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HOW BAD CANADA'S WATERS?

[And What's Being Done About It?]

CANADA, with more fresh water than any other nation in the world, is now aware that it has none to waste. It has 300,000 square miles of inland water, including a share of four of the five Great Lakes, more than forty other large ones

and scores of major rivers and bays. Much is sweet enough to be bottled, and occasionally it is; but as factories and people crowd the shores, the pollution climbs, bathing beaches are abandoned, and fish die.

The problem has



The villagers of remote Bouchette, Quebec, drink the tea-colored water straight from the Gatineau River. This year typhoid hit. The Ottawa River and the St. Lawrence near Montreal are polluted badly, and across the continent near Vancouver the lower Fraser is growing foul. Parts of Lake Erie are nearly dead and Lake Ontario is dying.

been building for years, but recognition has been relatively recent. Norvald Femreite, a graduate student at Western University, tying together the rumors, ideas and suspicions of many scientists, measured the mercury in fish last year. He found the poison content far above a safe limit. People eating the contaminated fish were threatened and there were other dangers too. Mercury in alkaline waters evaporates easily, adding to the heavy amount in the air produced by burning coal and oil, and then rains down on fresh water and crops alike.

These conditions, duplicated and often magnified around the world, have created a strong movement in Canada to clean up now.

On a significant, if limited scale the Ontario government has sued Dow Chemical Co. of Canada, identified as the main source of mercury in Lake St. Clair and the St. Clair River, for \$25 million, to reimburse the fishermen for their massive financial loss. The Manitoba government already had sued a chemical firm for its pollution of Lake Winnipeg. And a hundred-mile stretch off the Arctic Coast of Canada has been set aside as a pollution free environment. The village of Bouchette is struggling with the fiscal problem of cleaning up the Gatineau.

The main action, however, centers on the border. This summer the Canadian and United States governments formally began their second crusade to clean up the two most contaminated Great Lakes, Erie and Ontario, and the international section of the St. Lawrence River.

J. P. Bruce, director of the Canadian Centre for Inland Waters at Burlington, Ontario, says Canada's problem can be divided into two main parts — the pollution of the Lakes and the pollution of the rest of the inland waterways.

"They are equally important in terms of local and regional effects," he said, "but the Great Lakes are by far the most important economically because of the great number of Canadians who live in the area."

By the last census, 74 per cent of all Canadians live within 100 miles of the Canadian-U.S. border, most of them in the Great Lakes region.

THE FIRST Canadian-U.S. clean-up started with the Boundary Waters Treaty, which prohibited pollution on either side "to the injury of the health and property on the other." The International Joint Commission was founded in 1909 to keep track of the treaty.

Waste from new towns and heavy industries was beginning to destroy the lakes' ecosystems and endanger the health of the people. The typhoid epidemic of 1912 caused the two governments to commission a six-year definitive report from the IJC, evaluating conditions of the Great Lakes and recommending solutions.

The broad solutions recommended were never adopted. Instead, by 1920, a much cheaper answer apparently was found: the bordering cities began to purify the lakes with chlorine, a new magic formula. Everyone relaxed; no one seriously thought the world's largest inland waterway ever would be threatened again.

Fifty years later, with thirty million people in the Great Lakes region, parts of Lake Erie are moribund and the other four lakes are failing fast.

Fish have died in great "kills" from the lack of oxygen. Blue pike, whitefish and cisco have almost vanished. The yellow walleye, the lake trout and the sauger are diminishing as less valuable, pollution-tolerant fish like the smelt and the yellow and white perch are taking over. Sometimes, particularly in late summer, no fish at all can live in the western end of Lake Erie, near Detroit and Windsor.

The 1970 IJC report, accepted by Canada and the United States, constitutes the basis for an agreement currently being drafted by the two countries. It will incorporate a number of measures, the most important of which is the agreement on common water quality objectives for the Great Lakes.

"The water will be good enough for any kind of fish to live in by 1975," Jack Davis, the new Minister of Environment, told a press conference following a joint meeting at the State Department in Washington, D.C. in June.

To accomplish this the nutrient removal program must be finished by the end of '73, and all treatment facilities brought up to standard by 1975.

