

Canada Weekly

Volume 2, No. 41

October 9, 1974

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Ottawa, Canada.

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Oct. 9, 1974
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Benefits of nuclear energy without the proliferation of nuclear weapons

Nuclear arms control and peace-keeping were two of the main topics in Secretary of State for External Affairs Allan J. MacEachen's first address to the United Nations General Assembly on September 25.

While controlling the nuclear arms race was the direct responsibility of the nuclear nations, he said, halting the wider dissemination of existing nuclear arsenals was the responsibility of all nations and was one that Canada took seriously. Canada would satisfy itself that any country using Canadian nuclear technology or material would be "subject to binding obligations" to ensure it would not be used for explosive devices, said Mr. MacEachen.

Of peace-keeping, he stated that Canadians were now "less inclined to accept it in an unquestioning way" and that it must be "accompanied by a parallel effort on the political level...to convert the temporary peace that a peacekeeping force is asked to maintain into something more durable".

Excerpts from the Minister's address follow:

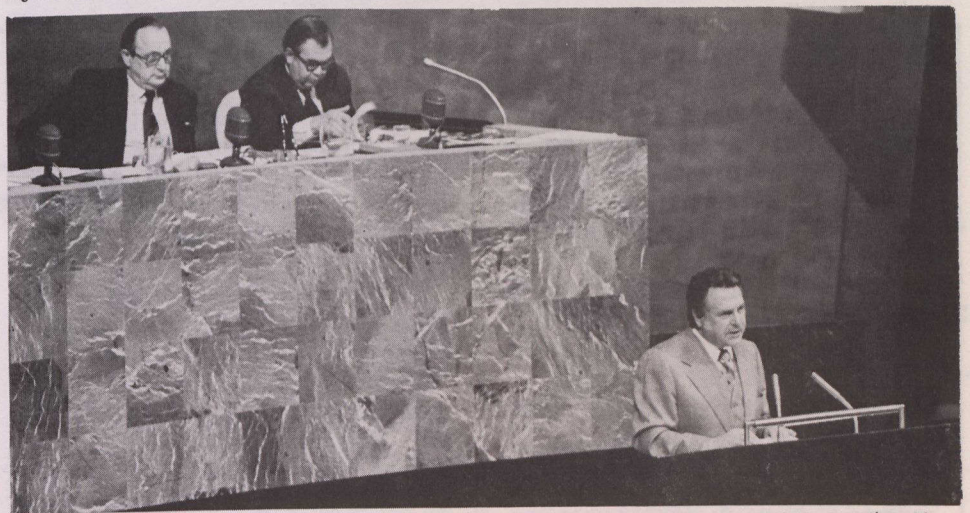
...Our security is threatened more than ever today by developments in nuclear and conventional warfare.

* * * *

Specifically, the problem we face is to devise a system which will allow the dissemination of the benefits of nuclear energy without at the same time contributing to the spread of nuclear weapons. The international community has attempted to devise a system to cope with this problem. Can-

ada has been very active in this endeavour. But the system could be strengthened further.

We have developed a valuable system of nuclear power generation and we believe that nuclear power should not be withheld from those whose energy needs can best be met by this method. We are deeply committed to the cause of international development but equally we are anxious to avoid contributing to the proliferation of nuclear weapons.



United Nations/T. Chen

Allan J. MacEachen, Secretary of State for External Affairs, addresses the United Nations General Assembly on September 25. At the presidential rostrum (left) are Hans Dietrich

Genscher (Federal Republic of Germany), a Vice-President of the Assembly, and Bradford Morse, Under-Secretary-General for Political and General Assembly Affairs.

In addition to our requirements, and subject to security and resource limitations, we want to make our nuclear power generating system available to other countries. However, until more adequate internationally agreed measures are instituted, Canada intends to satisfy itself that any country using Canadian supplied nuclear technology or material will be subject to binding obligations that the technology or material will not be used in the fabrication of nuclear explosive devices for whatever purpose. To this end Canada attaches special importance to the role of nuclear safeguards applied by the International Atomic Energy Agency.

