps are being used to gauge insect populations before spraying with insecticides.

"For honey bees and other social insects, there is a greater spectrum of pheromones than just sex attractants. The whole colony organization is directed mostly, if not entirely, by pheromones."

The first hint that this was the basis of communication was the discovery by a

Swiss naturalist, Francis Huber, that the odour from the sting of a honey bee agitated other honey bees, attracting them to sting near the same spot.

Although Huber's observation in 1814 indicated the possibility of alarm communication within a bee hive, it has been only recently that individual researchers like Dr. Boch have investigated chemical alarm communication as one part of the whole pheromone mystery.

Dr. Boch observed that if he tapped a bee near the entrance to a hive, she would immediately protrude her sting, but, she would rush into the hive rather than attack alone. After a few seconds, a whole crew of bees would rush out of the hive prepared to attack the offender.

Testing showed that if the bee's sting was removed and she was then allowed to enter the hive, she could alert only a few, if any, bees.

However, the sting alone, without the bee, when placed at the hive entrance could bring out angry bees. This clearly showed that it was a scent attached to the sting rather than something in the bee's movement and behaviour that sounded the alarm to the other bees.

In the early 1960's Dr. Boch and his associates proceeded from there to examine the chemical composition of the scent from the sting using two modern analytical tools of the laboratory — gas chromatography and infra red spectroscopy.

The scent is a complex one, but they were able to identify the major component as isoamyl acetate which smells something like banana oil. They have since separated and identified another substance from the bees' mandibular gland from its mouth parts which also acts as an alarm pheromone.

Such alarm chemicals can be used by scientists to test colonies of bees for their inclination to stinging. In this way, it may

be possible to breed a gentle bee which almost never stings.



Honey bees play an important part in pollinating agricultural crops, but their colonies are not always up to full strength when this pollination is needed. Dr. Boch is developing an artificial pollen diet which could solve the problem.

Knowing about alarm scents may also help in developing something which will chemically mask or counteract the alarm pheromone so beekeepers can open a hive with less disruption of the bees.

Dr. Boch is now studying the honey bee queen pheromones and their function as sex attractants to drones and as attractants for worker bees during the migration of swarms.

Another aspect of this eminent apiary scientist's research involves finding out what makes pollen attractive to bees. The object of this is to produce a synthetic pollen for keeping bees on a diet independent from flowers.

This artificial diet would be particularly useful in Canada where bees have a long wintering period. Many Canadian beekeepers import new colonies of American bees each spring because they cannot overwinter their own. These imported colonies are not usually fully developed at the height of the honey production season and an artificial diet could give them a faster start.

A beekeeper can feed his bees sugar to keep them alive, but pollen is the source of a bee's fat and protein. Without protein the bees cannot grow and reproduce.

Some beekeepers make a business of trapping pollen at hive entrances in the summer and selling this to other beekeepers for springtime feeding, but there is not nearly enough of this trapped pollen to meet the demand.

There have been attempts to feed bees soybean flour, but bees cannot be persuaded to eat it unless they are badly starving or unless it is mixed with trapped pollen. It is not certain whether it would be nutritionally adequate for bees even if one could entice them to eat it.

Dr. Boch has isolated one attractive substance in natural pollen which can be produced synthetically. The only problem is that it would be too expensive for practical use.

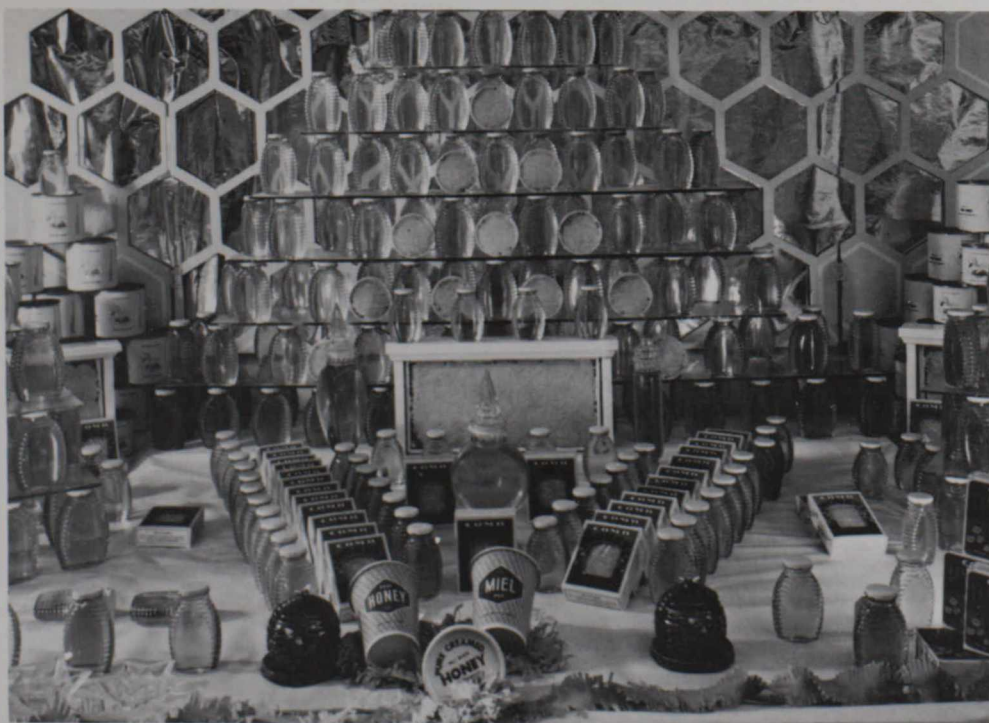
"The trouble with a relatively small industry such as beekeeping is that nobody would be much interested in producing such a substance commercially. A hundred-weight would be enough for all of Canada. Ideally such a substance should be something being used for other purposes or a by-product of a chemical production line," Dr. Boch says.