Last month in a prelude, Canada's Federal Government agreed to lend up to \$167 million to Ontario, twenty-five per cent of it forgivable, to construct sewage treatment plants and trunk sewers around the lower Great Lakes and St. Lawrence River.

External Affairs Minister Mitchell Sharp and Russell Train, chairman of the U.S. Council on Environmental Quality, jointly announced the 21-

Continued on page eight

POP MUSIC, a fusion of Rock, Folk, and Blues, did not just come up the Mississippi—it also came down the St. Lawrence.

The Canadian influence on Pop is real if not overwhelming and of the gentle rather than the hard rock variety—in the words of critic John McFarlane of *Maclean's Magazine*, most of the contributions have not been "psychedelic."

The first Canadians to move into the upper reaches of the Billboard LP listings were Ian and Sylvia Tyson with a dozen LP hits including "Four Strong Winds," their Golden Record. Their significant departure from straight Country and Western was sometimes called Country and Northwestern. Joni Mitchell hitch-hiked from Saskatchewan to the Mariposa Folk Festival in 1965 carrying her guitar and her tunes with her own particular lilt, a million miles from Acid Rock.

Gordon Lightfoot, who started as a boy soprano in Orilla, north of Toronto, is Canada's most famous composer-entertainer (famous first in Canada, then in the United States), and his songs are folk-rooted. They went over the border first, as recorded by Peter, Paul and Mary, Harry Belafonte, Judy Collins and others. He was enormously popular in Canada as a singer as well, and in the past year or two his voice has become as familiar in the States as his songs—a rapid blooming, attributable in part perhaps to the law requiring Canadian broadcasting stations to present a definite per cent of Canadian-oriented programming. Station CKLW in Windsor, the heaviest rock station in the Detroit area, featured Gordon. His Warner Bros. album, "If You Could Read My Mind," started at a moderate clip, then took off.

Leonard Cohen, who is a poet first and a composer next, has contributed to the quality of folk rock with such songs as "Suzanne," and Galt MacDermot has scored the ultimate triumph of the age of Aquarius with his music for *HAIR*. Bruce Cockburn contributed the memorable sound track for the film, "Goin' Down the Road."

Neil Young, who works sometimes alone and sometimes with three other independents as part of Crosby, Stills, Nash and Young, balances, in the words of one critic, "the almost overbearing optimism of Crosby, Stills and Nash. He is the poet in the group. His songs have an eerie depth.

He is the one element that keeps the smooth sound from being slick."

The Canadian group which may have made the most distinct contribution to contemporary music is The Band, which began as The Hawks, backing up Romping Ronnie Hawkins, became the back-up group for Bob Dylan, and then in "Big Pink" simply The Band.

Levon Helm, out of Marvell, Arkansas, the single non-Canadian member, started gathering them together: Rick Danko, who'd been an apprentice butcher in Simcoe; Jaime Robbie Robertson, of Toronto; Richard Manuel from Stratford; and Garth Hudson, from London, Ontario.

"We were playing Atlantic City and Dylan heard about us," Robbie Robertson told an interviewer last year, "and we'd heard about him, of course, but weren't really into that kind of music. Dylan brought us into a whole new thing and I guess he got something from us."

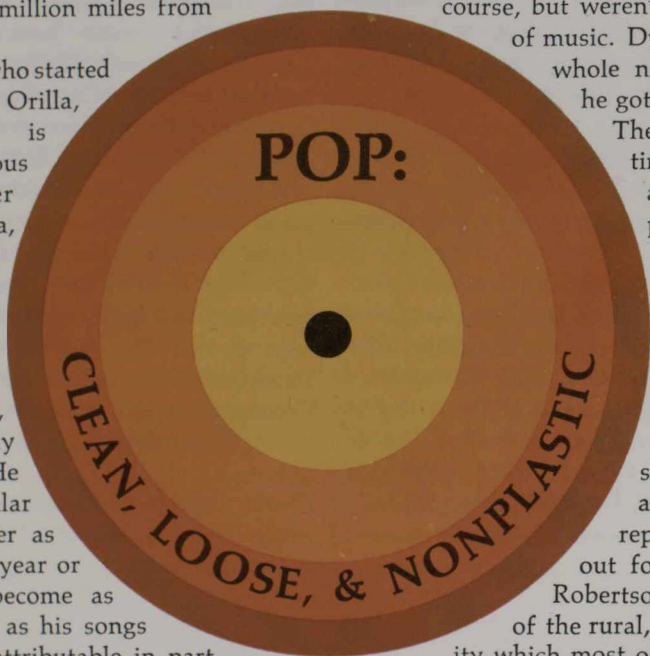
The Band has its own distinctions—the members are gentle, unobtrusive people, not remarkable in dress and antics, and inclined to be low key and appreciative of attention. When they were playing Brooklyn College an enthusiast in the audience shouted "Play all night," and Robbie Robertson replied, seriously, "Send out for sandwiches."

