UBC REPORTS

VOLUME TWENTY-ONE, NUMBER SEVEN

APRIL 30, 1975, VANCOUVER, B.C.

AGGIE SCHOOLS 'STARVED'

By PETER THOMPSON
UBC Reports Staff Writer

Canadian faculties of agriculture and veterinary medicine are being starved, and consumers are paying for it and will continue to pay for it until something is done.

At a time when new stresses are being placed on world food production and some resources, such as petroleum, are increasing in cost, the potential of Canadian faculties of agriculture to find solutions is being ignored.

Faculties of agriculture and veterinary medicine can't graduate enough students to meet demand, and as a result the agricultural industry is suffering.

These are some of the charges leveled against federal and provincial governments by Dean Michael Shaw of the University of B.C.'s Faculty of Agricultural Sciences.

"We're being kept down in the amount of research we do," Dean Shaw said. "Our situation is scandalous.

"Agriculture in Canada is big business. We're close to it because we train the people who run it and we work to solve the problems they come up against. And the problems they're facing now are huge."

Dean Shaw made the comments as first president of the Association of the Faculties of Agriculture in Canada. He said the situation is so bad that the 11 faculties of agriculture and veterinary medicine have asked federal Agriculture Minister Eugene Whelan for an additional $2 million in rescue money to cover research programs that must be undertaken now. The money would be a stopgap while a national agricultural research policy is worked out, Dean Shaw said.

Faculties of agriculture and veterinary medicine were among the first faculties formed when universities were established across Canada. In the decades since then other and more glamorous sciences have been introduced to the universities and agriculture has become less dominant in the national economy, Dean Shaw said.

In the last few years agriculture has become

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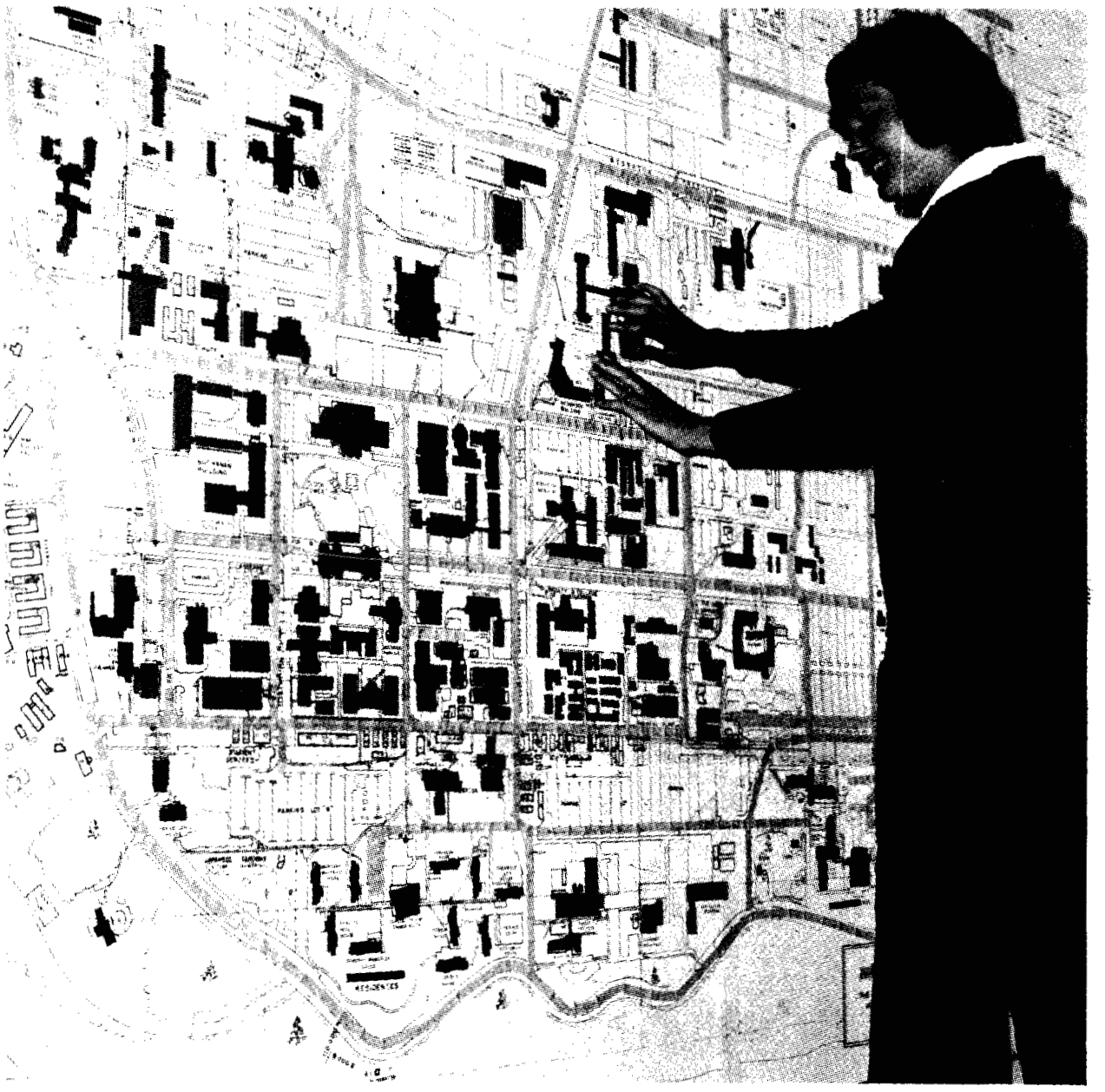
FACULTIES ISSUE



Picture by Jim Banham

Unique map of the UBC campus that allows blind students to "feel" their way around is demonstrated by Ms. Judith Thiele, reference and collections librarian in UBC's Crane Memorial Library in Brock Hall, who is herself blind. Main campus roads are marked with masking tape under which toothpicks have been placed and campus buildings are outlined in sandpaper.

UBC's Crane library has 'a very good year'

BY JIM BANHAM
Editor, UBC Reports

The 1974-75 academic year has been a very *big* year for the Crane Memorial Library, a unique UBC facility that provides services to blind students at UBC and elsewhere.

It's also been a very *good* year, according to Paul Thiele, the head of the library, who said that an infusion of funds from the provincial government and the University has enabled the library to expand and improve its services. One of the big breakthroughs in the seven-year history of the Crane Memorial Library came last spring when the provincial government announced an innovative-programs grant of almost $90,000 for the library.

(The grant to the Crane Memorial Library was one of 16 totalling $2,199,973 approved by the provincial government for various UBC programs in 1974 and 1975.)

"The provincial government grant enabled us to do a number of things," Mr. Thiele said. "First, it allowed us to expand our full-time staff to include a professional librarian and a library assistant to take care of an increasing number of inter-library loans.

"The grant also provided the salary for a technician to operate new recording and duplicating equipment for production of cassettes and reel-to-reel tapes that are lent to students here and elsewhere."

A capital grant from the University has also enabled the Crane Memorial Library to double the space it