So, the search for an artificial pollen continues. It's a lengthy, tedious and often frustrating job, but Dr. Boch is philosophical about his research — "if it were some simple problem, it would have been solved long ago."

Dr. Boch grew up in southern Germany and was educated at the University of Munich. He received his doctorate degree in 1955 with a thesis on the dance language of the honey bee. He emigrated to Canada in 1956 to take up his present position with Agriculture Canada.

In 1973, Dr. Boch received the James I. Hambleton Memorial Award from the Eastern Apicultural Society for outstanding research in the apicultural sciences in North America.

Canada exported more than £3 million worth of honey in 1972. Apiary researchers, including Dr. Boch in Canada's Department of Agriculture, are looking for better breeding techniques to raise honey production.



New film formula links Canada and Britain

By Alan Harvey

Britain and Canada are combining in bold new plans for joint film production that could tighten the bonds between the two nations.

British producer Michael Relph, a member of the celebrated Ealing Studios team that produced outstanding postwar films like "Kind Hearts and Coronets" and "The Blue Lamp," is joining a \$10,000,000 Anglo-Canadian consortium to finance a series of hands-across-the-sea films.

His Canadian opposite number is Donald J. Croker, president of Panorama Productions of Canada whose film studios in West Vancouver, British Columbia, are among the most modern in North America.

Relph and Croker are joint managing directors of the new consortium, Panorama International.

Their first film, to be shot this winter in the mountains of British Columbia, is "Seven Against the West" — based on a true story of an amazing trek by a family of young pioneer children in the mid-19th century.

The move comes at a time when Britain's film industry — long on talent but short on funds — seems to interlock neatly with the aims of a Canada which is just groping towards a national film industry after years in the shadow of the United States.

On a recent visit to Pinewood Studios west of London, where so many British hits were made in the past, I heard a stirring plea for Canadian films by John Vernon. He was just finishing the final sequences of the film "Cat and Mouse," with Kirk Douglas and Jean Seberg, the American actress who now lives in France.

Vernon may be remembered in Britain as the dynamic star of the CBC television serial "Wojeck," which was shown on BBC. He told me it was high time Canada got going on a film industry of its own.

"Our film industry has nowhere to go except up," he said. "There's no reason at all why we can't succeed. When I think of all my Canadian friends who are trying to make movies, I know that the desire is there."

The exterior shots for "Cat and Mouse" were made in Montreal. The British producer, Aida Young, came back from Canada enthusiastic about the possibilities of film-making there. She was positively thrilled with Canada.

"I was tremendously impressed," she said. "I wouldn't have put Canada very high on my list of places to visit, but as it

turned out I was ravished. I was so surprised at the place, the people, the beauty, the tremendous feeling of optimism, the sky's the limit, everything zooming up. Canadians in the movie industry were quite on the ball. They seemed to feel they were a little bit new at the game, but it didn't show."

British enthusiasm for an "upward-zooming" Canada augurs well for future co-operation. For the main idea behind the Relph-Croker partnership is to pool British experience with Canadian youthfulness and vitality — while reducing financial risks on both sides by pooling capital.

Canada, Croker points out, can scarcely support a viable film industry on its own. But the two countries working together bring to films a "chemistry" and a cross-fertilisation of talents whose importance can scarcely be overestimated. Repeatedly, he stresses that Canada's industry is just starting. "It is young, it has vitality, and it has talent," Croker says. "But youth, vitality and talents are assets that must be measured against experience, sophistication and skill." Embellishing this theme, Relph adds that Britain perhaps has an edge in sophisticated skills and experience. "But Canada has the outlook of a new nation," he adds. "It also has the wide horizons of a North America that comprises the vital market for an English-speaking film.

"Above all Canada — and B.C. in particular — have the same cultural heritage." (British Columbia is regarded as the most "English" of Canadian provinces.) "We believe that we can join in the co-production of films which will appeal to North America and the rest of the world without sacrificing an identity that springs essentially from North American roots." Together, the two countries could broaden their horizons.

Panorama International plans as its first target a series of feature films over a five-year period. Shooting on "Seven Against the West," first of the series, is expected to start before the end of the year.

The film tells of the epic 500-mile journey of seven newly orphaned children, the oldest 13 and the youngest a baby, across the Rocky Mountains. Hostile Indians, bitter winter weather, floods, forest fires and treacherous quicksands are among the hazards faced by the young travellers bent on keeping faith with their dead father's dream of beating British settlers into the state of Oregon. ♦

British musician to conduct Toronto orchestra

Andrew Davis, the 30-year-old associate conductor of London's Philharmonia Orchestra, has been appointed music director and conductor of the Toronto Symphony Orchestra, an appointment which he takes up in October 1975.

Davis only took up conducting five years ago, being known before then as a harpsichord player. He was assistant conductor of the BBC Scottish Orchestra before joining the New Philharmonia. He still performs on the harpsichord: he played in one of this year's promenade concerts and has just finished recording all the Bach concerti for harpsichord with the English Chamber Orchestra.

After he joins the Toronto orchestra he will spend sixteen weeks a year in Canada. The rest of the time he will be working at Glyndebourne and continuing his association with the New Philharmonia, as well as undertaking guest performances in the United States. ♦

Wiretapping equipment outlawed

A new law came into force at the end of June making it illegal to use, possess, buy or sell wiretapping equipment in Canada unless you are a policeman.

The wiretapping legislation struggled through Parliament last year, bringing to a climax more than three years of efforts to get control over bugging and to provide some protection of privacy. The delay in putting it into effect was necessary to enable federal and provincial officials to develop the necessary procedural steps.

Under the bill, only the police are allowed to bug, and then under controlled situations. Illegal use of wiretapping equipment can result in a five-year sentence and illegal possession two years.