Robertson suggests something of the rural, loose, nonplastic quality which most of the Canadians share.

Talking about The Band's second album, he has been quoted as saying, "There is a theme somehow. It just kind of developed. I don't know how. But it has to do with the idea of harvest. Not about it, but just a feeling. Where we're from in Canada and in Arkansas it means a particular thing. It is a time of year most people feel the best. The moon gets in a certain position. It's Carnival time, school starts, the leaves change, the breeze is different. Everyone gets paid for harvesting the crop. It's a feeling—I mean we didn't do it deliberately."

The Band members, in John MacFarlane's opinion, have changed the life style of a great many Pop performers by being "less like movie stars, more like artists." Others like Neil Young have insisted on remaining private people and independent from the grind of endless one-night stands.

What may be the most famous band out of Canada, Steppenwolf, is an exception to the gen-



eral low key tone — its most controversial title is probably the famous "Pusher." John MacFarlane says it is "psychedelic."

John Kay came to Canada from Germany and became immediately part of the emerging Pop scene. "I managed to scrounge up some money and buy this beat-up guitar. I hacked around on that, doing country and western music between fourteen and seventeen, finished high school, then went to the States. The folk revival was just happening. The country and western thing that I had been doing was sort of a semi-part of that. I was bumming around for a couple of years in both countries, Canada and the States, with a guitar, a duffel bag and a sleeping bag, playing dives and bars and coffee houses and joints. It was a great life in a way."

He met the members of a band called The Sparrow while playing in Yorkville Village in Toronto, and he and The Sparrows eventually became Steppenwolf. Steppenwolf, unlike The Band, does not believe in letting the music speak entirely for itself. Jerry Edmonston says "Kids come to the places to see you dressed freaky. They want to see you like that. If you wore what they wore, they'd walk out on you."

The chroniclers of Pop and Rock have on occasion talked vaguely of the Canadian Sound, but after listening it seems clear only that the Canadian performers do not sound alike. There are a great many Canadians singing, but the sound is woven into the sounds of San Francisco, Woodstock, HAIR, Fillmore East, Fillmore West and Carnegie Hall, as well as Toronto.

Canadian Studies

TRADITIONALLY, "Canadian studies" has not been one of your hotter subjects in United States academe, though the field does have its advocates in a handful of universities and colleges. All in all, however, it's probably fair to say that Americans' education gives them the slimmest sense of Canada-literacy.

Most Americans, says Dr. Dale Thompson, head of the Johns Hopkins University Center for Canadian Studies, seem to grow up learning "a version of Canadian-American relations over the past two centuries at least as different from what is taught in Canada as the history of Canada taught in French Canada is different from that taught in English Canada."

In the past, what growth there has been in Canadian study has been haphazard Canadian-studies scholars agree, partly because of the feeling that Canada is little different from the United

States, and partly because Canada has not been a "crisis area" in U.S. terms.

As with film study and other not yet fully accepted academic disciplines, many of the college courses (most of them in border states) have been the work of one individual — usually an expatriate Canadian or in some cases a U.S. citizen with a highly developed affinity for Canada: John Sloan Dickey, for example, who was until recently president of Dartmouth.

The most intense work has been at nine universities with Canadian studies programs, and it has been largely at the impetus of these that Canada scholars have been trying to broaden their influence. In April of 1970 Johns Hopkins sponsored a conference on Canadian studies at Airlie House, a think-center farm near Washington. The conferees looked at the scene with some introspection, some humor, and some alarm. Largely as a result of that they decided to start an Association for Canadian Studies in the United States, and they did.

