

# Canada Weekly

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## Alberta's Athabasca Oil Sands: ripe time for development

"The question is not whether we should develop the Athabasca Oil Sands — but when. And the time is ripe now. We may never have as good a chance again. Among the industrialized nations of the world, Canada is in the unique position of being able to assure its future oil supplies, both for domestic uses and for export," said Jean-Pierre Goyer, Minister of Supply and Services, speaking recently at the Faculty of Commerce and Business Administration, University of British Columbia in Vancouver.

Mr. Goyer spoke of Canada's responsibilities not only to Canada but to the rest of the world — and in particular, to trading partners, such as the United States, Western Europe and Japan.

Canada should not forget, said Mr. Goyer, that although an adverse energy situation affects highly industrialized nations, it has an even greater effect on those countries that can least afford it. The energy crisis is capable of producing a recession in underdeveloped countries by restricting the supply of equipment from developed nations, as well as reducing their imports of raw material. We must, also consider, the effects on international aid programs, he said.

Mr. Goyer wondered whether Canada's energy policy would, therefore, be egocentric or if both national and international responsibilities, would be fulfilled.

In deciding its policy, he said, Canada's choices lay between two extremes: to do the minimum necessary to get through the crisis, or to seek, in the long term, to improve the structuring of North American, Japanese and perhaps general OECD or world energy position.

### Which road to take?

No matter what the policy, the central issue was not whether or not to develop the oil sands but rather at what pace should the oil be developed. In Mr. Goyer's words:

"Will we seek only to meet our own requirements, such requirements

making it imperative to achieve full production from the oil sands by 1982, or shall we accelerate the development program in an attempt to assist the above-mentioned countries in the meantime?

"Do we prefer to develop the oil sands according to corporate objectives or national objectives?

"Do we prefer to drain our budget to finance the development of this important energy resource or do we prefer to accept outside financing while at the same time achieving full Canadian ownership?

"We are in the position of being able to have the development of the oil sands totally financed by our trading partners — and under total Canadian control. We may never be in such a position again.

"Canada would play a major role in alleviating the energy crisis. This would give us an important advantage during trade negotiations, and would give rise to great national pride and recognition."

Mr. Goyer spoke of the need for discussion between provincial and federal representatives before any solution to the present energy crisis can be found, because "we must first solve our internal problems and meet our own needs. But the solution of domestic problems must not be regarded as necessarily incompatible with the drafting of a strategy that would procure the maximum benefits for the entire world".

He rejected the pessimists who argued that Canada's resources were limited and who had little confidence in technological improvements.

"People often tend to forget," he declared, "the rapidity at which technology can be improved. If we take the example of President Kennedy, in 1960, when he said we would reach the moon in the next decade, he knew it could be done using near current technology, and roughly, he knew the costs of such a project — an attitude I describe as positive realism.

"I am an optimist, and optimists

recognize the importance of Canada's energy potential; our vast reserves of hydroelectric power, uranium, gas, synthetic crude, and coal. In fact, Canada is one of the under-exploited areas of the world."

#### World trends

Mr. Goyer produced statistical data on world oil and petroleum and spoke of current world trends:

"First," he said "there has been a tremendous change in the world cash flow. Therefore there is a potential destabilization of international monetary flows caused by the accumulation of oil revenues. 'Petro-dollars' received by Middle East and African countries in 1972 were valued at \$15 billion. Predictions as high as \$89 billion were made for 1974.

"Second, in Europe, North America and Japan, there has been a growing concern as to how reliable the supply of oil from certain oil rich countries is.

"Third, the United States is attempting to become self sufficient in energy

by 1980.

"Fourth, Japan and Europe would like to diversify their energy/oil supply.

"Finally, the high price and short supply of oil could put a strain on trade balance in developed countries (higher prices of imported oil and perhaps reduced exports of manufactured goods).