Provincial attorneys-general or the federal solicitor-general, or their agents, must apply to a judge for permission to bug. The delay in implementing the bill was partly to enable courts to appoint judges to hear these requests and for provinces to name their agents. Wide publicity was organized so that people illegally possessing wiretapping equipment could get rid of it before the law came into effect.

Girl dives in the Arctic

Jacques Cousteau's magnificent underwater films recently brought to the television screen something of the beauty and terror of diving under the Antarctic ice. Just how frightening it is to enter that element at the other end of the globe, under the Arctic, emerges from this personal account by Lydia Dotto, a Canadian reporter who went down to sample the conditions experienced by members of the Arctic IV expedition off northern Canada earlier this year. The expedition, sponsored like its three predecessors by the MacInnis Foundation of Toronto, carried out over a two-month period a wide range of technical studies related to cold-weather diving. One of its main purposes was to evaluate human capabilities and limitations; a wide range of equipment was also tested. The four Canadian expeditions have logged a high percentage of the total man-hours of Arctic diving in the world to date.

Lydia Dotto's account of her Arctic dives appeared in *The Globe and Mail*, Toronto, while the main Arctic IV expedition was in progress.

I'll admit it. As I sat on the edge of the dive hole, scattering inch-thick slabs of ice with a flipped foot, the thought going through my head was, what am I doing here?

What I was doing was getting ready to go scuba diving under the ice in the Arctic. The object of the exercise was to get a feel for the stresses and challenges facing divers and scientists participating in Arctic IV.

Preparing for my dive — with a background of only 1½ years in the field — I had a feeling the stresses and challenges of Arctic diving would become all too readily apparent. I glanced warily down the dive hole, which descended through nearly six feet of ice, and reflected on the fact that, stripped of its salt content, that water would itself be ice. I was, at that moment, less than fond of 29-degree (F.) water.

But, as often happens, the anticipation was far worse than the fact. I dropped into the 6 by 4-foot hole, into the slush and ice chunks that had been chipped from the surface — each morning brought a new fight against the daily onslaught of ice — and hit my purge valve.

This let air from the scuba tank into the dry diving suit. I bobbed like a cork in the dive hole, adjusting my face mask which had an unfortunate tendency to leak. The icy brine brought tears to my eyes.

A bright yellow down-line stretched from the dive hole to the sea floor 40 feet below.

I gripped it and turned another valve, releasing the air from my suit. Packing 40 pounds of lead weights around my waist, I sank beneath the surface.

There was a quick shock as the cold water hit me in the face and infiltrated my hood. Other divers were trying out full face masks which provided better protection, but these were tied firmly around the head and made me claustrophobic. I wore a standard mask which covered eyes and nose, but not the area around the mouth. The result was a sharp, searing sensation, followed by progressive numbness.

I stayed just under the ice on that first dive, trying to come to terms with the unknowns of the Arctic marine environment. It is both beautiful and fascinating, but there is possibly no environment on earth more inherently hostile to man and, once underwater, you don't forget it.

I saw air pockets skittering along on the underside of the ice like pools of mercury, but little else penetrated the overwhelming consciousness of self forced on me by that environment. I was actually aware of the tank on my back, the suit, the face mask, the breathing apparatus, or regulator, in my mouth and, especially, the hollow echoes of my breathing. I thought a lot about breathing.

At one point, I unwittingly managed to inhale through my nose a little of the frigid water pooled at the bottom of my face mask. This had the unnerving effect of seemingly locking my throat.

I literally had to lecture myself to breathe, a task made more difficult by my tendency to take great, rapid gulps, as if trying to constantly reassure myself that I really did have air to breathe.

My companions were Douglas Elsey of the diving unit at the Defense and Civil Institute of Environment Medicine in Toronto, second in command of Arctic IV, and Wally Jenkins, a US Navy aquanaut and 20-year diving veteran who is writing a manual on Arctic diving.

During the excursion, they enacted one of the minor dramas of cold water diving. Mr. Jenkins' regulator was free flowing. This occurs when a valve in the regulator freezes open, allowing air to escape from the tank with ever-increasing intensity. The diver can still breathe, but Mr. Jenkins noted in his manual that "exhaling into this stream of gas becomes steadily more difficult, to the point of dizziness." Moreover, the tank empties rapidly, a fact that tends to be disturbing.

Freeze-up can occur any time, often without warning. Mr. Jenkins was having particularly bad luck; on one dive, he came barrelling to the surface, spat out the regulator and took a great gulp of air. He'd run out of air after working 15 minutes underwater with a free-flowing regulator.

The Arctic IV divers were using two tanks and regulators, so one could be shut off if it free-flowed. This is what Mr. Elsey proceeded to do, after pushing the purge valve on my suit to prevent me from wandering off. The suit ballooned out, and I bobbed up against the underside of the ice, hanging there like a bloated seal while he swam over to shut down Mr. Jenkins' offending regulator.

My own regulator behaved, for which I was more than grateful. Free-flow was one of those things I was prepared to experience vicariously.

The suit protected me well, so I was not physically cold. But my mind could not escape a pervading sense of coldness. Out There, waiting just beyond that fraction of an inch of suit. And this was no idle distraction.

Water robs the body of heat several times faster than air does; a flooded suit could lead to immobilization in a matter of minutes. Even short of that, the cold has profound effects physiologically and mentally.

Dr. Joseph MacInnis, a leading Canadian underwater researcher who headed Arctic IV, had commented that much of a diver's mental alertness and ability to concentrate is lost in Arctic diving because of this underlying consciousness of the environmental stresses.

continued

'girl dives' — continued from Page 11.

Now I knew exactly what he meant. It was always there, in the back of my mind, a sense of impersonal menace and a heightened understanding that this was an environment that clobbered mistakes.