The need for truly effective anti-proliferation measures fully accepted and applied by the international community is pressing. The nuclear technology involved is no longer beyond the reach of a growing number of countries. The costs of developing a nuclear explosive device are no longer prohibitive. The principal problem is to obtain the necessary materials. Every day more and more of these materials are being developed throughout the world and the problem of controlling their movement, as well as their use, is becoming proportionately greater.

Nuclear chain reaction

The phenomenon of proliferation is, in political terms, something like a nuclear chain reaction. With the suc-

cessful explosion of a nuclear device by each newcomer to the ranks of the nuclear powers, the greater grows the desire of other countries "to go nuclear". In a world without truly effective safeguards they feel their national existence threatened. If each new nuclear-weapon state prompted its neighbour to follow its example all concerned would find their security quickly undermined.

We believe that it is the very existence of nuclear explosive devices that presents the hazard to humanity and it increases in proportion to the number of countries possessing them. One need make no distinctions in terms of what countries possess such devices. The danger lies as much in the number of countries that have them as in the policies of the possessors.

If we are to avoid a nuclear catastrophe we must accept that there are practical limits to the application of the principle of non-discrimination. My Government urges the international community to accept the obligation not to contribute to the uncontrolled spread of nuclear explosive capability, and the safeguards required to ensure compliance with that obligation.

International supervision needed

Our aim is to seek broadly international measures which will halt both the multiplication and the wider dissemination of nuclear weapons, and which will check the spread of the technology of nuclear explosive devices and the

further development of that technology as applied to nuclear weapons. The Non-Proliferation Treaty, the efforts to limit strategic arms, and the achievement of a comprehensive test ban are designed to serve these objectives. As for the halting of the proliferation of nuclear weapons, all states should undertake not to transfer nuclear technology or materials except under international supervision aimed at ensuring that the transfer is not used for fabricating nuclear explosive devices. In addition, all states should place their inventories of nuclear fissile material they hold for peaceful purposes under international supervision. Nuclear weapon states should, as a first step towards this objective, place their peaceful nuclear facilities under this supervision and seek to halt their production of fissile material for weapons purposes. International supervision of fissile material is the best available means for the international community to be assured of each state's peaceful intentions.

The nuclear threat to our security may be dramatic and awe-inspiring but we cannot neglect the more prosaic but lethal threat from the use of conventional force.

Peace-keeping

One of the few useful tools which we have developed so far to deal with this problem is peace-keeping by a United Nations sponsored force. Canada has responded positively to United Nations requests and has been engaged in virtually all of the United Nations peace-keeping operations to date. This has not been without cost in lives of Canadians and of those from the forces of the other participating countries.

Our interest is therefore obvious. There is no doubt in my mind that an overwhelming majority of Canadians continue to accept the importance and the usefulness of a United Nations peacekeeping role. But I would be less than candid if I did not admit that Canadians are today less inclined to accept in an unquestioning way the burdens of participation. Their concern springs mainly from the fact that peacekeeping endeavours often seem to do no more than perpetuate an uneasy *status quo*.

If United Nations' peacekeeping activity is to be fully effective it must be accompanied by a parallel effort on the

Canadian delegation to the United Nations General Assembly

Allan J. MacEachen, is Chairman of the Canadian delegation to the twenty-ninth regular session of the United Nations General Assembly in New York. Other members of the delegation are:

Dr. S.F. Rae, Ambassador and Permanent Representative of Canada to the United Nations, New York; Senator H.W. Hays; R.D.G. Stanbury, Member of Parliament; M. Prud'homme, Member of Parliament; Mrs. M. Masson; W.H. Barton, Ambassador and Permanent Representative of Canada to the Office of the United Nations at Geneva and to the Conference of the Committee on Disarmament; N.H.F. Berlis, Ambassador and

Representative of Canada to the Economic and Social Council of the United Nations; R. Elliott, Ambassador of Canada to Algeria; E.G. Lee, Legal Adviser, Department of External Affairs.