"Such a project will need the co-operation of provincial and federal governments and private enterprise: the provincial government since natural resources fall within provincial jurisdiction; the Federal Government since the investments are so massive as to require government to government negotiations with respect to loans, contracts, etc. The Federal Government must also ensure that the development projects fulfil Canada's long term objectives, thus enhancing national interests, and finally, the corporations which will provide the 'know-how' and the management would benefit from normal profits."

#### Artificial cells: new hope for patients with kidney problems

Some 20 years ago it was demonstrated that patients with only one kidney could depend on rather complicated dialysis machines to carry out the functions of a normal kidney. Unfortunately, because of the cost and bulk of the standard dialysis machine, only a few of the patients who require artificial kidney units have access to them. Furthermore, the problems of dialysis (separation and purifying of blood) are far from being solved.

A large step towards making the lives of such patients easier has been the development of the artificial cell by Professor Thomas M.S. Chang of McGill University's Department of Physiology, who originated the idea in 1956. In some respects, the artificial cells he prepared, containing hemoglobin and enzymes obtained from red blood cells, behaved like real ones.

In 1966 he started using artificial cells for the construction of a compact artificial kidney. He developed artificial cells containing absorbents which can remove toxins or poisons from the body, and demonstrated the feasibility of using this for treating patients with uremia. In the last two years, he has

carried out clinical trials of this compact artificial kidney at the Royal Victoria Hospital in Montreal. In this case, cells containing activated charcoal with an albumin coating, have been able to supplement some of the kidney's functions. Dr. Chang's artificial kidney is cylindrical and weighs less than 1 lb. The blood is circulated through the cylinder which is loaded with microcapsules. Waste products such as creatinine, uric acid and uremic toxin are absorbed directly by the cells.

#### Comparison of methods

Standard dialysis units are far less efficient than the new artificial kidney. The basic principle for the former is that the blood flows through one compartment and large quantities of dialysate through another. This process, in simple terms, washes the blood clean. Considerable volume and time are required. From the point of view of time, Dr. Chang's artificial kidney is much more convenient for the patient. From the psychological viewpoint, the new kidney has evident advantages: It is much smaller, lighter, less expensive

and easier to operate.

On the other hand, his machine will at present reproduce renal functions to the extent that it will remove waste products from the body such as creatinine, gaunidine, uric acid and uremic toxin but it does not remove water or electrolytes. Further research is required to perfect artificial cells to carry out these functions. Meantime the patient must be supplemented with the standard dialysis machine from time to time to remove the water and electrolytes.

#### Arctic sewage-disposal reactor

About 60,000 people who live in some 60 communities in Canada's Arctic have virtually no sewage-treatment facilities. In most northern settlements, human waste has to be taken by truck for disposal elsewhere.

To help overcome the problem, the Department of Chemical Engineering of the University of Toronto is developing a cheap, small device that can sterilize and oxidize sewage in the Arctic. In its present form, it consists of a reactor chamber in which waste is kept at a controlled temperature and pressure while being mixed and irradiated by sterilizing ultraviolet light.

In a typical run in the ten-gallon prototype, the number of micro-organisms in a millilitre was reduced in two hours from six million to 200.