And yet, familiarity bred not contempt, but relative calm and even a certain amount of detachment. My second dive was completely different from the first because the unknowns now had some boundaries. I was able to observe the environment, apart from a sole concern about its effect on me.

My target on the second dive was Sub-Igloo, an eight-foot diameter acrylic sphere which served as an underwater refuge and rest station. It was on the sea floor, 40 feet deep and 60 feet from the dive hole.

Sub-Igloo was bright but gauzy in the wan light, and seemingly suspended because the struts supporting it and the trays carrying tons of lead to hold it down merged into shadows. We floated between two struts and up through Sub-Igloo's bottom hatch.

Normally, air pumped through a hose kept Sub-Igloo free of water but this time it was about half full. I surfaced, faced with the incongruity of a red Contempera telephone floating on a styro-foam square. It had been used the day before by Dr. MacInnis and Mr. Elsey during a televised interview.

I heaved my tank onto the acrylic bench and sat down, taking my regulator out of my mouth and, cautiously, my mask off my face. There was an eerie quality of the world inside the sphere, derived in no small part from the awareness of being without a regulator while palpably surrounded by water. Sub-Igloo's dome shape made it seem larger than it was and the splash of water had the echoing, metallic sound reminiscent of subterranean caverns. The dive hole was a bright rectangular patch, seemingly far away.

Sub-Igloo was conceived by Dr. MacInnis and built by a group of Canadian firms headed by King Plastics Ltd. of Toronto, making its debut in the North during the Arctic III expedition last December. It provides divers with a refuge where they can rest, warm up and talk to each other while conducting scientific and technical studies underwater.

It was after we left Sub-Igloo that I became conscious for the first time of relaxing in the water. Only then did I really notice the surprising abundance of marine life; the dive site was swarming with colourful red jellyfish and delicate transparent creatures with luminous lighting. There were also large numbers of big, leathery and ugly-looking shrimps and the silty bottom was festooned with sea anemones and tangles of rubbery kelp.

To one side was an inverted plastic bowl fastened about six or seven feet off the bottom and filled with emergency air for divers in trouble.

In the Arctic, there is no advantage in denying that a diver can get into trouble. He has to be prepared for it. As Mr. Jenkins put it in his manual: "The sympathetic nervous system is already taxed with a hostile environment and any sudden extra emergency might turn normal apprehension into stark fear or its more destructive end product, panic."

He adds that "necessary risks are bad enough. Dares are neither offered nor taken. Those who try to succeed with the use of brute force and prove they can outlast, outperform and outdive other divers will get into trouble and are a threat not only to themselves but to the entire mission."

Sinking Sub-Igloo

Despite the dangers, however, Arctic diving is not the near impossibility, nor the sheer folly, it seems to the uninitiated. But such diving does require a lot of hard work and a great deal of surface support.

During the early part of Arctic IV, while Dr. MacInnis led the first diving expedition to the North Pole, Mr. Elsey, a veteran of the previous Arctic projects, directed the setting up of the dive site and the construction of Sub-Igloo.

Several days were taken up by the universally despised task of ice-chipping. The main dive hole was cut and a large heated tent erected over it. This was necessary to protect not only the divers but the equipment from the 20-below weather.

Then, assisted by Claude Boyer, Jerry Whent and Bruce Gallinger, students at Seneca College's underwater skills course, Mr. Jenkins began the four-day task of cutting the hole for Sub-Igloo. Mr. Elsey estimated that about 22 tons of ice were removed from the 10-by-12 foot hole, essentially by hand.

The group used chain saws to cut the hole to within a foot of the water. They then chipped around the edges until they broke through. Water flooded in, rising to the top of the hole. It took them another two hours to chip the foot-thick plug of ice free so that it rose to the surface. An attempt to pull it out in one piece by truck failed, so the team resorted to the technique of breaking the plug into blocks and hauling it out by ice tongs.

The frustrating thing about this job was that it never ended; every morning there was a film of new ice on the surface to chip away, as well as creeping crystals which formed hanging ledges at the bottom of the hole.

Sub-Igloo was lowered into the hole one hemisphere at a time. The bottom hemisphere was lowered into the water first and secured on the 16 struts. The top hemisphere was then installed and the water was emptied from the habitat. Mr. Elsey estimated that the operation, including chopping through the ice, took about 24 man-days.

In light of these difficulties, some people suggest it makes more sense to simulate

Arctic diving in laboratory tanks and chambers. But Mr. Jenkins, who has participated in such simulations, believes that lab tests cannot simulate the social, psychological and wider environmental factors which greatly affect Arctic diving.

"You can simulate the depth and cold temperatures, but there's no simulator in existence that can simulate the pre-dive and post-dive environment."

You can't, for example, simulate the frustration and fatigue of four days spent chopping 22 tons of ice. You can't recreate the 24-hour night or day after day of below-zero weather or the interplay of personalities which is inevitable within the closed world of a dive camp. And there's one other small point. In a simulator a diver is relatively sure he's not going to get killed. This is not necessarily true in the Arctic.

Arctic IV is largely privately financed, although the federal Government contributed logistics and transportation by the Canadian Forces. Yet the work has important implications for national policies and the question of sovereignty.

Last year, the federal Science Ministry announced an oceans policy which in part, called for Canada to develop an internationally-recognized skill in operating above and below ice-covered waters within five years.

In many ways, an expedition like Arctic IV invites comparisons with going to the moon; regions of the North even look a little like the lunar surface with snow. In terms of the money and new technology involved, it does not match the moon programme. But in terms of the challenges of the environment, the Arctic holds its own.

It shares with space an implacable and utterly ruthless disregard for man's weaknesses. Even man's technology does not bend the environment of the Arctic to his convenience, but merely allows him to exist within it. As one member of the Arctic IV expedition put it, man does not tame the Arctic; he learns to cope with it on its own terms. "You don't overpower it. You've got to get along with it." ♦

Union members are 'happy' about pay cut

Members of a Manitoba union recently agreed to an official pay cut by their employers as part of an overall plan to increase their total earnings and improve working conditions.