Special advisers are: J.E.G. Hardy, Director-General, Bureau of United Nations Affairs, Department of External Affairs; J.A. Beesley, Ambassador to Austria and Permanent Representative of Canada to the United Nations Development Organization and to the International Atomic Energy Agency; S.A. Freifeld, Ambassador of Canada to Colombia; and G.F. Bruce, Secretary-General of the delegation.

Prime Minister of Japan visits – possibility of increased bilateral trade

Prime Minister Kakuei Tanaka, accompanied by senior trade and foreign affairs officials, on a four-day visit to Canada that began September 23, held wide-ranging discussions on trade and economic affairs and bilateral and international issues with Prime Minister Pierre Elliott Trudeau and other officials of the Canadian Government.

Mr. Tanaka, the first Japanese Prime Minister to visit Canada since 1961, told a news conference the next day that trade between his country and Canada would reach \$4 billion this year and maybe \$4.5 billion – two thirds of that amount in Canadian exports to Japan.

“There is plenty of room for expansion of trade between Canada and Japan,” he said. This could be made possible by the increased sale to Japan of Canadian manufactured goods and by exports of Canadian nuclear reactors and aircraft.

Canadian and Japanese officials are to study the possibility of new Japanese investment in Canada on a joint venture basis.

Among items in a joint communiqué issued at the conclusion of Mr. Tanaka's two days in Ottawa were: matching programs of \$1 million each would be negotiated for the promotion of academic relations between the two countries, the money to be used mainly for the development of Canadian studies in Japan and Japanese studies in Canada; negotiations would begin toward the signing of an agreement to promote cultural exchanges; and that Mr.



CP photo
Prime Minister Kakuei Tanaka of Japan (left) and Prime Minister P.E. Trudeau on Mr. Tanaka's arrival at Ottawa for a four-day visit to Canada.

Trudeau had accepted Mr. Tanaka's invitation to visit Japan at a later date.

From Ottawa, Mr. Tanaka spent a few hours in Toronto, receiving an honorary degree of doctor of laws from the University of Toronto. He ended his Canadian visit with a stopover in Vancouver, where he unveiled a plaque at a new Asian Centre at the University of British Columbia.

New telemetry-monitoring system to diagnose epilepsy

A team at the Montreal Neurological Institute (MNI), part of McGill University, has recently devised telemetry systems which greatly facilitate the diagnosis of epilepsy and localization of areas in the brain responsible for seizures. Whereas former methods to record epileptic seizures sometimes involved considerable discomfort for the patient and often proved inconclusive, the new monitoring systems have produced more accurate records of brain activity and have increased the likelihood of recording a seizure without

undue discomfort to the patient.

The MNI has long been renowned for its pioneer work in neurology and neurosurgery and is still a world leader in neurological research. With Dr. Wilder Penfield's demonstration years ago that certain types of epileptic seizure which could be localized to specific regions of the brain could be successfully treated surgically by removal of the epileptogenic area, it became imperative to develop an effective means of localizing precisely the epileptogenic region.

Dr. Pierre Gloor, Dr. Ivan Woods and Mr. John Ives, all of the MNI, are concerned principally with two types of patient: those in whom seizures are usually of a generalized and non-convulsive nature (“absences” attacks – fits of blankness of mind); and partial cerebral seizures, often ending in a generalized convulsion, which have become a seriously disruptive factor in their lives – these seizures can usually be traced to a specific region of the brain which may or may not be removable. Minor seizures of this type may merely consist of a hallucination, a brief spell of dizziness or convulsive movement restricted to one limb. They are also interested in a third group who suffer from fits of dizziness or fainting spells but whose causes may not be due to abnormal brain activity. They have recently developed three telemetry systems for monitoring seizures, all of which have considerable advantages over former methods.