Please turn to Page Two
See CRANE LIBRARY

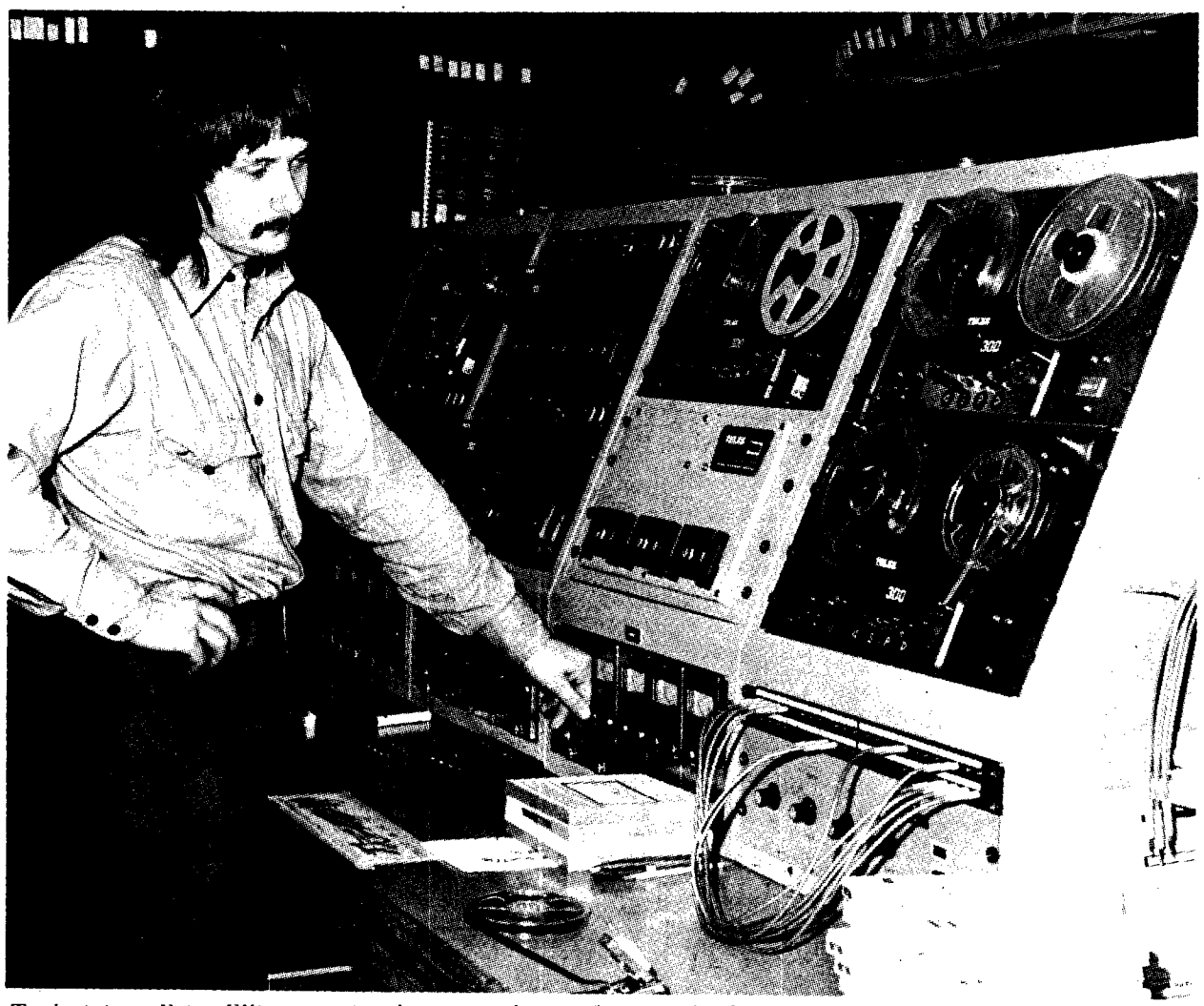
New UBC Senate meets

UBC's new Senate, reconstituted under the new *Universities Act*, met for the first time on April 23 and voted to increase its alumni representation from 4 to 11 members.

The effect of the move will be to increase the size of the new Senate from 79 to 86 members. There were 99 Senators under the old act.

And a committee chaired by president-designate Dr. Douglas Kenny is looking for two new vice-presidents for UBC.

On Page Three of this issue of *UBC Reports* readers will find advertisements concerning the vice-presidencies and a call for nominations for the seven new Convocation Senators.



Technician Eric Ellington is the custodian of new duplicating equipment, purchased with a provincial-government grant, for making cassette and reel-to-reel tapes in UBC's Crane Library Picture by Jim Banham.

CRANE LIBRARY

Continued from Page One

occupies in the north wing of Brock Hall on the UBC campus.

Mr. Thiele said it would be misleading to say that the grants from the provincial government and UBC have enabled the library to offer any radically new services. "It's given a tremendous boost to functions that were in existence previously, but which needed additional money to increase their effectiveness," he said.

The stock-in-trade of the Crane Memorial Library is its collection of braille books (some 14,000 volumes representing more than 6,000 titles) and a huge collection of cassettes and reel-to-reel tapes. The library boasts some 30,000 tapes and reels representing about 15,000 titles, including everything from novels to textbooks.

The library also has some 1,200 titles that deal with the causes and sociology of blindness and the methodology of teaching the blind.

All of this material is available to the blind and partially sighted, and to faculty members and students elsewhere who are interested in the problems of the blind, through UBC's Inter-Library Loan Service.

"We're a community resource," Mr. Thiele emphasizes, "and our materials are available to anyone anywhere in Canada who has need of them. Last year 70 per cent of our total loans of books and tapes – more than 35,000 items – went off the campus to users throughout Canada."

Most of the material in the Crane Memorial Library is vital in the education of blind students at UBC and elsewhere. The textbooks, novels and other materials housed in the library have been chosen largely with academic pursuits in mind.

"One thing the expansion of the past year has allowed us to do," said Mr. Thiele, "is to accept requests for the recording of material on demand. A sight-handicapped student enrolled at, say, Selkirk College in Castlegar can now ask us to record his or her textbooks on cassettes or reel-to-reel tapes for playback on his or her own equipment."

The recording of material on tape is done by a group of seven professional readers, who are paid for their services, and by up to 100 University and community volunteers.

"Our professional readers," Mr. Thiele said, "are assigned the more difficult task of recording material that requires careful rehearsal and some professional artistic input, such as novels.

"Our volunteers – faculty members, students and citizens – record textbooks and other material that doesn't require a background in radio, television or the theatre."

In some months, the Crane Memorial Library records up to 100 titles by dint of staying open well into the evening every day of the week and on weekends as well.

The actual preparation and transfer of recorded material to cassettes and reel-to-reel tape is accomplished on a battery of editing and electronic equipment purchased at a cost of $35,000 from the provincial government grant.

"We went to an enormous amount of trouble in purchasing our new editing and duplicating equipment because we wanted it to produce tapes of a professional quality. Our new editing and mixing equipment allows us to blend in music and sound to create a more attractive production," Mr. Thiele said.

"And our new duplicating equipment is highly computerized and flexible. From a single recording we can produce up to 90 cassettes or 40 reels in one hour. Our old equipment was capable of producing only three cassettes and perhaps half a dozen reels an hour.

"The duplicating unit also produces high-quality tapes very quickly. And cassette tapes can be transferred to reel tapes and vice versa in many combinations."

The new duplicating equipment is also designed to accommodate the next advance in the state of the art. "There is a new type of cassette and playback equipment on the market – in the United States only, unfortunately – that records and plays back at the rate of fifteen-sixteenths of an inch per second, much more slowly than the standard equipment now on the market in Canada.

"The new cassette also uses four separate recording tracks and the result of both these factors is that the ordinary, commercially available cassette is capable of six hours of playback.

"Our new recording and duplicating equipment is capable of dealing with this new type of cassette," said Mr. Thiele. "The only thing we're waiting on is the availability of playback equipment in Canada. I don't expect, however, that it will be long before it's available here."

In its day-to-day operations the Crane Memorial Library aids up to 36 blind students who are registered at UBC for credit and non-credit programs offered during the Winter Session or through the Centre for Continuing Education.

"Our print-book collection is used widely by normally sighted students enrolled in the Division of Special Education in the Faculty of Education – they're the future teachers of the blind in Canada – and by students in psychology and physiology who have an interest in the problems of the blind," said Mr. Thiele.

"And, of course, almost all our collection is available to normally sighted students and faculty members throughout Canada through the inter-library loan service.

"Even faculty members at UBC find our tape-recorded novels and other material useful. They'll borrow them from us and listen to them on playback units in their cars while driving to and from the campus."

Another recent addition to the resources of the Crane Memorial Library is a huge wall map of the campus presented to the library by UBC's Housing department.

The map, based on aerial photographs of the campus, is especially designed to orient blind students to the geography of the UBC campus so that they can find their way about unaided.

All the main roads of the campus are marked with masking tape under which toothpicks have been placed at regular intervals. And all the main buildings on the campus are outlined in rough sandpaper. As a result, blind and partially sighted students are able, literally, to "feel" their way around the campus.

"A few years ago," said Mr. Thiele, "all UBC's blind students were enrolled in the Faculty of Arts, many of them in music. Many still are, but the Faculty of Education is now open to the blind, and in the current year there is a blind student enrolled in electrical engineering, and another in the Master of Business Administration program in labor relations."

Paul Thiele likes to think that that shift in interest on the part of blind and partially sighted students is due to the increasing willingness of UBC faculties and departments to open their doors to the sight-handicapped. And, of course, to the presence of the Crane Memorial Library on the campus.

Alumni grant will purchase equipment

UBC's Alumni Association has announced a gift of $4,500 to the Charles Crane Memorial Library to establish a program to train blind library users in the use of the OPTACON – a new sensory aid which allows the blind to read ordinary print.

The Alumni Fund grant, combined with an earlier gift of $2,000 from the Hamber Foundation, will be used to purchase the portable basic unit, which uses a small electronic probe to scan printed pages. The unit then translates the print into tactile symbols which the blind user reads by placing a finger on a small screen of vibrating pins.

The grant will also provide several electronic and optical teaching and training aids and will allow Ms. Judith C. Thiele, Crane reference and collections librarian, who is blind, to take the intensive instructor course at the OPTACON factory in Palo Alto, Calif.

Acquisition of this highly sophisticated equipment and establishment of a special program will provide training and update training for blind students and add a significant set of items to the Crane Library's collection of apparatus for use by the blind.

SPECIAL ISSUE PLANNED

Have you got a favorite anecdote or reminiscence about UBC's retiring President, Dr. Walter H. Gage?

If you have, the editors of *UBC Reports* would like to hear from you.

President Gage, after 52 years of association with UBC as a student, teacher and administrator, will step down as UBC's chief executive officer on June 30.

To mark the occasion, a special insert will appear in the annual edition of *UBC Reports* published in the latter part of May when the University holds its annual Congregation for the awarding of academic and honorary degrees.

Included in the edition will be a selection of anecdotes and reminiscences about President Gage from students past and present, UBC colleagues and community friends.

Send your contribution to The Editor, *UBC Reports*, Main Mall North Administration Building, University of B.C., 2075 Wesbrook Crescent, Vancouver, B.C. V6T 1W5. We'd like to hear from you not later than May 15.

Incidentally, Dr. Gage is retiring only as President of the University. Next year, he will be back at the old stand in the classroom teaching mathematics to UBC Engineers.

Board statement voices concern

The statement which follows on academic standards and curricula was approved by the Academic Board of B.C., a body which existed under the old Universities Act *to "advise the appropriate authorities on orderly academic development of universities ... and colleges." The board was abolished under the new* Universities Act, *which came into force in July, 1974, and has been superseded by the new Universities Council. The nine-member Academic Board, made up of representatives of B.C. universities and colleges, was chaired by Dean Ian McT. Cowan, of UBC's Faculty of Graduate Studies.*

This is the board's final statement.