The plan, a remarkable piece of non-doctrinaire thinking by union members and employers alike, involved a 20-per-cent reduction in salaries paid for maintenance work by members of the Millwrights Maintenance Union. It was agreed, however, that the men do maintenance work on flex time, receiving a premium of 14-per-cent for weekend work when plants are shut down and repair work can proceed. They receive days off during the normal working week. The overtime rate for maintenance was also reduced from double time to time and a half.

Gene Davidson, business manager for the union, estimated that members would as a result of the new agreement pick up an additional 600 to 800 hours of work a year, which would mean at least \$3,000 dollars added income for each man. Before the agreement, non-union firms were getting much of the maintenance work because they offered lower prices. "We're happy with it," said Davidson. "The employers and the men are both in the same bag."

George Atkins, speaking for the Labour Relations Council, which negotiates for major construction firms in the province, commented that the agreement was "a good example of how a union and employers can co-operate for the best of both."

"The pay cut means the union firm now is competitive and can bid and recapture maintenance work it lost to the non-union companies. The non-union companies still will be paying lower wages, but we have cut the difference to where our member firms can bid against them."

Apart from increasing incomes and getting men off unemployment insurance for part of the year, the agreement has other benefits. Some of the older men and some with families would rather have less pay an hour and be able to stay home than go and work in the North. By creating new job opportunities in the South, it is even hoped that the agreement will provide year-round employment. ♦

Marshal McLuhan pronounces on the Ethereal Society

Society "has degenerated from a physical to an ethereal event," according to Marshall McLuhan, still pronouncing on the human race in general and communications in particular from his vantage at the University of Toronto.

Professor McLuhan, widely hailed as an expert on modern communications and Prophet of Pop Culture, holds forth

regularly before packed audiences at the teaching centre he founded in an old coach house attached to St. Michael's College, University of Toronto. It is called The Centre for Culture and Technology.

The coach house with its quaint, peaked roof and a tall tree growing by the front door is not a likely setting for anyone so intensely involved in today. Inside, the walls are covered with posters. Instead of a blackboard there is a psychedelic mural at the front of the room. A hand-lettered sign on one wall says: "The first thing is to gain perception, though it cost you all you have."

Though it is attached to the university, not all the classes at the Centre are restricted to students: every Monday, from 8 to 10 p.m., there is an open session. Anyone can attend, as long as there is room. If there are not enough chairs, people can sit on the floor and a lot of them do.

It was at one of these sessions that Professor McLuhan recently made his statement about the ethereal nature of society. "We're no longer substantial beings," he declared. "Your're on the air" means a considerable etherealization of your own being... a diminution. When they spread you that thin, there's not much of you."

There is a playfulness in McLuhan's attitude to his subject which sometimes leaves his audience in doubt as to how seriously such statements are intended. He does not rule out the view that much of his writing can be taken both literally and as a joke: he says he does not take it too seriously himself. But people listen avidly as the distinguished looking, grey suited figure puts forward these extraordinary ideas.

Perhaps more serious were his remarks about "the listener as liar." He said, "The lie, no matter how unbased, or baseless, or base has only to be stated to have its effect. All the later retractions and cover-ups and so on can never wipe out that effect. Truth, probably because it is good news, doesn't have the same effect as the lie, or bad news — and so the temptation to lie for the sake of effect is overwhelming.

"Most people when they're listening to anything, translate it into themselves, or into their own wishes and whims, and lie to themselves quite freely about what they hear. The ordinary listener is a liar. That is, he fakes everything he hears, translates it into his own wishes. The user is the content."

The audience at Professor McLuhan's lectures is encouraged to participate in "the total electric drama" — but in practice many come just to watch the professor. From time to time he emits the sparks that have made him famous — most often when he is on his favourite subject, the media and their effects.

Research at the Centre is meanwhile being carried out on something called a speech compressor which, it appears, permits English words to be heard at

several times the usual reading rate. But the overall emphasis of the Centre is on discovery rather than instructions. Says McLuhan, "Our object is simply to study situations developing around us by means of technology.

"We are currently engaged in doing an inventory of all the breakthroughs in all the arts and sciences since 1900. What is a breakthrough? It's very simple. Whatever upsets the appletart is a breakthrough. When you see the people scrambling around trying to pick up the apples, then you know you've made a breakthrough." ♦

Sixteen-year-old completes 32-mile swim

A sixteen year old girl sliced three hours off the previous record for the gruelling 32-mile swim across Lake Ontario this summer. Cindy Nicholas, a Scarborough girl who learnt to swim at the age of 2½ and had been training every day from the age of five "for something like this", dived off the cold, dark shore of Youngstown at 2.20 a.m. on August 16. At 5.48 p.m. she stepped on to the Toronto shore to a tumultuous welcome from a crowd that gathered as news of her feat began to spread.

A cheerful, chunky little blonde, she kept cracking jokes through the first 27 miles of her swim. After that she was fighting pain and weariness, weeping as her red, swollen arms pounded away at the water — but her pace never fell below 70 strokes a minute. That is how she broke the previous record, set by Brenda Fisher in 1956, which was 18 hours and 50 minutes. The last successful attempt on Lake Ontario was in 1957.

It's a lot tougher than the 21-mile swim across the English channel, which has now been done so often that relatively little notice is taken of it. By comparison, Cindy was greeted on her arrival at the Toronto shore by a wealth of promised gifts — including over \$3,000 in cash, a new 2-door Astre car, an Arab horse, a trip anywhere in the world and 50 gallons of ice cream. Her story also rated the main headline and most of the front page of the Toronto *Globe and Mail*, as compared with the tiny paragraph that sometimes creeps into the British press to honour the latest Channel swim.