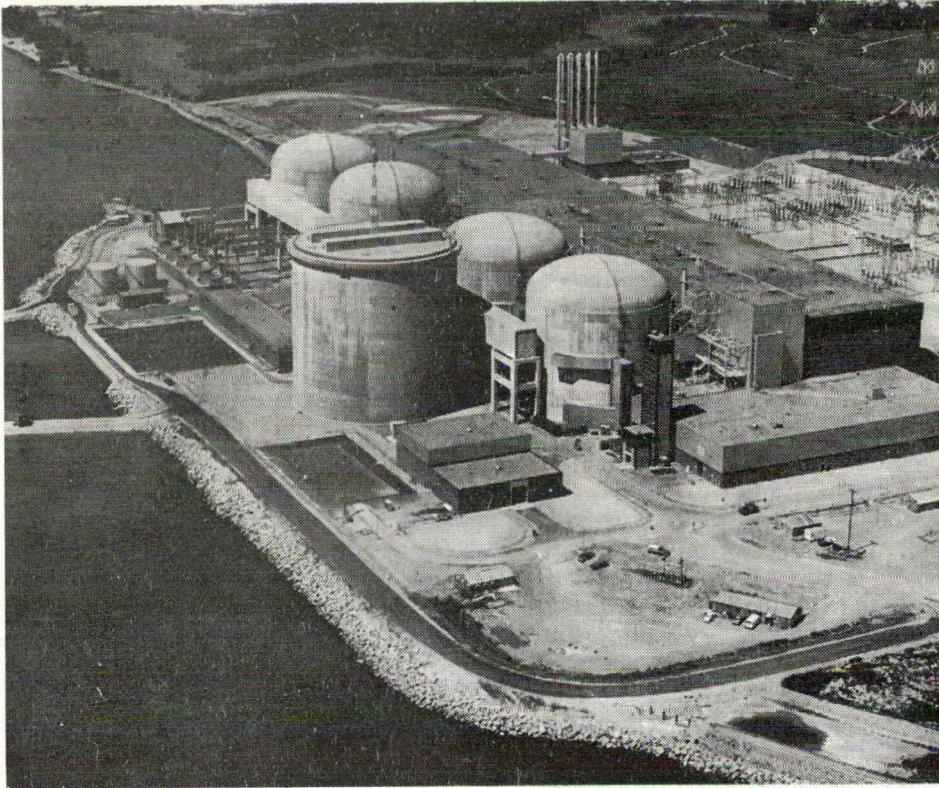
Such a device, it is claimed, could easily be installed in northern households to quickly clean waste for safe disposal in rivers or seas.

#### CP in Brazil

A consortium of two Brazilian engineering companies and Canadian Pacific Consulting Services Ltd of Montreal, has been chosen to plan and construct a new rail complex to be built by Rede Ferroviaria Federal S.A. (RFFSA), the Brazilian federal railways.

The new facilities, designed to handle a fleet of 300 locomotives and 5,000 cars, will be located at Conselheiro Lafaiete, in the state of Minas Gerais. The complex will include locomotive and car repair shops, rail yards, fueling systems and other related facilities.

*Aerial view showing the Ontario Hydro nuclear plant at Pickering, near Toronto.*



**Candu nuclear reactor may fill Britain's power needs**

The system used to produce electricity in the world's largest fully operational nuclear power station, at Pickering, near Toronto, Ontario, has been the subject of interest in Britain recently.

Atomic Energy of Canada Ltd (AECL), the federal Crown corporation responsible for the construction of the

Candu system (Canadian Deuterium-Uranium) has put forward a strong case to the British Government for its use as the main reactor to supply Britain with its power needs.

Its advantages include an efficient design that makes full use of the technical possibilities for nuclear fission and — because natural uranium is

used — eliminates the expensive process for enriching uranium used in light water, and gas-cooled reactors.

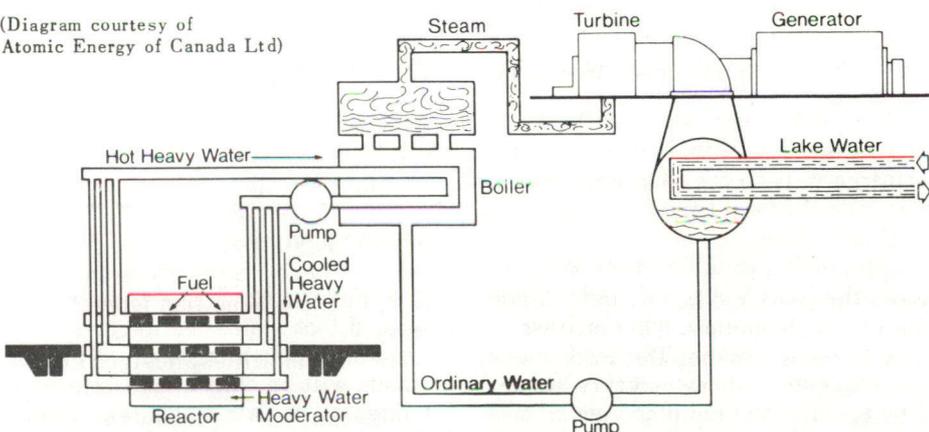
However, the Candu reactor does require heavy water as well as uranium. Alternative systems need only fuel, thus leading to the contention that Candu reactors have a higher capital cost than enriched systems. Nonetheless, AECL say that within a few years after start-up, savings in the cost of fuel for the Candu more than compensate for any difference in cost — particularly when taken over the lifetime of the station.