New technique

The most elaborate of these is a 16-channel system that is particularly useful for monitoring some of the more serious patients for whom neurosurgical treatment is a possible solution. Twenty-one small surface electrodes, similar to those used with the EEG, are placed on the patient's head and are located so as to cover as many regions of the brain as possible. The wires from these electrodes lead to a small box (about a 2-inch cube) bandaged to the patient's head and containing 16 amplifiers and a multiplexing system. The box also provides protection against picking up distortions caused by head movement which could affect signals coming from the brain. The multiplexer combines the signals from the 16 channels so that only one cable leaves the box on the head. This connects with a battery pack worn on the patient's waist. From this extends a thin flexible cable about 30 feet long plugging into a wall relay box which is linked to a computer in the Institute. There are wall boxes in several rooms so that the patient can move freely within a radius of 30 feet, and may also “unplug” himself if necessary and plug himself in again in another room. When the signals from the cable reach the computer they are “demultiplexed” – i.e. the 16 individual channels are separated once more – and

recorded on the computer's digital disc which will write out the information on request.

Results

Using the 16-channel system Dr. Gloor's team has found that in epileptic patients in whom the standard EEG has failed to give unequivocal localizing evidence, it is now possible to pinpoint a specific region (usually the left or right temporal lobe) as the site of origin of the patient's seizures. If the information is truly consistent and the trouble spot is not too close to critical regions of the brain (like the speech cortex) the chances are very high that surgical removal of that part of the brain will bring total relief to the patient.

Dr. Gloor's team has been using the 16-channel system for only a few months. Demands on it are great and computer time is fairly scarce. Another method — an eight-channel system which transmits the electrical signals of the brain by radio waves — which the same doctors have used for some time has in many respects been superseded by the 16-channel system. The older method is nevertheless useful for recording the frequency of seizures and the type of activity or environment most conducive to epilepsy in the type of patient who suffers from "petit mal" or "absence" seizures. It cannot, however, provide the detailed information about different regions of the brain required to localize seizure activity.

Tape recorder system

The most recent telemetry system devised by the group is a very small portable cassette tape recorder, the original version of which was developed in a British medical research engineering laboratory to record ENG (electrocardiogram). Mr. Ives recognized its potential for recording EEG in epileptic patients and adapted it for use in the MNI. The recorder, which has four channels, uses regular commercial cassette tapes. The speed is very precisely regulated and it can run continuously for 24 hours. Batteries have to be changed every other day. Surface electrodes are glued on the patient's head and wires, coloured for camouflage, run through the patient's hair and down his back to connect to the recorder, which weighs only 400 grams (about 1 lb.) and is worn over

the shoulder. The great advantage of this system is that patients can use the recorder in their home or on the job. It is particularly suitable for patients to record the frequency of their seizures and also to establish whether, in certain cases of dizziness and black-out "spells", the problem is genuinely of an epileptic nature. To facilitate the location of a seizure on the tape when it is played back the patient is asked to turn off the recorder for one minute after he recovers from a spell. The doctors can then easily locate the straight line on all four channels indicating when the recorder was turned off and then replay the recording prior to this to see where the seizure occurred.

The systems developed by Dr. Gloor's team have changed the lives of many patients. In some cases they have been able to establish that patients who feared they had epilepsy did not in fact suffer from it; in others they have been able to improve drug therapy with the information obtained, and for those sufferers from severe epileptic attacks they have been able to provide neurosurgeons and neurologists with crucial information which, in many cases, has provided a complete cure.

Settlement services for immigrants

"Many organizations providing settlement services to immigrants under federal grants slated to terminate before the end of September will be able to continue under a new Settlement Services Contract System," Manpower and Immigration Minister Andras announced recently.

The Department of Manpower and Immigration and officials concerned with multiculturalism are reviewing 51 projects that provided various settlement services formerly funded by the Secretary of State multicultural program. Some of these originated as local initiatives projects.