It's worth considering, if you are a swimmer in search of a challenge. But it will take some swimmer to improve on Cindy's 15 hours and 18 minutes. ♦

Heritage campaign keeps watch on progress

By Jill Pound-Corner

In one Canadian city alone, historic buildings were being demolished at the rate of one every two days. The stone residence of Ottawa's first settler had been bulldozed to make room for the Trade and Commerce Building. The home of Canada's Supreme Court, one of the four original buildings on Parliament Hill, had been torn down to permit a larger parking lot. Parliament's West Block had been gutted and refurbished. The Goulden Hotel, a building of charm and significance, had been demolished and succeeded first by a service station, then by a parking lot. The demolition of Ottawa's grand 19th-century railroad station was only stopped because of the outcry from Ottawa's residents.

While change is both desirable and necessary, the Canadian Parliament decided in the spring of 1973 that balance has to be found between progress and preservation. To serve this end, it authorized C\$12 million (about £4.5 million) endowment of a national preservation organisation, Heritage Canada. Proposed by the government and approved by Parliament, it then became a largely autonomous publicly-owned body.

Matters came to a head in the Canadian capital in a massive campaign to save a convent on Rideau Street, by history-minded citizens.

The convent, a complex of buildings occupying a full city block, was 120 years old. Matthew Revere had built the first part in the 1850s as Revere House, a hotel

with resplendent lobby and grand salons. In 1869 the Sisters of Charity (the Grey Nuns) moved in and it became a school, with the first pupils the daughters of cabinet ministers and Members of Parliament in the new Confederation. From time to time buildings were added, including in 1888 a chapel which was designed by a Father Bouillon. Using the materials of the age, iron pillars and plaster, he captured the Gothic magnificence of Henry VII's chapel in Westminster Abbey. The fan-vaulted ceiling gleaming in gold trefoil and turquoise blue was particularly beautiful.

In the spring of 1971 the sisters applied for the property to be rezoned as commercial and it was bought by a developer who had a high-rise office building in mind. At this point the history-minded citizens began battle, and it appeared for a short time that they would be successful. The developers agreed to keep the old buildings and convert them into a forty-shop area to be called a Mews. The chapel would remain a chapel and the rest of the two-storey complex would be made a shopping mall, shops connected by a wooden promenade. The *Ottawa Citizen* wrote: "Modern commerce will meet historic Bytown, oom-pah music from a beer garden will mingle in the courtyard with violin music from an elegant restaurant..." Unfortunately the developer miscalculated the cost of renovation to be a mere half million instead of a million and a half dollars.

A Heritage Committee, the National Capital Commission and Mayor Pierre Benoit negotiated with the developer to try and find some solution. They failed, with the exception of the chapel, which was dismantled and stored away. The chapel ceiling will be incorporated in a new building for the National Gallery of Canada.

It was, as Mr. R. A. J. Phillips, Executive Director of Heritage Canada, said later, "A classic example of losing the battle and winning the war." The National preservation organisation, Heritage Canada, was endowed by Parliament and people throughout Canada saw the need to form their own groups to watch over their own local heritage. Heritage Canada spearheads a permanent campaign, using some money to buy where it can, although it realises this is impossible in every case. In other cases they try to persuade other agencies and individuals to buy historic buildings and "natural landscapes" and convert them to practical use which will preserve their characteristics. As Mr. Phillips puts it: "Because of the Canadian spread of population, a lot of groups are working in isolation. With no outside support they tend to re-invent the wheel. One of the purposes of Heritage Canada is to make one community of all people concerned with heritage conservation — to serve as a central reference, and, frankly, a kind of lobby." ♦

Inmates approve of co-ed prison

Canada's first co-ed prison, in Prince George, British Columbia, has made interesting progress since its inauguration earlier this year. *The Globe and Mail*, Toronto, published the following progress report by Steve Whipp of the *Prince George Citizen*.

Holding hands and stealing kisses could get you seven days behind bars at the Prince George Regional Correctional

Centre if you happen to be one of the 12 women or one of the 170 men serving time at British Columbia's first co-ed prison.

The regional prison in Prince George, about 500 miles north of Vancouver, was the province's first jail to house male and female inmates two months ago in a common area.

"We have only had a few instances of

holding hands and kissing. They are only human. It's going to happen and we can't police it that strictly. When it does happen they are put in the confinement of their (cell) unit and taken off their programme for seven days," says Arno Brenner, senior correctional officer.

The men say they wish more hours in the day could be spent with the women.

"We hardly get to see them, but I guess

it's because there aren't very many of them in here yet," one man said. "Still, it's better than looking at sourpusses and pinups."

The centre has developed a new atmosphere since it started to house men and women, Mr. Brenner says.

"The females have a good effect on the male inmates. The guys are getting more haircuts and shaves and their clothes are cleaner. Their general conduct has improved."

The change at the jail came in April of this year in an attempt to break down the artificial environment that usually surrounds such centres, Mr. Brenner says.

"We were snickered at by the rest of the institutions in the programme. They kept asking us who was going to perform the first marriage and when the first baby was going to be born, but I think the programme has proved itself," Deputy Warden Barry Rafuse says.

Another change that came with the women is street clothes instead of prison uniforms. "This is just another way to break the artificial environment and to let the people become people," Mr. Rafuse says.

One of the major benefits of the new system is a lack of tension, female prisoners say.

"It's unbelievable. It's like going to another world. You no longer have the tension that you had in an all-broad jail," one woman prisoner says. "You can only talk to another woman about your problems for so long before you go snaky. With guys it's different — they understand and they'll listen longer."

A new type of unit leader has emerged, Mr. Brenner says.

The correctional centre has six units, five that house men and one that houses women.