The Academic Board wishes to express its concern at the apparent increasing lack of uniformity in academic standards and curricula in the Province of British Columbia and with an apparent decrease in the standards of some university programs.

By a conscious policy on the part of the Department of Education, province-wide high school examinations have been phased out, and as a result there are no longer adequate guidelines to maintain uniform academic standards of high school graduation. This divergence of standards is most apparent to the universities, which traditionally have used high school grades as the most reliable predictors of a student's ability to profit from a university education.

DIFFERENT STANDARDS

With different graduating standards being used throughout the province, high school grades are no longer an adequate measure for evaluation by universities, colleges, or employers. In the opinion of the Academic Board this is a gross disservice to many students, both those with unusually high academic ability who do not have the opportunity to demonstrate their achievement, as well as those with only moderate academic accomplishments who may be misled in their choice of appropriate post-secondary education.

The students most harmed by this apparent erosion of standards are those from homes in which the parents themselves have had only limited educational opportunities, and who therefore must rely entirely on the school system for academic guidance. Of particular concern is the decreased requirement for students to demonstrate a minimum ability in written English and in mathematics. Any deficiencies in these areas deny a student access to most, if not all, professional careers.

As disturbing as the lack of uniformity in standards is the removal of uniformity in curricula. School districts and individual high schools have been encouraged to develop their own curricula. It is assumed that a curriculum committee in each school district, consisting of teachers, parents and students, will be charged with the responsibility for curriculum development.

In theory there are to be core curricula developed by the Department of Education, but without province-wide evaluation there is no guarantee that the core curricula will be followed. As a result, students are entering the colleges and universities unprepared in certain areas of the traditional curriculum of each discipline. The problem is compounded in first-year university-level courses because students from different school districts have different gaps in their background knowledge.

A possible solution to these problems might be the reintroduction of province-wide grade 12 examinations in English, mathematics, sciences, social sciences and second languages. In each area the curricula and standards would be established by committees with representatives from the Department of Education, the schools, the colleges, and the universities.

ENTRANCE EXAMS

A second solution would be for the universities and colleges to establish their own entrance examinations. This solution would deal only with those students seeking university or college entrance, and would offer no guidance to employers of high school graduates. An over-emphasis on university entrance requirements in determining high school curricula has been criticized in the past and would be an undesirable result of encouraging the universities alone to evaluate entering students.

A third solution is for the colleges and universities to operate with a completely open-door policy, accepting all those who seek admission and thus moving the selection process to the end of the first year of the university or college programs. The solution would be difficult to justify economically, since most universities and colleges do not have the facilities to accept the large number of students which would be involved, and because the first-year courses would, of necessity, include work at the grade 12 level, thus reducing college and university standards.

EFFECT ON STUDENTS

Again, the students receiving the greatest disservice would be those at either end of the academic spectrum. The better student would not be fully extended during the first year of his college or university program, and the student not suited to university-level education would spend a year, probably ending in failure, which could have been more profitably used in some other post-secondary institution or in employment.

The problem addressed here is of crucial importance to the whole educational system in the Province of British Columbia. The Academic Board urges action to re-establish procedures which will ensure some uniformity of academic standards and core curricula throughout the province.

The board is also concerned about the apparent decrease in standards in some college and university programs. This is a continent-wide phenomenon, but in Canada appears to have two primary causes. The first originated from "formula financing", under which system there were distinct financial advantages to colleges and universities to maintain the largest possible student enrolment.

This percolated down to the department level, where, again, resources have been allocated on the basis of student enrolment. The second cause results from a change in educational philosophy during the 1960s, which saw a move to the displacement of classical evaluation methods by such methods as student self-evaluation, and a belief by some faculty members that they do not have either the responsibility or the right to evaluate students.

Yet again this has done a great disservice to students. The more competent students lacked challenge and the opportunity to demonstrate their ability, while others have been encouraged to remain in academic programs which they have found subsequently to be of little value in providing career opportunities.

STEADY IMPROVEMENT

The Academic Board believes that the colleges and universities, and the Universities Council, should acknowledge this problem and energetically move towards a steady improvement of academic standards. In particular, resources should be allocated on the basis of academic quality as well as the number of students enrolled.

OFFICIAL NOTICE OF BY-ELECTION

At its meeting of April 23, 1975, the Senate of The University of British Columbia, under the authority of the *Universities Act*, (Section 35 (2) (I)) increased its membership under Clause 35 (2) (i) from 4 to 11. This action of Senate requires that a by-election be held in order to elect a further 7 members from Convocation.

This notice is a call for nominations.

Candidates eligible to stand for election to the Senate are members of Convocation who are not members of the Faculty of the University. The attention of those concerned is directed to the following sub-section of Section 15 of the *Universities Act* (1974):

(2) All nominations of candidates for membership in the Senate shall be signed by not less than three persons entitled to vote in the election of the Senate.

In addition, each nomination must be accompanied by the signature of the nominee indicating willingness to run for election.

In accordance with the *Universities Act*, an election register has been prepared of the names and known addresses of all members of the Convocation who are entitled to vote at an election and the register is open to inspection at all reasonable hours by all members entitled to vote.

Nominations must be in the hands of the Registrar no later than 4:30 p.m. on Wednesday, June 11, 1975.

Relevant extracts from the 1974 *Universities Act*

35. (2) The Senate of each university shall be composed of

(i) four persons who are not faculty members, elected by and from the convocation;

(I) such additional members as the senate may from time to time determine ....

CHEMISTS AID CANCER RESEARCH

By PETER THOMPSON
UBC Reports Staff Writer

Prof. James Kutney and Dr. David Dolphin have something in common apart from their positions in UBC's Department of Chemistry.

They are both working in areas related to "synthetic" chemistry where compounds are put together in ways not found in nature.

Some of their work involves developing new medical compounds which may affect the course of millions of lives.

And both, in these days of fickle government financing of research, enjoy generous financial backing.

But not from Canada.

Dr. Dolphin, associate professor in the department, joined UBC in January of 1974 from Harvard where he had worked with Nobel Prize-winner Prof. R.B. Woodward. Among the specialties of chemistry, he is working in a field that deals with substances that are between organic molecules and the molecules of living things.

SIMPLER REACTIONS

"I take naturally occurring reactions, and try to find simpler reactions that mimic them," Dr. Dolphin said. "If I can understand the simple system first, I have a better chance of knowing how the more complicated one operates, and eventually that understanding may be applied to similar systems of living molecules."

Part of the $275,000 in grants he has received while at UBC for the scientists in his group is for work on the mechanism of vitamin B 12, the most complex vitamin known. The human body requires only one-millionth of a gram a day, but without it, a person can develop pernicious anemia. Without vitamin B 12, pernicious anemia is always fatal.

IDEAS ACCEPTED

"It isn't clear how the vitamin functions, but in the past year I think we've broken the back of what it's all about," he said. "Our ideas of how it works are beginning to be accepted."

Money for this research is coming from the American Chemical Society.

Dr. Dolphin, who was born in the U.K. and received his bachelor's and Ph.D. degrees from the University of Nottingham, also has a grant of $140,000 from the U.S. National Institutes of Health for studying the role of porphyrins, a common type of molecule that plays crucial roles in living organisms.

Hemoglobin, the molecule in the blood to which oxygen is attached for dissemination throughout the body, is a derivative of porphyrins. So is chlorophyll, the compound that makes it possible for energy from sunlight to combine through photosynthesis in plants with water and carbon dioxide to produce carbohydrate, the first link in the chain of life on which we all depend.

Dr. Dolphin's work has unravelled the first steps of the complex reactions of photosynthesis.

Related to medicine is work he is doing to try to create molecules that can act as a sort of rescue flare in the body.

He and Dr. Donald Lyster, assistant professor in UBC's Faculty of Pharmaceutical Sciences, are trying to find molecules which, when they enter the body, tend to travel to a specific organ. By attaching a radioactive substance or label to the molecules, physicians would be able to study the part of the body that the molecules travel to by means of radio-sensitive equipment.

"We are making a variety of organic compounds to which we can tie a radioactive label. Then we inject the complex compound into laboratory animals, to see where in the body it travels, in the hope that we can make something which will be specific for a particular organ," Dr. Dolphin said.

"Once the material collects in a particular organ it gives off gamma rays, very similar to x-rays, and these rays can be detected so that you can see where the organ is, how big it is, whether it's functioning properly and how quickly the material passes through it."

This work was begun at the Massachusetts General Hospital in Boston where a radioactively-labelled compound or tracer was perfected that made its way to the bone. The compound is now being used to detect cancer of the bone some eight months earlier than was previously possible using x-rays.

X-RAYS ABSORBED

"Bone is so dense that it absorbs most of the x-rays and appears clearly on the x-ray film. But although the bone shows up well, it has to be eaten into very badly before you can detect a difference," said Dr. Dolphin.

"By that time time it's usually too late."