Although a United States-designed light water reactor is also being contemplated AECL officials have been promised that the Candu system would be very seriously considered.

The Pickering plant, operated by Ontario Hydro, has proved to be a commercial and technical success and will double its generating capacity to 4,112 megawatts with the installation of four more Candu reactors. Since entering full production the station's four 514-megawatt reactors have operated for long periods at 90 to 99 per cent of installed capacity, which is well above average. In one month last year, the station fed more than 1,000 million kilowatt hours into the Ontario power grid.

International confidence in the Candu reactor is growing. Purchases worth \$470 million have been made by the Argentine and by South Korea, with other countries now considering the system.

(Diagram courtesy of Atomic Energy of Canada Ltd)



*This simplified diagram shows how electricity is generated by the Candu natural uranium reactor. The natural uranium fuel in the reactor heats the*

*heavy water, which in turn heats the ordinary water. The steam from the turbine, which drives the generator, produces the electric power.*

**Energy Ministers visit London**

The federal Minister of Energy, Mines and Resources, Donald S. Macdonald, accompanied by the Ontario Minister of Energy, Darcy McKeough, Lorne Gray, President of Atomic Energy of Canada Ltd and other Canadian officials, were in Britain during the week of February 4 for discussions with Prime Minister Edward Heath and British Ministers regarding the possibility of collaboration between the two countries in the construction of nuclear power reactors.

A full debate by the House of Commons, which has been delayed owing to Britain's general election, will be held before a final decision is made.

### Canadians to study acupuncture in China

Ten Canadian anaesthetists will visit the People's Republic of China in early April 1974 for six weeks to study acupuncture analgesia, Health and Welfare Minister Marc Lalonde announced recently.

The visit forms part of the Sino-Canadian exchange program following Prime Minister Trudeau's visit to the People's Republic in October 1973 at the invitation of Premier Chou-En-lai.

In a press statement in Peking at the conclusion of his trip, Mr. Trudeau said that there had been a profitable discussion in the fields of medical science and health care, as a result, of which a number of exchange visits would take place in 1974. In this connection, China has been invited to send later this year a nine-member team of scientists (in three groups of three) for one or two months to study neurophysiology, organ transplantation, and the artificial kidney.

The Canadian anaesthetists studying acupuncture include nine physicians and one dentist from universities across the country.

When they return to Canada they will

be in a position to teach the techniques of analgesic acupuncture and supervise research in this field.

In the report of the delegation organized by the Canadian Medical Association that visited the People's Republic of China in April 1973, mention was made of several new areas in medicine in that country worthy of study including acupuncture. Commenting on the report with reference to this subject, Mr. Lalonde noted that neither the delegation nor the Chinese medical authorities regarded acupuncture as a "cure-all". It was important, he said, that these matters "be studied closely and proven effective in the Canadian setting before they were introduced to health care delivery systems here".

The CMA delegation, which included Dr. J.M. LeClair, the Deputy Minister of Health, recommended an exchange of physicians and scientists between the two countries to allow China to study Canadian medical programs. At the same time it would allow Canadians to study acupuncture analgesia, its use in surgical operations and for the relief of pain.

that all citizens receive an adequate pension when they retire and that the retirement age be reduced to 60 years," said Mr. Home.

The CLC will serve as a co-ordinating and motivating body for all activities by affiliated labour organizations and as a clearing house for data and information on the subject.