This past April, ACSUS had its first meeting at Duke University. Besides the setting up exercises, a number of papers were presented on the theme of "The influence of the United States on Canadian development." Subjects included the recondite and the current, from "American Influence in the Development of British Columbia Irrigation, 1900-20" to "International Unionism, Communism and the Canadian Labour Movement: Some Myths and Realities," to "American Influences on the Mass Media," to "The Effects of the Automotive Agreement," and numerous other topics. Some may be published by Duke University.

The scholars also published a 36-page newsletter. Issues will be sent to members twice a year. Dues are \$5 for two years, and anyone with more than a passing interest in Canada is invited to join.

FOR MORE INFORMATION, write Dr. Roger Swanson, Center for Canadian Studies, The Johns Hopkins School of Advanced International Studies, 1740 Massachusetts Avenue, N.W., Washington, D.C. 20036. There are a limited number of copies of the newsletter for early inquiries.

Rape

THE CANADIAN POST OFFICE has ruled that Tisdale, Saskatchewan, may not call itself the "Land of Rape and Honey."

The Tisdale area produces rapeseed, a major source of edible oil. It also produces a great deal of honey.

It wished to use the slogan as a stamp cancellation.

The Hon. Jean-Pierre Côté, Minister without Portfolio argued against it in the House of Commons, saying that rendered bilingually it was too long for the cancelling stamp "even after removing the seed from rape seed."

He said there was also a problem of interpretation, since "not everybody knows what rape means."

Despite a severe infestation by the Bertha army worm, rape production is expected to exceed one hundred million clean bushels this year.

Giants On Fairy Feet

WHEN the hard freeze of winter comes to the Northwest territories, men can now move freight over the literally trackless wastes — from Yellow Knife to Port Radium and over the Mackenzie Valley from Providence to Inuvik. They move on gigantic snow tractors over ice, packed snow, and frozen muskeg.

In 1920 Joseph Armand Bombardier, a young French Canadian engineer, began experimenting with machines to go over the snow. He developed a twelve passenger vehicle in 1936 and later his tracked Penguin, which the Canadian army used to slog through the low countries in World War II.

Meanwhile, other men looked to making huge vehicles with the same tracked principle — ma-

chines to carry loads of logs and oil exploration equipment virtually anywhere as cheaply as trucks and without the ice roads that trucks need in the North.

One of the principal big track innovators was Bruce Nodwell, who began building tracked vehicles in 1952. Today he and his son, John, run Foremost Tracked Vehicles in Calgary — one of the two companies in the world making giant-sized tracked vehicles. The competition, also in Calgary, is Flextrac Nodwell, which Mr. Nodwell left.

Foremost gained something of an international reputation in 1968, when Russia put in her first order for fifty-two Husky Eights and twenty Husky Sixes (the number designating the number of axles). The \$150,000 Husky Eight carries forty tons on a deck nine by thirty-four feet, going seventeen miles per hour and fording streams four feet deep. It will start in temperatures fifty to sixty degrees below zero. Since its ground pressure is only four to five pounds per square inch, it has little if any effect on the tundra. A car, by comparison, exerts ten or more psi. Foremost is now testing a new track, with even less effect on the tundra.

Mr. Nodwell sees some new developments coming in far-north traffic — the greater use of sleigh trains, such as Imperial Oil used last spring to carry 105 tons of equipment wherever they wanted — and the advent of even bigger individual units. "We're now developing the sixty-ton Grisley Eight, which we hope the Russians will be interested in," Mr. Nodwell says. "It should be ready around Christmas."



THE ARMY

THE MOST REMARKABLE THING about the Canadian Army is that it ceased to exist in 1968.

It became part of the Canadian Armed Forces — a single group under a single head — which today holds in reasonable harmony and identical green uniforms the former members of the Army, the Royal Canadian Navy and the Royal Canadian Air Force.

The CAF is in some respects unique and in many unusual:

—It is, in the Canadian tradition, a force of volunteers. It recruits by advertisement and has little difficulty attracting and maintaining officers and men, but its strength, by design, is declining. It has coalesced from 126,474 in 1962 to its present 88,496.

—It performs many basically nonmilitary jobs.