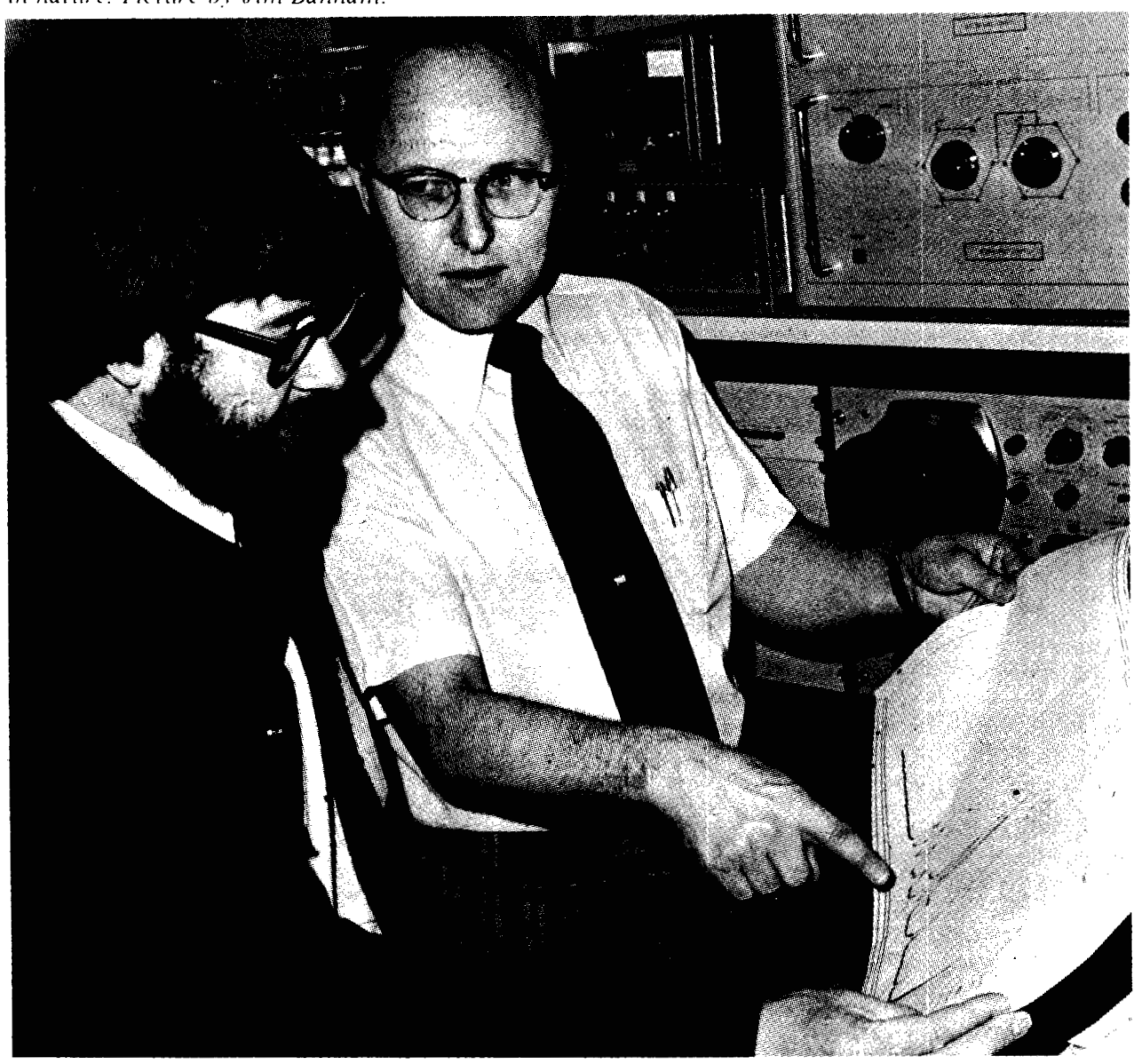
The compound now being used at the Massachusetts General collects around the bone, especially if the bone is cancerous. The larger the cancer, the greater the number of molecules of the compound that collect in the area, he said.

Dr. Dolphin is now trying to develop such compounds – "site-specific radio pharmaceuticals" – for the large organs of the body.

"The reason why we need them for organs such as the kidney, heart and liver is that these organs are so transparent to x-rays that is is essentially impossible to see them by this method," he said.

He has one compound that is showing good promise

Prof. James Kutney, at right below, and Dr. David Dolphin discuss a spectroscopic analysis of a chemical substance in the nuclear magnetic resonance laboratory of UBC's Chemistry Building. Both chemists are working in areas related to "synthetic" chemistry where compounds are put together in ways not found in nature. Picture by Jim Banham.



as a specific radio-pharmaceutical for the kidneys. So far the work has been confined to animals, he said. If the compound passes this hurdle, studies will be done to see what toxic effect the compound might have, then it may be used on human patients on a trial basis.

His work on radio-pharmaceuticals is being supported through $27,000 from the Canadian Medical Research Council.

The faint-hearted support he has received from Canada intrigues and distresses Dr. Dolphin. Of the $275,000 in research funds he is working with now, more than 60 per cent came from the U.S.

His operating grant from the National Research Council is $18,000.

"It's disturbing for Canada and Canadian chemists that Americans are prepared to support a foreigner in a foreign country at a level which is at least three times higher than the National Research Council is prepared to support me," he said.

PROMISING PROGRAM

Another person in UBC's Department of Chemistry with a large amount of money for research and who is busy on a variety of fronts is Prof. Kutney.

One of his most promising programs is in cancer research. As in the case of Dr. Dolphin, the U.S. National Institutes of Health has supported him generously.

"It is generally difficult and rare to receive funding from the NIH for work outside the U.S.," Prof. Kutney said. "In fact, applications from outside the U.S. usually have to go through a special screening process.

"For me to receive funding from the NIH must indicate something about the type of work we are doing, especially since NIH approached me and suggested higher funding than I had applied for originally."

Prof. Kutney feels that his decade of work in trying to synthesize a particular cancer drug is about to pay off. The story of his work, though, begins with earlier research in the laboratories of Dr. R.L. Noble (now director of the Cancer Research Centre at UBC) and Dr. Charles Beer, a biochemist, at the University of Western Ontario, and of the Eli Lilly pharmaceutical firm in Indianapolis. They were able to show that at least two closely related compounds in the common periwinkle plant are effective in combatting certain types of cancer, especially leukemia, a cancer of the white cells of the blood.

A major problem is that the two active compounds, vinblastine and vincristine, are very complex and are associated in the plant with many other complex chemicals which are inactive. Isolating, extracting and purifying the two active compounds is difficult and expensive. Literally acres of periwinkle are grown to obtain a small amount of the precious chemicals.

Prof. Kutney wants to produce the two compounds synthetically in the lab, eliminating our dependence on periwinkle. The starting compounds he is using are relatively inexpensive. More important, if a laboratory method can be found to produce the compounds, then analogs – compounds made up of the same or similar components but arranged in a different way – might also be made. By testing the different combinations of components, more and perhaps vital information might be obtained about the drugs and how they eventually bring about in the body the death of white blood cells, stricken with cancer and multiplying uncontrollably.

"For example, what's the chemical structure required for the drugs to be biologically active against the cancers? Is the entire molecule as it appears in nature required? Can we reduce or eliminate some of the side-effects by altering the structure, or increase its anti-tumor activity in the body?

"We decided years ago that only by building the drug in the lab would we have a chance of answering these questions," Prof. Kutney said.

"The reason for this is that the drug is chemically delicate. If you begin by using it as the starting material and try to perform chemical reactions which would produce a number of related synthetic analogs, the molecule tends to fall part."

The drugs have a fascinating structure. Each is made up of two closely-related halves joined together by a weak bond. Combined, the two halves are effective anti-cancer drugs. Separate, they are inactive.

Beginning in 1964, Prof. Kutney and his colleagues began putting together the components of one half, perfecting a method so that the components can be switched around into different configurations to produce an almost endless number of analogs. Then they worked out the chemistry involved in doing the same for the other half.

MAJOR PROBLEM

A major problem the group has overcome after years of effort is how to put the halves together in the proper linkage. They worked out a general linking method and the compounds are now being tested at NIH laboratories.

While this work is going on, Prof. Kutney and his group are going one step further. No one knows how vinblastine or vincristine are broken down in the body. To try to find out, NIH is sending samples of the drugs to Prof. Kutney, who attaches a radio-active label to the drug molecules, using the chemical methods his group has perfected. The label allows the drug to be traced in the bodies of laboratory animals.

The drugs are sent back to NIH where they are injected into laboratory animals. By analysing the tissues of the animals, NIH scientists hope to discover what happens to the drugs in the body, what compounds they break down into, and exactly which compound is responsible for destroying cancer cells.

Four UBC chemists receive awards

Four members of UBC's Chemistry department, including **Dr. James Kutney,** whose research is detailed in the article on these pages, have recently received awards and honors for their research activities.

Prof. Laurance D. Hall and **Dr. Brian R. James,** both of whom joined the UBC faculty in the early 1960s, have received awards from the Chemical Institute of Canada, the 9,000-member national scientific society for the chemical profession.

Prof. Hall, 37, will receive the Merck, Sharpe & Dohme Lecture Award for 1975, which consists of a scroll and $500. Dr. James is the 1975 recipient of the Noranda Lecture Award which also carries with it the award of a scroll and $500. Both awards will be presented on May 26 at the 58th Chemical Conference and Exhibition of the Chemical Institute of Canada in Toronto.

PROF. L.D. HALL

DR. BRIAN JAMES

Six members of the UBC Chemistry department have received the Noranda award since it was instituted 12 years ago.