### Inco in Japan

The signing of an agreement to form a jointly owned company in Japan was announced recently by Daido Steel Co., Ltd and The International Nickel Company of Canada, Limited. Each will have a 50 percent equity in the new company, which is to be named Daido Special Alloys Ltd.

The new company, which will be located in Nagoya, Japan, will process and market special and high nickel alloys in Japan. Daido will supply the special alloys to the new company and Inco's rolling mill affiliates, the Huntington Alloy Products Division, Huntington, West Virginia, and Henry Wiggin & Company Limited, Hereford, England, will initially supply the nickel alloys.

### CLC campaign to improve old age pensions

"An adequate pension for all at age 60" is the theme of a two-year campaign launched in February by the Canadian Labour Congress as part of its Citizenship Month, CLC President Donald MacDonald announced recently.

The 1.8-million member labour organization traditionally observes Citizenship Month each February and invites its affiliated organizations to take part in programs that assume national proportions.

Last year's theme "a campaign in support of senior citizens" received an excellent response from the labour movement, Mr. MacDonald said. "More unions have negotiated optional earlier retirement ages into their collective agreements; co-operation between organized labour and retirees has increased; and there is an increase in requests for pre-retirement courses at labour institutes and schools.

The campaign will be in two stages, CLC Political Education Director

George Home explains, in a circular to the 10,000-odd affiliated labour organizations across the country: this year, unions are being encouraged to establish committees to examine existing pension protection, study the needs for improvements and assist in a broad education program to rally public support for such improvements.

The second stage, which will take place in 1975, will include a political campaign to push for improved pension arrangements for retired Canadians, Mr. Home stated.

"The latest available information shows that only 2,822,336, or 39.2 per cent of paid workers are covered by private pension plans. The evidence also suggests that few workers covered by private pension plans actually draw an adequate pension when they retire. Needless to say that those on public plans only are even worse off. "The time has arrived for an all-out campaign by organized labour to ensure

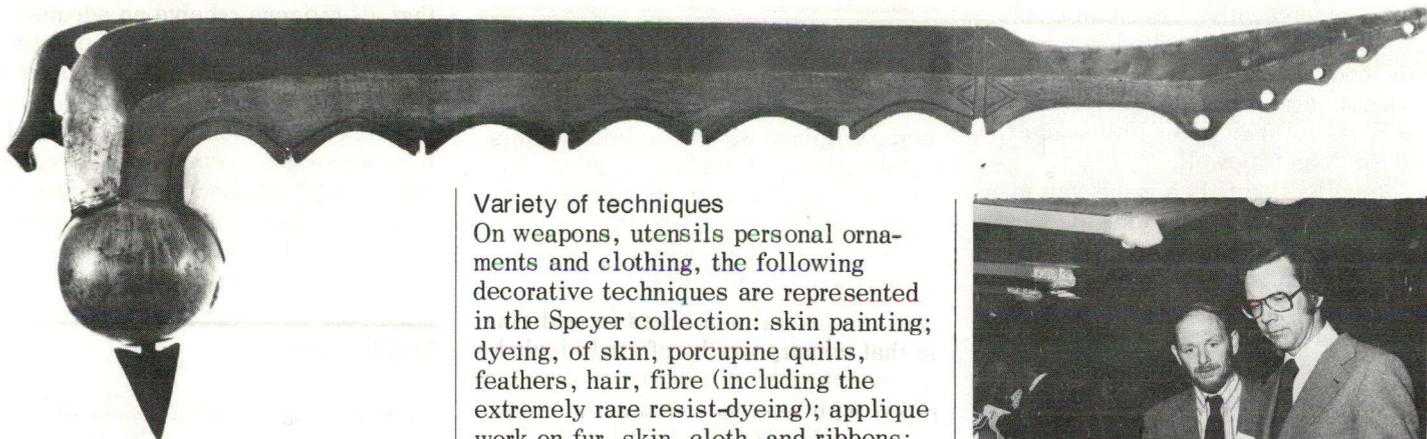
### Venezuela buys NE telephones

An order for 5,000 *Contempra* telephones has been awarded Northern Electric Company Limited by *Sumatelco*, one of the largest telecommunications distributing companies in Venezuela.