To qualify for a Settlement Services Contract, groups must provide direct services to immigrants for their settlement and adjustment into the community. Groups to be considered include non-profit organizations that provide for orientation, reception, counselling, placement and settlement of immigrants.

The assistance already available at Canada Manpower and Immigration

Centres will continue. This includes emergency financial aid pending first employment, job counselling and placement and occupational language training. The Department is also increasing its efforts to ensure that individual immigrants receive the services they require for successful settlement.

More fresh air

Some of the major airlines servicing Canada and abroad have increased non-smoking areas on their aircraft.

Air Canada, one of the first to provide specific areas for non-smokers, back in September 1971, will designate second and fourth cabins of all wide-body jetliners as non-smoking areas. Approximately 40 per cent of all "jumbo" planes and 50 per cent of all DC-8s and DC-9s will be smoke-free.

Canadian Opera Company's twenty-sixth season

John Arab and Gwenlynn Little in Ravel's L'Heure espagnole, one of the productions of the Canadian Opera Company at the O'Keefe Centre, Toronto (September 6 to October 12). The Company, now in its twenty-sixth season, also includes in its repertoire Bluebeard's Castle (Bartok); The Flying Dutchman (Wagner); Carmen (Bizet); La Traviata (Verdi); Boris Godunov (Mussorgsky); and Faust (Gounod).



Trade Minister leads mission to Brazil

New opportunities for marketing Canadian goods and services will be explored by a trade mission leaving for Brazil on October 18, Industry, Trade and Commerce Minister Alastair Gillespie said recently.

Mr. Gillespie, who will lead the group, will be accompanied by 35 executives from the Canadian business, industry, and academic communities. They will seek to strengthen Canadian marketing programs in Brazil, and express Canada's interest in expanding trade between the two countries.

Senior businessmen from ten Canadian provinces will be represented on the trade team which will emphasize Canadian capabilities in such areas as transportation, communications, power, forestry, agriculture and food, scientific equipment, and mining industries. They will visit Brasilia, the capital, as well as Rio de Janeiro and São Paulo, the commercial and industrial centres.

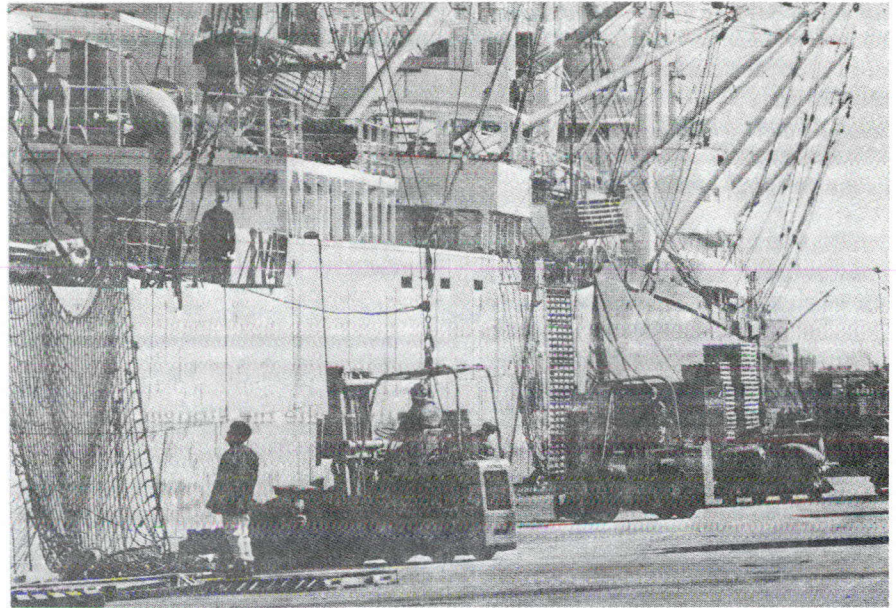
Meetings have been arranged with Brazil's President, General Ernesto Geisel, and with the Ministers of Industry and Commerce, Foreign Affairs, Planning, Mines and Energy, Transport, Aviation, and Communications. Meetings will also take place with representatives of the Brazilian business and investment communities.