The Merck, Sharpe & Dohme award is given annually to the outstanding Canadian organic chemist under the age of 40. Prof. Hall was selected for his unique contributions in synthesizing novel carbohydrate derivatives and in developing magnetic resonance spectroscopy as a tool to study organic compounds in solution.

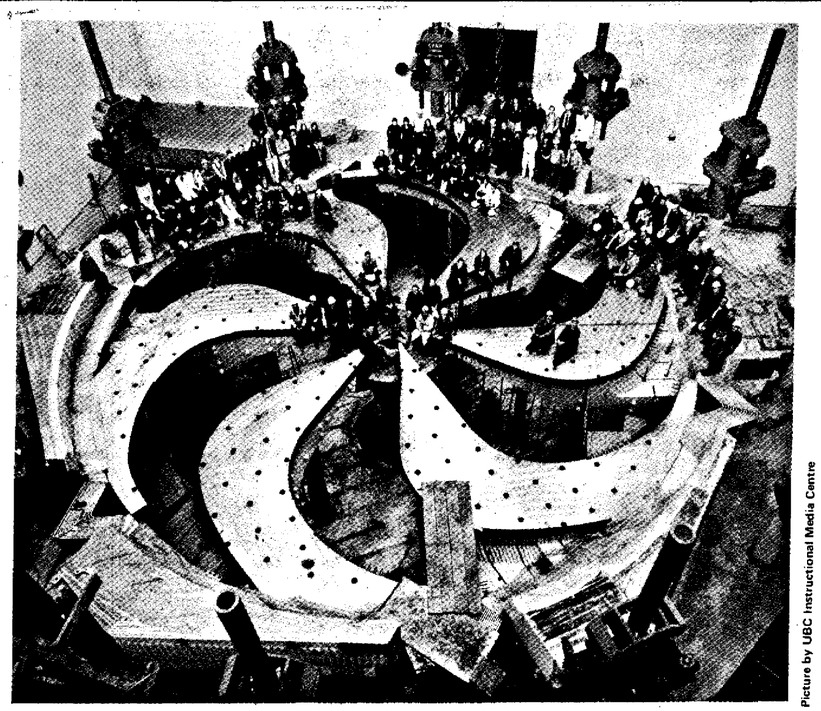
The Noranda award is for distinguished contributions to physical and inorganic chemistry by an under-40 scientist working in Canada.

Dr. James, 37, was given the award for research which has made a major contribution to the understanding of homogeneous catalytic processes. The results of his studies can aid in an understanding of inorganic aspects of certain biological processes.

Dr. Thomas Money, another member of the UBC Chemistry department, has been awarded the prestigious degree of Doctor of Science by the University of Glasgow for his research contributions in the area of natural product chemistry.

Dr. Money will receive the degree at a July 9 ceremony at the University of Glasgow, where he was an undergraduate student, before participating in the 4th international Symposium in Organic Chemistry at Cambridge University on July 15, where he will describe the latest results of research carried out at UBC.

And finally, Dr. Kutney has been elected visiting professor by the Japan Society for the Promotion of Science. He will spend three months in Japan lecturing at various Japanese universities, but will be based mainly at Tohoku University in Sendai.



Picture by UBC Instructional Media Centre

TRIUMF

is the name of a new $36 million cyclotron, which went into operation in mid-December, 1974, on UBC's South Campus. The machine was conceived in the mind of its director, Dr. R. Reginald Richardson, who is seen at right in the master control room of the facility. The cyclotron, which produces short-lived, sub-atomic particles called mesons, is already being used by Canadian and foreign scientists for research on the structure of matter. One of the future uses of the machine will be the production of a beam of negative mesons for use in treating some types of cancer. The heart of the cyclotron is its unique "sector-focusing" magnet, which holds the sub-atomic particles in a spiral position while they accelerate. When the lower half of the magnet was in place in January, 1972, TRIUMF technicians and staff members, left, gathered to have their picture taken.

By Peter Thompson
UBC Reports Staff Writer

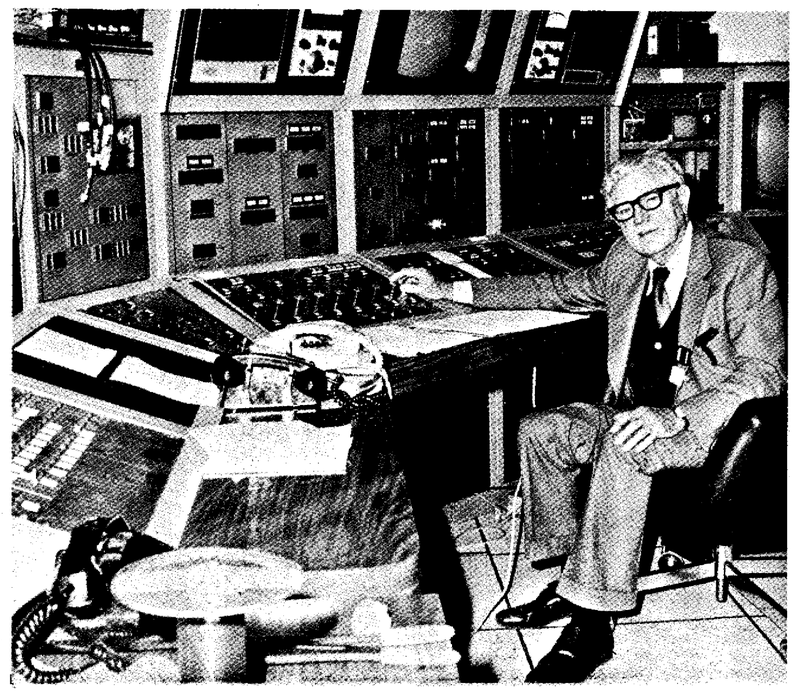


Photo by Jim Banham

TRIUMF, the huge, $36-million cyclotron on UBC's South Campus, was conceived on Galiano Island in 1962 in the mind of Dr. R. Reginald Richardson. More than a decade later Dr. Richardson realized his dream. At the controls of the cyclotron on Sunday, Dec. 15, 1974, he guided the first beam of sub-atomic protons out of the machine.

Cyclotrons are one of the two major types of machines used to find out how atoms are held together. The machines disintegrate atoms so that physicists can measure what happens during decomposition.

Basically, both cyclotrons and linear accelerators — the other major type of atom-smasher — operate the same way. They take sub-atomic particles and accelerate them to speeds approaching the theoretical limit at which anything in the universe can travel — the speed of light. Then the particles are guided to collide with a target. Some of the atoms of the target are shattered during impact.

Linear accelerators, as their name implies, accelerate particles in a straight line. Cyclotrons accelerate particles in ever-widening circles in a spiral pattern and are more compact.

Dr. Richardson, born in Edmonton and in 1962 a professor of physics at the University of California at Los Angeles, was spending his vacation on Galiano on the property his family has owned since 1946 and to which he intends some day to retire.

At that time about a decade ago physicists were realizing that because of technical advances a number of new tricks were possible in accelerator design. They thought it possible to accelerate tremendously strong proton currents to high speeds to produce mesons, one of the more important of the 100 or so known sub-atomic particles.

Atoms, for those who have forgotten, are made up of a central core consisting of a nucleus surrounded by one or more electrons. The nucleus is made up of neutrons which don't have any electrical charge, and protons which have a positive charge. Electrons orbiting the nucleus have negative charges. Atoms can vary in the number of constituents. The simplest atom is hydrogen with one proton and one electron.

Helping to hold the protons and neutrons together at the core of atoms are mesons, particles whose life-span is about one-hundred-millionth of a second.

Dr. Richardson's invention is a meson factory, a machine for producing mesons by hurling a proton beam into a target. First he decided it would be a cyclotron rather than a linear accelerator.

"The important difference between a cyclotron and a linear accelerator is that a cyclotron can produce a beam continuously," Dr. Richardson said, "whereas a linear accelerator puts out a beam in pulses.

"For example, the meson linear accelerator at Los Alamos in New Mexico has a six per cent duty factor — the beam is on only six per cent of the time. This means there are problems in conducting some experiments at Los Alamos that won't be present at TRIUMF."

Reduced to crude generality, all cyclotrons operate the same way. At the heart of all cyclotrons is a huge magnet, divided into two halves, each usually shaped like a coin. The halves are flat and one is suspended above the other with a gap in between.

Into the centre of this gap sub-atomic particles are introduced and are energized by currents of electricity. The electricity makes the particles accelerate, move out from the centre of the gap in swirling circles, spin outward in a spiral and gain speed. Holding the particles in their spiral position is the magnet.

Once the particles achieve the required speed, they are directed out of the magnet and into a target.

One of the technical tricks Dr. Richardson used in his concept is a "sector-focusing" magnet. Instead of each half of the magnet being shaped like a coin, it is divided into spiral-shaped sections like the petals of a flower. Instead of two coins suspended one above the other, Dr. Richardson's magnet is shaped like two daisies one above the other, except that the daisies would have only six petals each.

The advantage of sector-focusing is that it compensates for the increase in the mass of the particles as their speed approaches the velocity of light. According to Einstein, the mass of any object increases the faster it travels.

Another innovation of Dr. Richardson is that his machine uses negative hydrogen ions as accelerated particles. A negative hydrogen ion is simply a hydrogen atom which has one negatively-charged electron orbiting a nucleus with one positively-charged proton, with an extra electron added to give it a net negative charge.