The first shipment will be made this month. Northern expects the transaction to lead to further sales, not only of premium telephone sets but of other telephone apparatus as well.

### Pipeline plan

The Federal Government has announced that a pipeline to carry Western Canadian crude oil to Eastern Canada will be built from Sarnia to Montreal. The Sarnia-Montreal line will rely on the pipeline system through the United States. The Government's long-term goal is an all-Canadian oil pipeline system, but no time limit has been set for its construction.



**Canadian Indian art comes home**

After more than three years of negotiations the National Museum of Man has succeeded in returning to Canada the most outstanding collection of Canadian Indian material known to have been in private hands. The Speyer collection is the only substantial collection of eighteenth and early nineteenth century Canadian Indian artifacts now held in Canada.

The material in the collection, which dates from 1760 to 1860, originates mainly from the Great Lakes region, the Boreal Forest and the Plains. The remaining material is from fringe areas and emphasizes the similarities and differences of the cultures that occur across the North American continent.

The 259 artifacts that comprise the Speyer collection were brought together by Mr. Arthur Speyer and his late father over a period of 50 years. The artifacts were gathered piece by piece from European nobility, other private sources and from museums no longer in existence.

The objects in the collection, bear witness to the ingenuity and creativity of Canada's Indians as well as to the quest for knowledge and exotic beauty by early European collectors, recently returned to their home country. Many of these artifacts were taken to Europe during the eighteenth century; practically none of them was made after 1850. Although *circa* 1760 is the accepted base-line date, an even earlier date for a number of these artifacts is very probable. Given this age, their importance is immediately obvious; traditional arts and crafts, enriched by the merchandise of the fur trade, were still vigorously alive at that time.

**Variety of techniques**

On weapons, utensils personal ornaments and clothing, the following decorative techniques are represented in the Speyer collection: skin painting; dyeing, of skin, porcupine quills, feathers, hair, fibre (including the extremely rare resist-dyeing); applique work on fur, skin, cloth, and ribbons; porcupine quillwork; embroidered, wrapped, and several weaving techniques; hair embroidery, including 'false embroidery'; weaving, both in native fibres as well as in imported wool; beadwork, including the use of native shellbeads (*wampum*), several techniques represented; incising, in wood, bone and stone; sculpture, in wood and stone; inlay work of metal in stone; and fringing, including netted fringe and a variety of tassels and jinglers.

The decorative designs run the whole gamut from floral and realistic to geometric and abstract. Apparently, many of the Speyer pieces were new when purchased from the Indians as souvenirs by early travellers, who never used them. However, the great age of these perishable objects has made them extremely fragile.

**Outstanding items**

A few outstanding pieces in the collection are: a Naskapi Indian paint-



*Ritual mat used in the 'makushan' rituals held to propitiate the game spirits. (Pre 1770.)*



*Dr. T. Brassler (left) and Secretary of State Hugh Faulkner look over Canadian Indian artifacts, some of which are 200 years old.*

ed skin mat, most probably used during rituals in honour of the game spirits. Except for some fragments in the Smithsonian Institution, this is probably the only example in existence. It is also one of the most magnificent examples of this Naskapi art style. Also part of the collection is a moose-skin coat, illustrating the distinctive yet barely known painting style of the Northern Ojibway Indians. There are the two examples of a long extinct type of Plains Cree woman's dress, so far known mainly from one example collected by Lewis and Clark on their famous expedition in 1805. A quill-worked belt was made for Sir William Johnson, Superintendent of Colonial Indian Affairs, by one of his Mohawk sweethearts; the beautiful piece is one of the many gems in the Speyer collection.

Since 1968, when the collection was exhibited in Germany and an excellent catalogue produced, 50 pieces have been disposed of (including two to the National Museum of Man). But the 50

*Shown at top is a club (pre 1840), carved with representation of a mythical being at the head.*

were replaced with 39 items of equal quality, which has resulted in a better balanced collection. Most of the replacements came from the collections of the Earl of Warwick, Sir Walter Scott, and Sir John Caldwell.