Trade between Canada and Brazil has developed rapidly in 1974. In the first six months of this year, Canadian exports totalled \$111 million, equal to the figure for the 12 months of last year, which puts Brazil into first place in customers from Latin America. Although wheat continues to dominate Canada's exports there have been significant gains in electrical-transmission equipment and computer software.

Early retirement offer

In an attempt to reduce the surplus of longshoremen at three St. Lawrence River ports, the Maritime Employers Association (MEA) has offered its members cash payments to retire early.

Longshoremen who voluntarily retired between April 25 and May 17 received \$12,000; those who retired between May 18 and May 31, \$7,500.



Payments of \$6,000 were made to each man who retired between June 1 and June 30, and \$4,500 will be paid to men who retired between July 1 and August 30. Men who will be 65 next January 1 are not eligible.

The MEA, representing stevedoring employers, shipping lines, and agents, found it necessary to ask for voluntary retirements because the ports of Montreal, Quebec City and Trois Rivières are overstaffed by about 400 longshoremen. A similar offer made last year in Montreal produced 560 retirements, but a total of 1,800 men still work at Montreal's port, 500 in Quebec and 275

in Trois Rivières.

The surplus situation arose several years ago when MEA-member companies signed contracts guaranteeing 37 weeks of pay a year, regardless of work volume, to virtually all the longshoremen on the union rolls. Levies on cargo handled at the ports were to pay the salaries. But the trend to containerization and the increased use of tidewater ports has reduced the amount of non-container cargo coming up the St. Lawrence River.

The job security clauses will not be renewed in the MEA contracts, which are effective January 1, 1975.

Memory of Canadian geologist honoured in Wales

The memory of a famous Canadian geologist, Sir William Edmond Logan, was marked with a ceremony at the Church of St. Llawdogg, Cilgerran, Wales on September 8, for the dedication of a plaque on his grave.

Sir William, born in Montreal in 1798 and died in Llechryd, Wales in 1875, was the founder and first director of the Geological Survey of Canada from 1842-1869. He established his reputation as a geologist by mapping the South Wales coal fields, by his research on the geological and mineral resources of Canada and his leadership of the Geological Survey. The plaque was erected by the Geological Association of Canada to mark the centennial of his death.

William Edmond Logan's education began in Montreal, but at the age of 16 he was sent with his older brother Hart to high school in Edinburgh. In 1816 he registered as a medical student at Edinburgh University where his subjects included logic, mathematics and chemistry.

Logan left the university at the end of his first year, even though his scholastic achievement was high, to enter the London business establishment of his uncle, Hart Logan, for whom he worked for over 20 years. In 1831 he moved to Swansea, Wales, where he was appointed manager at the Forest Copper Works, Morriston, a copper smelting and coal mining establishment in which his uncle had in-

vested a substantial sum of money. Logan soon realized a continuous supply of coal for the smelters could be guaranteed only with the help of accurate maps of coal seams. Existing maps had too little detail to make them useful. Logan set out to make his own.

Recognition in Britain

In 1835 the Geological Survey of Great Britain was initiated and when its first director, Sir Henry Thomas de la Beche, saw Logan's maps for South Wales he adopted them, because "the work on this district (was) of an order so greatly superior to that usual with geologists". Logan's contribution is still recognized; modern revisions of the geological maps for South Wales name him as an original co-author.

In July 1841 the Natural History Society of Montreal and the Literary and Historical Society of Quebec petitioned the first united parliament of Upper and Lower Canada to allocate an amount not exceeding £1,500 sterling for a geological survey of Canada. Logan was immediately interested; his reputation from his mapping of South Wales, and because he was a native Canadian, obtained him the appointment in the spring of 1842 at an annual salary of £500, just half of what he had been receiving in Wales.