EXTRACTING negative hydrogen ions from the machine is easy and this is its advantage over other cyclotrons. Once negative hydrogen ions are accelerated to the required speed, they intercept a strip of copper or aluminum which removes two electrons from each negative hydrogen ion. This in effect transforms the stream of particles into a beam of protons, whose positive charge causes the beam of particles to deflect out of the magnet.

Another advantage of using negative hydrogen ions is that more than one beam of the particles can be extracted from the machine at the same time, Dr. Richardson said. The continuous stream of negative hydrogen ions spiraling in the machine can be intercepted at any point and part of it deflected out so that beams of various energies can be extracted from the machine simultaneously.

This is what happened on Feb. 20 when TRIUMF, for the first time in accelerator history, extracted two beams of different energies simultaneously.

At UBC, Prof. John Warren during the 1950s and 60s had built up a solid group of nuclear physicists who had used a Van de Graaf electrostatic generator, a small and now primitive piece of equipment, in their work. Prof. Warren became the first director of TRIUMF.

Physicists realized that a 500-million-electron-volt cyclotron would be as good for research in many fields and better in some fields than the 800-million-electron-volt machine at Los Alamos, the most powerful meson factory in the world. This is because the cyclotron would be able to extract more than one beam and be able to produce a beam continously. It was also realized that a 500-million-electron-volt cyclotron would cost about one-third or less than the linear accelerator at Los Alamos.

The dramatic reduction in cost placed a 500-million-electron-volt machine within the financial means of a middle-power country such as Canada. By 1965 the three public universities in B.C. had come together in TRIUMF, the Tri-University Meson Facility. They formed a consortium, realizing that such a large facility should be shared. The following year the University of Alberta joined, so that TRIUMF is now a misnomer. The consortium idea has been copied by other universities for other large projects and has been one of the successes of TRIUMF so far. TRIUMF's existence is an example of what universities can do to their mutual benefit through co-operation.

Early in 1969 contracts were awarded for the beginning of TRIUMF. Other meson factories underway were the Los Alamos linear accelerator, begun in 1964, and a 500-million-electron-volt cyclotron in Switzerland, which was originally funded in 1962. Russian also has plans for a meson factory.

TRIUMF's ambitious magnet was the most difficult problem to overcome. The magnet is probably the largest in the world. It weighs 4,200 tons and contains as much steel as the Port Mann Bridge. Because of its size, it had to be made up of more than 1,000 pieces of plate steel instead of the usual forged steel.

EXCAVATION for the cyclotron vault extended 90 feet beneath the surface of UBC's South Campus. The bed of concrete underneath the magnet is 13 feet at its thickest point and is interlaced with reinforcing steel as thick as a man's arm. The cyclotron building has been designed so that in the event of an earthquake, the building will shake but the magnet will remain relatively fixed.

The size of the TRIUMF magnet led to some difficulty. It is the only magnet of its kind in the world built of plate steel. The steel plates came from a steel rolling mill in Hamilton, Ont., and TRIUMF magnet designers used steel from the same mill to build a magnet one-tenth the size of the final magnet to test magnetic properties. What they didn't anticipate was that when an electric current is sent through the full-scale magnet, its magnetic properties are up to 40 per cent different from those of the one-tenth-scale magnet, in spite of the fact that the steel for both has the same metallurgical characteristics. (The magnetic properties of the steel for the full-scale magnet had been changed during its production at the rolling mill.)

For almost eight months TRIUMF personnel had to agonizingly shave off pieces of steel from certain places on the full-scale magnet and add pieces in others. The eight months killed any chance the project had of starting up before the linear accelerator at Los Alamos. Over the six years of construction, a full year had been lost due to strikes and made up again, but the time lost on adjusting the magnet could not be overcome.

A slight advantage to the lost time was that the changes in the magnetic field were such that TRIUMF would require less electricity to power the cyclotron. The changes mean a saving of about $50,000 in the $500,000 of electricity TRIUMF will use each year. Averaged out over the lifetime of the cyclotron, the saving doesn't make up for the lost time and Dr. Richardson said he would prefer to have avoided the change in magnetic field of the magnet.

"But since it's the first extremely large sector-focusing magnet of advanced design to be built of steel plates," Dr. Richardson said, "there was no reason for us to have been able to anticipate the problem."

TRIUMF has maintained 80 per cent Canadian content in the construction of the project. At a mundane but financially important level, B.C. material went into the special concrete used to shield the radioactive area of the cyclotron building.

"The simplest method of shielding is to put material between the source of radioactivity and people in the area," said Prof. Erich Vogt, former associate director of TRIUMF.

"It doesn't matter what the material is made of as long as there's enough of it. But it's usually more efficient to put a thinner shielding of dense material around the cyclotron than a thick layer of less dense material.

"To reduce space, the best shielding for its cost is battleship steel. One foot of it can be as good as two or

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TRIUMF

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three feet of concrete. The Americans and the Russians sometimes simply use steel from an old battleship for shielding.

"Battleship steel was out of the question for us so we decided to use dense concrete. To make the concrete more dense we had planned to ship crushed iron ore from Quebec, until one of our engineers discovered the same type of material on Texada Island in the Strait of Georgia.

"We saved $100,000 on that contract alone."

Local industry also benefited from TRIUMF, perhaps none more than Ebco Industries of Richmond. Ebco president Helmut Eppich said that the company's association with TRIUMF has given it special knowledge in a highly technical area.

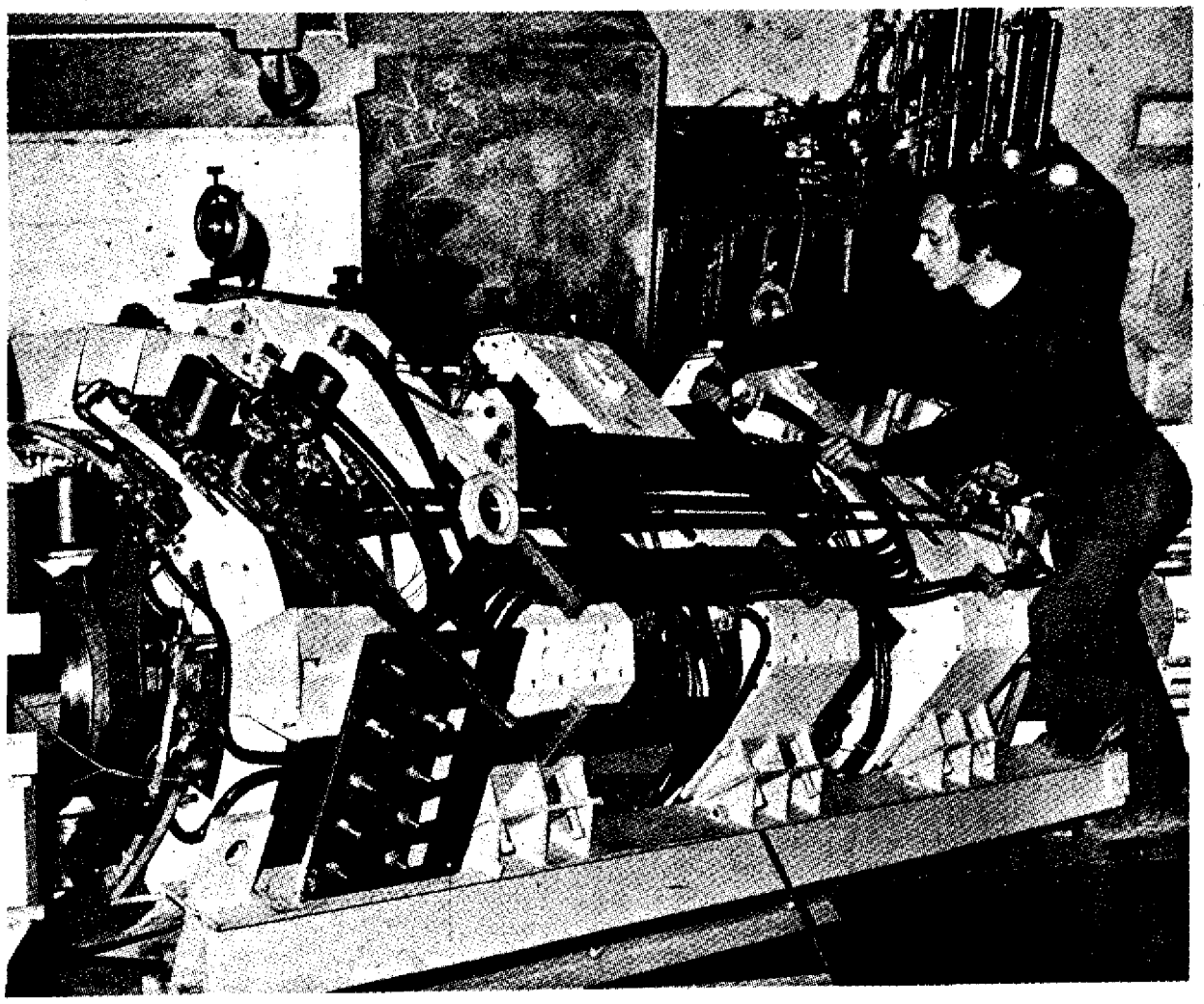
Some TRIUMF consulting engineers recommended against Ebco's association with the cyclotron project but TRIUMF's board of management was willing to take a chance with the local firm.