"The old tough guy is no longer the dominant figure in a unit. A suave, well-educated man has emerged. Usually a guy who is big with the women in the jail has become the leader. I guess it's a status thing," Mr. Rafuse says.

A woman prisoner says: "I enjoy having guys around, especially at work in the laundry and tailor shops — it makes you feel more relaxed. I only wish we had more integrated programmes. We go to the library together and we have our exercise programme together. We also go to church and to shows but the guys sit on one side and the girls on the other. I guess that's because of a lack of supervisory staff."

One woman expresses the desire to play more sports with the men. "I played floor hockey with the guys a couple of times then I was told that I couldn't any more. I guess they thought it was too rough for me, but that is the way I was brought up."

A male prisoner summed it up best when he says: "It's great. It's 100 per cent better. It certainly is better than working with a bunch of guys every day in the shops." ♦

Economic Digest

Unemployment

Women were dropping out of the Canadian labour force in larger-than-expected numbers in September as unemployment levels rose, Statistics Canada reported at mid-October.

The seasonally adjusted unemployment rate for the month was 5.8 per cent, up from 5.3 in August.

The return of students to school left the work force more than 500,000 smaller, but many young people remaining in the work force were unable to find jobs. While the number of men with jobs increased, discounting the effects of seasonal factors, there was a decline in the number of women with jobs.

The actual number in the work force was 9,649,000 and 431,000 or 4.5 per cent, were unemployed. Actual unemployment in August was 4.4 per cent of the work force and in September, 1973, it was 4.6 per cent. (Seasonally adjusted figures generally are considered to be more indicative of performance of the economy.)

The report qualified the one-half of a percentage point jump in the seasonally adjusted unemployment rate in September. "Similar increases have been recorded in September in recent years, but have been subject to subsequent downward revision as more complete information on current seasonal patterns is incorporated into the seasonal adjustment process."

There was a drop of 143,000 in the actual number of women with jobs and this was due in part to students returning. The number of women over 25 taking jobs as younger women left the work force was not as high as expected.

The seasonally adjusted unemployment level for women 25 and older declined to 3.6 per cent from 3.8 and for men 25 and older rose one-tenth of a percentage point to 3.8 per cent.

Regionally, there were increases in unemployment in all areas except British Columbia where the rate in September was unchanged from August at 6.5 per cent. In the Atlantic provinces the September rate was 10.3, up from 9.6 in August; in Quebec, 7.3 per cent from 6.8 per cent; Ontario, 4.5 per cent from 4.4 per cent, and Prairie provinces 2.8 per cent from 2.6 per cent.

Cost of Living

The Canadian consumer price index recorded the lowest increase of the year in September, Statistics Canada reported at mid-October.

At the end of September, the index stood at 170.6, which is 10.9 per cent above the level a year ago and six-tenths of one per cent higher than at the end of August.

This means that a mix of consumer items that could be bought for \$100 in 1961 cost \$170.60 in September, up from \$169.60 in August and \$153.90 in September last year.

Higher mortgage costs and rent increases pushed up the housing component of the index, accounting for four-fifths of the over-all rise.

Natural Gas

The first official estimates of natural gas reserves in the Mackenzie River delta show an accumulation of more than three trillion cubic feet of fuel in one field alone.

According to Imperial Oil Ltd. of Toronto, evidence from the Taglu area would indicate "much promise for future discoveries in comparable structures in the unexplored (tertiary) sediments of the Beaufort Basin. (Taglu is one of several gas fields found on land in the Delta.)

At those reported reserve volumes, Taglu ranks as one of the major gas fields found in Canada. It contains about one-fifth of the estimated threshold gas reserves needed to warrant further development of the region and a pipeline to markets.

Industry sources say discoveries in the delta so far have yielded at least 15 trillion cubic feet of gas. Crude oil prospects — about five billion barrels in reserves are needed for commercial purposes — are somewhat less spectacular. There has been only one oil occurrence in the Taglu field, in an area isolated from the main gas-bearing sand reservoir.

The Taglu field disclosure was made at the Canadian Society of Petroleum Geologists conference on frontier and off-shore exploration in Calgary, Alberta in October.

Energy

Canada's increased crude oil requirements this year were supplied 99 per cent from domestic sources, Statistics Canada figures show.

Canadian crude oil requirements — based on anticipated and actual refinery receipts of crude — rose to 1,837,000 barrels a day in 1974, up 155,000 or 9.2 per cent from 1973.

Only 1,000 barrels a day of this increase was supplied from abroad, as the other 154,000 barrels a day came from domestic sources.

This year's estimated requirements are 19.6 per cent higher than in 1972. Imports of crude will account this year for 47 per cent of requirements, down from 51 per cent last year, the figures show.

In 1974, western Canadian oil wells will supply an average 973,600 barrels a day, eastern Canadian wells 2,800 barrels a day, and foreign wells 860,500 barrels a day. ♦

The Arts

John Neville plans to stay in Canada

By John Young

A small and somewhat decrepit Salvation Army hall in Edmonton, Alberta, is hardly the place you would expect to find one of the most distinguished British actors of the 20th Century. But John Neville has made the transition from the West End to western Canada smoothly and, from all appearances, happily.

The metamorphosis from demi-god of Stratford, the Aldwych and the Old Vic to thespian father-figure in an oil-and-cow town of half a million people, whose inhabitants until a few years ago scarcely knew that the live theatre existed, has been eased by his disillusionment with Britain. "Maybe it would be better if people worked, but they haven't worked since the war," he observes. From an actor it seems an unexpected piece of conventional conservative wisdom, but actors are not always as radical and unconventional as is often supposed.