The collection fills a major gap in the ethnographic collections of Canadian museums. Beyond its size and historical importance, the condition, craftsmanship and artistic quality of the Speyer collection is outstanding. Funds to repatriate the collection were made available through the National Museums Policy Emergency Purchase Funds. (*Photos courtesy National Museums of Canada.*)

### Public expenditures indicators

The Chairman of the Economic Council of Canada, André Raynauld, has expressed satisfaction that the January Federal-Provincial Conference of Finance Ministers considered the recommendation in the Council's *Tenth Annual Review* "that the federal and provincial governments establish, for themselves and for the public sector as a whole, one or more indicators of the desirable level of increase in public expenditures for a three-year period".

After discussion, the Conference agreed that a continuing committee of officials study the various possibilities of setting up one or more indicators related to the desirable growth of public expenditures over a three-year period and report on these matters to the governments concerned in the near future.

Mr. Raynauld indicated that the Economic Council of Canada would cooperate fully in support of this endeavour.

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*Ciertos números de esta publicación aparecen también en español bajo el título Noticiario de Canadá.*

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

### Man and the animal

The Canadian Association for Laboratory Animal Science (CALAS), was established in 1962 by a small group of senior technicians concerned for the standards of animal care throughout the scattered institutions in Canada. Since then it has undergone a remarkable growth and development in both numbers and influence. Its aims and policy, as written into the Corporation by-laws, are:

(1) to upgrade the efficiency of persons caring for and using animals in research;

(2) to improve the facilities under which animals are maintained;

(3) to make grants for improving laboratory animal care in Canada;

(4) to make recommendations for improvement of means of animal care; and

(5) to disseminate knowledge of sound animal care.

CALAS which held its Annual Convention in November 1973, issued special invitations to members of the humane movement. The editor of the Canadian Federation of Humane Societies *Newsletter* attended all the scientific sessions and noted, in particular, the general changing attitudes of the scientist to the animals in his care. In descriptions of techniques, adjustments to reduce stress were always sought. Such words as "contented" and "happy", and phrases, such as "gently remove from the cage", "remove blood sample without undue stress", were used. Stress was put on anaesthetization in describing techniques that might cause pain or stress. At this level, the concern of the scientist for the animals in his care was obvious. There was concern to keep the numbers of animals at a minimum and means for better care was continually being sought with regard to the special care needed to avoid environmental stress in laboratory animals.

It was clearly noted that it was regrettable that animals must be used in order to improve the quality of life but it is then imperative that all possible be done to minimize suffering and unnecessary loss of life of these animals. There was an understanding and appreciation of the con-

cern by the general public over the use of animals in research. The scientific community felt strongly that what they were doing should not be kept secret "behind closed doors". The public has a right to know, in their language, what was being done, how and why. It is of paramount importance to communicate with the public and with the humane movement. The way to do so will be examined and set forth in the near future.

"The Use of Animals - The Scientist and the Public" was a unique panel discussion on the last day, on responsibility and controls, between members of animal welfare and scientific communities.

### Weekend hockey results

#### National Hockey League

*Results February 16*

Toronto 7, Atlanta 2

NY Rangers 9, Vancouver 4

Chicago 4, NY Islanders 0

Boston 5, Los Angeles 2

Pittsburgh 7, California 3

Minnesota 4, St. Louis 2

*Results February 17*

Philadelphia 2, Montreal 2

Chicago 4, Toronto 1

Buffalo 2, Detroit 1

Minnesota 7, California 1

#### World Hockey Association

*Results February 16*

Toronto 5, Chicago 4

Cleveland 5, Quebec 2

*Results February 17*

Edmonton 3, Toronto 2

New England 3, Winnipeg 2

Minnesota 6, Houston 1

Vancouver 4, Los Angeles 0

New Jersey 10, Quebec 3

Cleveland 6, Chicago 5