As a result of the experience, Ebco "is attracting customers from all over North America," Mr. Eppich said. "We would never otherwise have been able to bid on some of these contracts."

Ebco is probably the most dramatic example of the benefit a dozen or so local companies have derived from TRIUMF.

Prof. Vogt is chairman of TRIUMF's board of management. The board has 12 members, three from each of the four universities represented in the consortium. The day-to-day operation of the cyclotron is the responsibility of Dr. Richardson and his operating committee. Legal and fiscal responsibility for TRIUMF lies with UBC.

Prof. Vogt is also chairman of TRIUMF's experiment evaluation committee which screens all experiments proposed for TRIUMF, regardless of where they originate.



Technician at TRIUMF, UBC's new cyclotron, works on mechanism that will guide the meson beam to be used in cancer therapy at the new $36-million facility. Picture by Jim Banham.

A number of foreign students are already working at TRIUMF. Teams of scientists from Japan, the U.S. and the Rutherford Laboratory near Oxford, as well as researchers from the Universities of Montreal, Alberta, Victoria, Simon Fraser and Queen's Universities and UBC are using the cyclotron. About 75 to 80 per cent of the work at TRIUMF will be done by Canadians.

Dr. Richardson describes TRIUMF as the largest single investment in fundamental research ever made in Canada. In spite of its fundamental aspects, TRIUMF is expected to have practical spin-offs, some of them almost immediately.

"Perhaps the most important application of TRIUMF in the immediate future will be to develop a beam of negative mesons for use in cancer therapy," Dr. Richardson said. "The work will be done under the direction of the B.C. Cancer Institute.

"Unlike cobalt-60 or x-rays, negative mesons can be made to release their energy only where it is wanted. This means that a cancerous tissue can be destroyed by a negative meson beam without also destroying the healthy tissue in the path of the beam."

The machine has already created history by simultaneously extracting two beams at different energy levels, in effect getting two beams for the price of one. TRIUMF was designed with the capacity to produce a total of four beams simultaneously.

Dr. Richardson said he anticipates pressure on the federal government to finance the third beam for use in cancer treatment. Experiments in Russia, he said, indicate that protons are useful in treating some cancers which are otherwise almost impossible to treat using available medical techniques. The beam for this purpose would be at an energy level of about 200 million electron volts. So far, he said, TRIUMF has produced beams of energy between 183 and 520 million electron volts.

"There is increasing pressure on TRIUMF that it be used to produce radio-isotopes for medical purposes. An example is iodine-123, which has a number of advantages over the currently used iodine isotope which is produced in nuclear reactors. The side-effects of iodine-123 are much less."

Preliminary work at Los Alamos indicates that when mesons are aimed at a certain target of living tissue, the radiation emitted from the cells of the tissue destroyed by the mesons can give clues as to the composition of the cells. This means, he said, that it might be possible to diagnose what is happening in an area deep in the body without having to operate and remove a sample of tissue for analysis.

He says TRIUMF's usefulness will span about 40 years. Fundamental research will dominate in the first years but he anticipates applied research will quickly dominate the project.

"It's curious that although the project was originally conceived and financed by the federal government for fundamental research, I believe that from five to 10 years from now at least half of the research will be applied. The subjects will include medical applications and the use of the cyclotron in analysing small chemical components in such things as polluted water or air, and other uses we're not aware of now," he said.

PROF. Vogt says that an early practical experiment might involve nuclear energy. TRIUMF may be used to "breed" fuel for nuclear reactors when Canada's abundant supply of natural uranium is depleted. The experiment would involve bombarding the heavy nucleus of a cheap material such as lead or bismuth with a high-energy proton beam. Theoretically this would cause neutrons to pour out of the nucleus. The neutrons could be used to produce nuclear energy at a cost, Prof. Vogt anticipates, much lower than today's, and the process would be completely safe.

"It is easy to say that any scientific discovery has a practical benefit," Prof. Vogt said. "This is often denied, sometimes by the very people who make the discoveries.

"Rutherford (the great New Zealander whose researches at McGill and Cambridge Universities were milestones in our understanding of atoms) said in 1937 at a public lecture on atomic energy – just two years before nuclear fission came on the scene – that the one thing that was certain about nuclear energy was that no one would be able to exploit it."

UBC to host huge science meeting

Scientists from the countries of the Pacific Rim and from countries interested in Pacific affairs will attend the 13th International Pacific Science Congress at the University of British Columbia this summer.

Between 3,000 and 4,000 delegates are expected to attend the congress from Aug. 18 to 30.

Special speakers include Herman Kahn of the Hudson Institute in New York; Maurice Strong, executive director of the United Nations Environment Secretariat; and Lord Ritchie Calder, of the Centre for the Study of Democratic Institutions, in California.

The theme of the congress will be "Mankind's Future in the Pacific."

Chairman of the local advisory committee for the congress is Dean Ian McT. Cowan of UBC's Faculty of Graduate Studies.

Prof. William Hoar, secretary-general of the congress, said the purpose of the committee is to ensure that there will be a maximum amount of contact between the people of Vancouver and other parts of Canada's west coast and the delegates.

He said the congress, held every four years or so, aims at encouraging co-operative study of Pacific problems, especially problems relating to the prosperity and well-being of Pacific peoples.

"We want the 13th congress to be the most relevant to the Pacific Rim over the next 20 years," said Dr. Hoar, professor in UBC's Department of Zoology.

"We're trying especially hard to bring in younger people. It's easy to get in touch with the groups in each country that represent senior administrators. We want to get the younger people who will be the policy directors in 20 years.

"We're working through the United Nations, the Canadian International Development Agency and other organizations to try to reach these people."

Prof. Hoar said the problems of the Pacific are enormous. It's a huge area of tremendous diversity, he said, with extremes of poverty and wealth, urbanization and industrialization. Some of the cultures are among the oldest on earth. Some, he said, may be so primitive that they have yet to be discovered.

Problems to be dealt with at the congress will be divided into several areas: population and migration; energy resources, water resources, and pollution; nutrition and food production; poverty; management of land resources; and the role of science policy in increasing the welfare of Pacific peoples.

The management of land resources will include the production of timber, wildlife, food crops and fish, and examination of the ethics of land use.

Topics that will be discussed under the title of poverty will be whether technological aid to developing nations has been a success or failure, the position of minority groups and whether they should be isolated or integrated, and the growing trend towards urbanization of Pacific peoples.

The congress is held under the aegis of the Pacific Science Association, an international, non-governmental, scientific organization.

DONALD S. MOSEDALE

UBC certificate program upgrades qualifications of pre-school teachers

BY DONALD S. MOSEDALE
Acting Director, Education-Extension
Centre for Continuing Education

Amidst many changes occurring in approaches to human learning, educators are paying special attention to the child between birth and six years. Perhaps more than any other area of education, pre-school is better able to adapt to change; to remain open and flexible for children and parents, parents and teachers. To maintain this flexibility and to continue to grow with change, it is imperative that people working and living with young children stay abreast of new information.

With the incredible increase over the past few years in the number of facilities required for young children, there has been a corresponding need for well qualified pre-school personnel. Compulsory training for pre-school teachers consists of ten post-secondary courses, usually taken over a one- or two-year period at a community college. When training has been completed, a pre-school supervisor's license is issued by the Community Care Facilities Board.

Many licensed supervisors (another name for pre-school teachers) find that their basic training and subsequent dealings with young children contribute to the desire for further learning. It was this desire that led to the development of the Certificate Program in Early Childhood Education. This program is offered by the UBC Centre for Continuing Education in co-operation with the Faculty of Education.

A policy committee appointed by the dean of Education determines general and long-term academic program policy. The Centre for Continuing Education, the Faculty of Education, the provincial government and the B.C. Pre-school Teachers' Association are represented on the committee.

The certificate program consists of a series of courses, workshops and seminars. Independent study, teamwork and fieldwork are emphasized in an attempt to make the courses immediately practical. Within a broad framework of specified program goals, students and instructors work together to develop course content. A flexible approach such as this offers mature and experienced pre-school teachers an environment conducive to learning and personal growth.

The program consists of two 30-hour required courses (The Young Child in Society and The Adult and Learning Child in Group Settings), 60 hours in an area of concentration and 80 elective hours: Childhood Development, Special Education, Administration and Supervision, Integrated Curriculum. Electives can be taken from any area.

The various courses and workshops are offered not only for certificate candidates. Others who work and/or live with young children are welcome to attend. Pediatricians, nurses, social workers and public school teachers attend many of the courses. Some courses are designed specifically for parents. Dr. Neville Scarfe, dean emeritus of the Faculty of Education, has chaired four lecture series on early childhood in the past two years. Over 400 parents and pre-school teachers have attended these lectures in various locations throughout the Lower Mainland.

Since 1972, 35 courses and workshops have been developed. Some are offered once or twice, others several times a year on an on-going basis. This spring, 20 courses and workshops are being offered, including: Planning Environments for Young Children (Elizabeth Prescott), Teaching with Feelings: Understanding Emotions (Dale Martin and Roslyn Kirson), First Aid and Child Safety for the Pre-school Teacher (Ted Williams); Music and Movement (Nancy McMaster and Carolyn Kenny), The Inner World of the Pre-school Teacher (Eva Mai Allan), Working with the Mentally Retarded Pre-schooler (Wanda Justice), Improvisation and Drama Games (Gary Pogrow), The Growing Child (Neville Scarfe), Organizing and Operating Centres for Young Children (Jan Summerton), Touching and Holding Pre-schoolers: Uses (John Allan), The Young Child in Society (Edna Durbach).