Its men flew aid and evacuation planes to Peru during the 1970 earthquake and to Pakistan during the floods. Divers went down into the freezing and oily waters of Chedabucto Bay in Nova Scotia to pierce the holds of the sunken tanker Arrow and pump out thousands of tons of oil which otherwise might have leaked out to destroy the fish and dirty the beaches. Pilots conduct pollution patrols of coastal and Arctic waters. Research is underway to make greater use of the Gulf of St. Lawrence during the heavy ice season. —The caste system is somewhat less than in some other services. For example, the green uniform covers the commissioned and noncommissioned alike.

"The same cloth will be used for officers and men," as the Minister of National Defence said

White Paper on Defence

IN THE WHITE PAPER ON DEFENCE, issued late last month, the Department of National Defence outlined and explained present and future policies. The document reasserted the objectives of defence policy as stated by Prime Minister Trudeau in April 1969. Primary emphasis is placed on the aim of maintaining Canada as an independent entity, safeguarding sovereignty and independence, and the attainment of peace and security.

Four major areas of activity for Canadian Forces are identified:

- surveillance of Canadian territory and coastlines in protection of sovereignty;
- defence of North America in cooperation with United States Forces;
- fulfillment of NATO commitments; and
- performance of such international peace-keeping roles as may be assumed.

HIGHLIGHTS of the White Paper on Defence:

Increased military surveillance of Canada's land, waters and airspace for national security to permit greater surveillance support for other government departments, such as Energy, Mines and Resources, and Environment.

Canada to contribute to the continued effectiveness of the deterrent system for North America until alternate means are found to

maintain peace.

Forces to continue to be prepared to react quickly in aid of the civil power in containing civil disorder.

BOMARC anti-aircraft missiles sited in Canada will be retired; interceptor aircraft to be maintained at the current level for bomber defence, peacetime identification, and sovereign control of airspace.

Canada to continue to station forces in Europe with NATO and to designate other forces in Canada for Europe in the event of an emergency. Land forces will be re-equipped and reconfigured for tactical reconnaissance missions, and backup air support from Canada will cover NATO's northern flank.

Positive consideration to be given, when warranted, to requests for Canadian participation in international peacekeeping.

The defence budget freeze will be ended in 1972-73, one year ahead of schedule. The budget will remain within about one per cent of the present \$1.8 billion ceiling for 1972-73.

A summary of the White Paper on Defence is available from the Canadian Embassy, Washington; copies of the Paper itself may be obtained from Information Canada, Ottawa, Canada, for \$1.00 pp.

[WHAT'S IT UP TO?]

at the time of the reorganization plunge.

"With the overall high calibre of our men, it is no longer acceptable to have them wear anything but top-grade material and design. . . . They are first-class and they should look first-class."

Officers are trained on civilian campuses or at the three military colleges. Most of those at the latter spend their last two years at the Royal Canadian Military College at Kingston, Ontario. The emphasis there and everywhere is on academic achievement; little time is spent during the school year on purely military matters. The military is focused on during the twelve-week summer encampments. Most graduates of RMC speak French and English with ease.

Still the CAF is most emphatically a military service. It has more rather than fewer traditions—air pilots have not become tank drivers nor seamen foot soldiers. Old and often splendid regimental dress is still permitted on ceremonial and social occasions, and primary loyalties continue to be to regiments, ships and squadrons, not to concepts such as the functional Command.

The Force continues to supply skilled units to NATO in West Germany and on the Atlantic. Some 2800 men serve in the land units, one mechanized battle group, and three fighter squadrons at Lahr and Baden-Soellingen, but they no longer handle nuclear weapons. The CAF sends men to the UN at Cyprus, Palestine, Korea, India and Pakistan.

Canada and the United States work together in the North American Air Defense Command.

It supplies military training assistance to developing Commonwealth nations and to some selected French speaking and Pacific rim nations.

It pursues technological research and the development of new weapons, continuing with verve (and with occasional cost overruns. The price of the Helicopter-Destroyer Project, DDH 280, went from \$192.7 million to \$251 millions, for example, an escalation of 25 per cent).

Soldiers also assisted the Provincial and Federal police during last fall's kidnapping crisis.