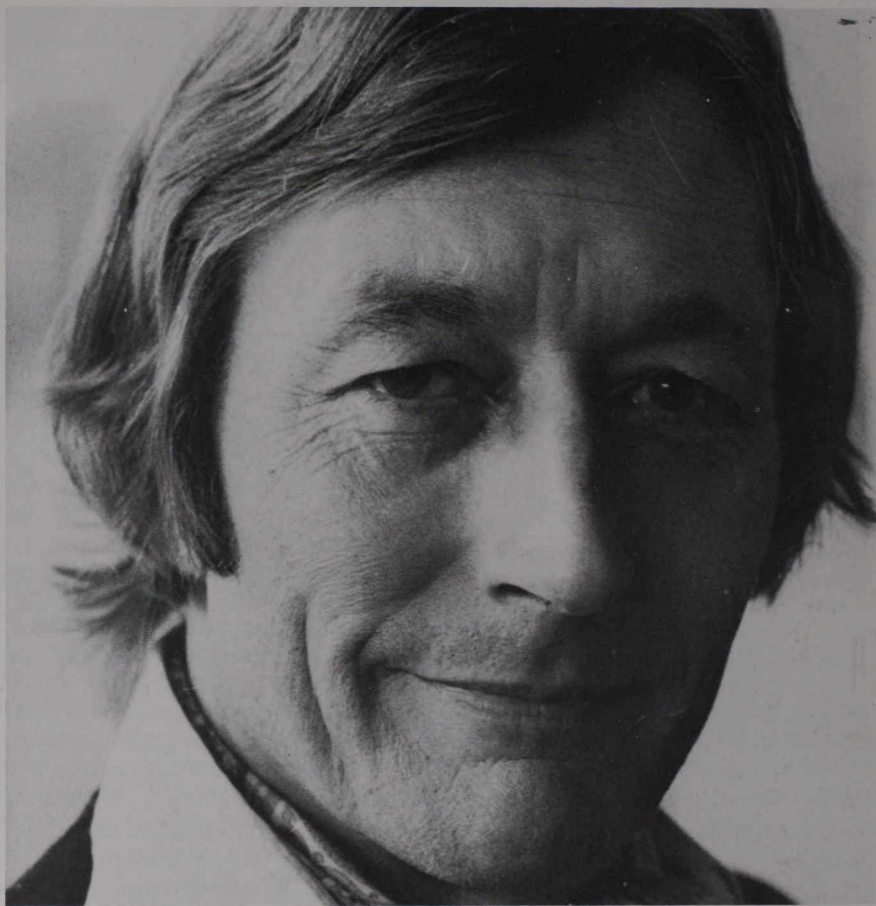
But in another sense Neville is a rebel. He quarrelled with the latter-day sheriffs of Nottingham, where the Playhouse under his direction was an outstanding success. He is equally scathing about the English commercial theatre, which he calls "an artistic sweatshop." Has he no nostalgia for Britain? "No, none at all." He gulps his ice-cold beer in an angry decisive gesture.

Canada, familiar from earlier tours, offered the chance to start afresh. In August 1972 he was invited to direct *The Rivals* at the new National Arts Centre in Ottawa; from there he moved further west to Winnipeg to perform in *Hedda Gabler*, and then returned to the capital to play in *The Tempest* and *Mrs. Warren's Profession* and to direct *Don Giovanni* at the Opera House.

This was clearly the sort of diversity and challenge he was seeking, after a frustrating period of wondering what the future held. When Edmonton put the word out that it was seeking a top-level director, Neville had no hesitation about making it known that his services were available.

The carrot was a brand-new civic theatre promised for the autumn of 1975 — Nottingham all over again perhaps, but without the "aggro." But he insists that this was not what made him stay; the real challenge was a public which had been reared on the inanities of American television and who deserved something better.

An admirable sentiment, but it was not easy getting the message across. Neville recalled his experience with *The Caretaker*



John Young has been a reporter and feature writer on *The Times* for many years and is now their Environment Correspondent. He talked to John Neville on a visit to Canada earlier this year.

ten years earlier; half the audience had walked out, and he warned his Canadian cast that in Edmonton they would do the same. They did.

He of course knew his audience, realised that in a temporary theatre seating a mere 290 people the seats were all sold on a subscription basis to people whose idea of *avant garde* was probably *Pygmalion*, and made due allowance. He mollified them with *Much Ado* and an innocuous Broadway musical, *I Do, I Do*, followed up with *How the Other Half Loves*, *Child's Play* and *That Championship Season*, and ended up with a double bill of *Oedipus Rex* and *Scorpio Rising*. When I talked to him earlier this year, he had plans to turn *Scorpio* into a musical and present it in Ottawa. "It should be quite a good evening."

Just in case conventional Edmonton audiences does not appreciate all this, he has started Citadel on Wheels, a summer touring company to travel round the mining towns of the Northwest Territories. Tough frontier settlements like Yellowknife, Hay River, Inuvik and Norman Wells might not seem obvious candidates for *Hamlet* or *As You Like It*, but Neville claims he was

told that, if the "culture" was there, the audience would buy it. A far tougher assignment was a night of jazz and poetry reading in Fort Saskatchewan jail which was, he says, "a fantastic success."

Neville admits to three main difficulties. Foremost is the problem of guaranteeing professional Equity members full-time employment — hence the long-established flight of top Canadian actors to the United States or to Europe, where they are often mistaken for Americans. Second is the absence of a repertory tradition, which makes it difficult to "slot in" new plays on Friday and Saturday nights when full houses are virtually guaranteed and audiences are in a receptive mood. Third is the difficulty of "selling" new plays by Canadian authors — nationalism in Canada, though often vociferous, has all too obvious limits.

Having returned to England only once, briefly, to collect his wife and children, Neville evinces no doubts about his new home. "I do get depressed at times," he concedes, "but I would never go so far as to say I should be back in England. This is a very exciting country, and Edmonton is a very exciting place. I relish the job I'm doing to a point that is almost alarming." ♦