Logan recognized that a proper geological survey of the vast wilderness of Canada would require a permanent institution. The first office of the Geological Survey was set up in the autumn of 1843 in a Montreal warehouse provided by Logan's brother.

Logan's first major honour was election in 1851 as a fellow of the Royal Society; he was the first native Canadian so honoured for work in Canada. Queen Victoria bestowed a knighthood upon him in 1856; only two other Can-

adians had been distinguished in this manner. At the same time the Geological Society of London awarded him its distinguished Wollaston Medal. His contribution to the geological sciences was again recognized in 1867 when the Royal Society of London awarded him the Royal Gold Medal with specific reference to his geological map of Canada.

David Lewis at Carleton

The appointment of David Lewis as a Visiting Fellow in the Institute of Canadian Studies was announced on August 19 by Davidson Dunton, Director of the Institute.

As part of his university work, Mr. Lewis will do some teaching in the Department of Political Science. In the Institute he will be studying and writing, taking part in seminars, and he will be available to assist students.

Mr. Lewis, leader of the New Democratic Party, but who lost his seat in the last election, was a member, from June 1942 to June 1943, of the first Board of Governors of the Ottawa Association for the Advancement of Learning, which was the corporate name for Carleton College.

Mr. Lewis was first elected as a Member of Parliament for York South in 1962. He lost his seat in the 1963 Liberal sweep of Toronto seats, but was re-elected in 1965 and again in 1968. In 1971, he was elected leader of the New Democratic Party.

Benefits of nuclear energy...

(Continued from P. 2)

political level, especially by the parties most directly concerned, to convert the temporary peace that a peacekeeping force is asked to maintain into something more durable. If this is not done, and if those who contribute to peacekeeping roles are faced with indefinite prolongation of their hazardous tasks, I am afraid governments will be less willing to respond to future requests for troops.

The past year has seen two new peacekeeping operations established in the Middle East and the force in Cyprus reinforced. These developments were important in themselves but they are also capable of teaching us lessons

for the future. From the Canadian standpoint the operations in the Middle East are working effectively and are making an essential contribution to the maintenance of the cease-fire and disengagement agreements. But equally important, new principles have been established in the process. Participants have been drawn from a broader base than in the past, and a sounder financial foundation for the operations has been laid through a general assessment of the United Nations membership. These innovations have contributed to effective peace-keeping in the Middle East for the present, and will enhance the prospect of more effective peace-keeping in the future.

Cyprus

There are less grounds for satisfaction in the case of Cyprus. There, despite the presence of United Nations' peace-keeping forces fighting has taken place on an unprecedented scale because the long-smouldering political problem remained unresolved. Moreover, it has been demonstrated once again in Cyprus that without the agreement and co-operation of the disputants, the constructive role of a peacekeeping force is severely circumscribed.

If the usefulness of the United Nations in peace-keeping is to be maintained and expanded, new principles and techniques to strengthen it must be found. The machinery is at hand under the Charter to ensure an effective United Nations response to future peacekeeping needs. The advantages of agreement in advance on how United Nations peace-keeping should be directed and controlled are obvious. The experience of the United Nations Emergency Force could point the way to such agreement or guide-lines for peacekeeping operations under the over-all authority of the Security Council, with a system of shared responsibilities among the Security Council, the Secretary-General, the troop contributors, and the parties directly concerned in the field. This organization can scarcely afford to neglect any instrument which might have a contribution to make in helping to defuse situations of armed conflict. It is the hope of my Government that member states will continue to give this problem the attention it deserves....

Canada Weekly is published by the Information Division, Department of External Affairs, Ottawa, K1A 0G2.

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Cette publication existe également en français sous le titre Hebdo Canada.

Algunos números de esta publicación parecen también español bajo el título Noticiero de Canadá.

Ähnliche Ausgaben dieses Informationsblatts erscheinen auch in deutscher Sprache unter dem Titel Profil Kanada.