The reorganization was an attempt to make all this more efficient. It began after World War II, with an effort to combine nonmilitary jobs. The drastic phase began in 1964. The budget would not permit expansion in defence spending, but pay scales for military and civilian personnel

were irresistably going up. It was assumed unification would permit the trimming of manpower and the maintaining of research and capital expenditures. The assumption has proven correct.

A single Minister of Defence, now the Hon. Donald S. MacDonald, became the man in charge and below him a single Chief of Defence, a military man, replaced the former joint chiefs. The Army, Navy and Air Force ceased to be, the whole was divided instead into Commands, each involving two or all three of the former services.

The Mobile Command, the prime user of manpower, is headquartered in Montreal. It has three combat groups, the Canadian Airborne Regiment, the UN Force in Cyprus, two tactical fighter squadrons, a transport helicopter squadron and a combat training center.

The Maritime Command, in Halifax, is as its name suggests, concerned with the sea. It has submarines, destroyers, support ships and minesweepers, and it also has aircraft for patrols.

The Air Transport Command provides air transport for all components of the CAF.

The Training Command in Manitoba provides training for the pilots of helicopters and fixed wing aircraft and offers a variety of other technical training. It has nothing to do with the training of officers in the military or civilian schools. The CAF Headquarters is in charge of the National Defence College, staff college and school, as well as the three military colleges at Kingston, Royal Road, and Saint-Jean, Quebec.

The cadets do not decide on their particular preference, land, sea or air, until the end of their first year, and most attend RMC for the last two years. This has given officers in different pursuits a common background. The captain of a destroyer may have gone to classes with the colonel of an infantry regiment. There is no grounds for old school rivalry.

The unification has worked remarkably well. Though there were "proud and gallant men who received the news with a heavy heart" as was suggested during the debate on the unifying Act of Parliament, Canada has kept her armed forces in a modest but adequate condition. The Defence's budget is \$1.86 billion a year—about 14.1 per cent of the national budget for a force the size of the U.S. Army before World War II.

Continued from page two

point program, which for the first time accepts common water standards, outlines methods to achieve them, and gives greater authority to the IJC, administratively and jurisdictionally.

The Commission will monitor the scene and is expected to ask for appropriate government action against violators. It will have no enforcement powers itself and there will be no redress in international court. Mr. Sharp said lawbreakers will be tried "in the world court of public opinion."

THE REPORT shows most pollution originates on the U.S. shores, and consequently the implementation will cost the United States about two billion dollars—at least half from the federal government and the rest from state and city monies. Canada will need to spend several hundred million dollars—"over two," said an IJC spokesman, "but under a billion."

The commission has identified the Niagara River into Lake Ontario and particularly the Detroit River into Lake Erie as the main source of all pollution in the lakes.

Before World War II, Lake Erie was mesotrophic, probably the best a relatively shallow lake in a populated area could be. Mesotrophy is a healthy balance of fish and plant life, fed by a reasonable supply of nutrients from municipal and industrial sewage. Today the abundance of these wastes has brought Lake Erie closer and closer to eutrophication, where super-rich water fosters so much plantlife the rotting vegetation

sinks and smothers the oxygen which fish need to breathe. This is a change that would have taken tens of thousands of years to accomplish naturally. Lake Ontario, deeper than Erie, stagnates much more slowly. Thirty years ago it was oligotrophic—the sort of water some of us remember from our childhoods, clear and clean with fish but little algae, a swimmer's haven. Now Lake Ontario is basically mesotrophic.

A combination of nitrogen and phosphorus triggers eutrophication and if only one is removed, the process can be reversed. Fortunately, phosphorus can be, and more cheaply, easily and quickly than any other pollutant. Eighty to 95 percent can be eliminated by better sewage treatment and the job would be simpler still if phosphates were banned from detergents, which account for 70 percent of the municipal wastes from the United States and half from Canada. The rest primarily comes from human excrement, the cause of bacterial contamination, and to some extent, from farmland erosion.

Although only ten miles of the Canadian shoreline on Lake Erie is polluted by bacterial contamination, one-third of the stateside shoreline is fouled by it, "continuously or intermittently," the IJC reported. Beaches in Toronto and Rochester, on Lake Ontario, near the mouth of the Niagara River, have been closed.

Canada already has limited the phosphate content in detergents to twenty percent and is about to lower it to five. The IJC wants it banned altogether in both countries.

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