The interest in and demand for programs is overwhelming. In the spring of 1972 three courses were offered for 25 registrants. Twelve hundred registrants will be involved in 20 courses and workshops this spring. In addition to the registrations, most courses have long waiting lists.

The future of the Certificate Program in Early Childhood Education includes not only an increase in the number and variety of courses offered at UBC but also, in response to many requests, the location of as many courses as possible in other centres throughout the province.

Summer housing sought

The Centre for Continuing Education is looking for English-speaking families who would like to host international students for 6 or 12 weeks this summer.

Students from all over the world are enrolled in the centre's summer immersion programs in English and they would like to experience the Canadian way of life at first hand. They want to eat Canadian food, to get to know Vancouver, to participate in sports and social activities, and to meet other Canadians during their stay in Vancouver.

The students attend classes at UBC for six hours a day, Monday to Friday. On Saturdays visits are scheduled to local places of interest and in the evenings they attend cultural events in the city.

Some French-speaking host families are also required for students coming to UBC to learn French.

For further information, please contact Lilian Kunstler, 228-0304.

Centre looks at housing for aged

In April, 1973, the action-research project, "Housing for Older People", was set up under the joint sponsorship of the UBC Centre for Continuing Education and the Central Mortgage & Housing Corp. Its purpose is to assist those concerned with accommodation and services for older people to use the best information currently available in planning, constructing and operating such facilities. There are several facets to the project's activities. In the following article, Marjorie Smith, project director, summarizes the needs and the activities of the project.

Collation of relevant information from both "experts" and the literature about the needs and preferences of older people with respect to accommodation and service is an on-going activity. Some of this material is now being prepared in digest form for use by architects and others.

A substantial research study is in progress under the direction of Dr. Gloria Gutman of the UBC Department of Psychology. It will provide useful information on the characteristics, expectations and design preferences of persons who apply for accommodation for older people, as well as of a control group who have not applied for such accommodation. It will also yield data about the impact on the social activities of residents of moving into selected facilities.

Information and experience relevant to the provision of accommodation and services is being disseminated through a variety of meetings in which participants are encouraged to share their knowledge and expertise, both within their own professional/occupational groups and with persons whose concern is normally with a different but related aspect of the subject. These meetings may be "one-shot" affairs, or the group involved may decide to come together regularly for a time to pursue specific purposes.

Architects and other professionals, educators, non-profit societies, administrators of facilities, planners, government personnel, and seniors themselves — all contribute to and gain a better understanding of the phenomena associated with aging in our society and the implications of these for their fields.

One such group, the Senior Citizens Housing Liaison Committee, has met monthly over the past year. Its purpose is to provide an informal forum of personnel from various levels of government and others concerned with housing for seniors, in order to discuss and overcome problems of co-ordination, and to clarify and assess questions of policy. Among its activities has been the preparation of the *Information Kit: Accommodation for Seniors*, which provides information for the use of board members of non-profit societies, architects, government personnel and others.

Another on-going group, also initiated by the project staff but now an independent organization, is the Advisory Council for Educational Programs in Aging. Council meetings bring together representatives from government departments, educational institutions, and agencies serving older people for the purpose of achieving co-ordination of effort in the provision of training and education in this field.

Because of the urgency of the need for good staff in accommodation for seniors, the major focus to date has been on training for professionals, auxiliary personnel and co-ordinators of volunteers working with older people. However, the council is also concerned about the need for education of the general public regarding older people and the process of aging. Increased understanding on the part of all age-groups will be essential to the development of sound social policy enabling older people to continue to participate and contribute to the extent of their capability, and to be assured of appropriate care if and when this is necessary.

Educator wins $1,000 award second time

For the second year in a row, **Dr. Alan J. McCormack,** of the Science Education department of the Faculty of Education, has won a major award in an international awards program sponsored by the National Science Teachers Association of the United States.

Dr. McCormack received a cash award of $1,000 in the Science Teaching Achievement Recognition (STAR) awards program at the National Science Teachers Association convention in Los Angeles in March.

DR. ALAN J. McCORMACK

His paper entitled "Invention Workshops: Children Search for a Better Mousetrap" was selected from submissions by science teachers across the U.S. and Canada.

Last year, while on leave from UBC to work at the Lawrence Hall of Science in Berkeley, Dr. McCormack was awarded the first-place prize of $1,000 in the Gustav Ohaus-NSTA Awards program for his suggestions on training college students to generate novel ideas for science education.

The awards programs emphasize both achievements (novel ideas that can be put into practice) and projections (innovative planning and creative thinking) aimed at improvement in the teaching of science at the elementary and secondary school levels.

★ ★ ★

Dr. Dennis Milburn, associate professor and chairman of the Social Studies department of the Faculty of Education, is visiting a university in Quito, Ecuador, in April to initiate a program of curriculum development in the field of teacher training.

★ ★ ★

Dr. Eleanore Vaines, assistant professor in UBC's School of Home Economics, is one of 24 Canadian university teachers who have contributed articles for a book entitled *Teaching in the Universities,* published by the McGill-Queen's University Press.

The 252-page book, edited by Prof. Edward Sheffield, professor of higher education at the University of Toronto, is available at $12.00 in hardcover and $5.00 in softcover.

A second contributor to the book is Mr. Leon Getz, a former member of the Faculty of Law at UBC, who resigned in 1973 to join the federal Law Reform Commission in Ottawa.

★ ★ ★

Prof. George Winter, head of the Department of Agricultural Economics in the Faculty of Agricultural Sciences, has been appointed to the B.C. Marketing Board by the provincial government.

★ ★ ★

Dr. William T. Ziemba, associate professor in the Faculty of Commerce and Business Administration, spoke in March at an international conference in Israel on "Financial Decision-Making Under Uncertainty". He spoke on "Computing Methods for Portfolio Selection Problems" during a session on the extension and application of capital market theory.

Dr. Ziemba was asked to speak at the conference by an organizing committee of representatives of Israeli universities and research institutions.

★ ★ ★

Prof. David Suzuki, of UBC's Department of Zoology, was the recipient in mid-April of a $5,000 award from the Canadian Human Rights Federation. He will use the award to continue work on a book entitled *The Social Impact of Genetics,* which will argue that genetic diversity is man's best hope for the future.

The award was presented to Prof. Suzuki in Ottawa by Canada's Governor-General, the Hon. Jules Leger.

★ ★ ★

Prof. Peter Oberlander, of the School of Community and Regional Planning, has been installed as president of the American Society of Planning Officials, which met in Vancouver in April. Prof. Oberlander has served as vice-president of the society in the past year.

★ ★ ★

Mr. Robert Silverman, an assistant professor in the UBC Music department, was the solo performer with the National Arts Centre Orchestra in Ottawa on April 21 in honor of Prince Charles, who was visiting Canada.

Described by critics as "one of Canada's leading pianists," Mr. Silverman performed Piano Concerto No. 1 by Shostakovich. He repeated his performance the following day at the orchestra's regular subscription concert.

Mr. Silverman has also been engaged by the Toronto Symphony Orchestra for a solo performance marking the debut of the eminent Soviet conductor, Kiril Kondrashin, in Toronto in April, 1976.

★ ★ ★

Dr. John D. Friesen, associate professor in UBC's Faculty of Education, has been asked by the Canadian Penitentiary Service to evaluate the rehabilitation programs at Springhill Penitentiary in Nova Scotia.

★ ★ ★

Dr. Conrad Schwarz, consultant psychiatrist with UBC's Student Health Service and clinical associate professor in the Department of Psychiatry, has been appointed head of the new psychiatric unit that will open at St. Paul's Hospital in Vancouver this summer.

★ ★ ★

Mr. William White, UBC's deputy president and bursar, has been elected a fellow of the General Accountants' Association of Canada.

★ ★ ★

Dr. Malcolm Tait, associate professor of animal science in the Faculty of Agricultural Sciences, has been appointed a councillor of the B.C. Institute of Agrologists by the provincial government.

★ ★ ★

Mr. Howard R. Eddy, assistant professor in the Faculty of Law, is the author of a report for the national Law Reform Commission that advocates establishment of a regulatory agency to govern the ways in which banks and other financial institutions cash cheques and carry on related transactions.

His report says existing law governing payment of bills is obsolete and new rules are needed to govern an electronic payments system now being devised.

★ ★ ★

Prof. Setty Pendakur, of UBC's School of Community and Regional Planning and a former alderman of the City of Vancouver, has been appointed by the provincial government to Vancouver's Board of Variance.

★ ★ ★

Prof. J. Neil Sutherland, of the Faculty of Education, has been named to a four-member team that will evaluate the work of the Canada Studies Foundation, which was established five years ago to promote teacher-based innovation in the field of Canadian studies at all levels of the public-school system in Canada's ten provinces.

Part of the objective of the evaluation will be to chart the course of the next phase of the work of the foundation, which will be funded by the provincial and federal governments.

A key figure in the operations of the foundation over the past four years has been **Prof. George S. Tomkins,** who has been on leave from his teaching duties in UBC's Faculty of Education as the co-director of the Canada Studies Foundation. He will be returning to UBC in the fall of 1975.

★ ★ ★

Mr. Peter Leask, an assistant professor in UBC's Faculty of Law, has recommended the creation of a provincial legal aid commission to administer a variety of programs for different areas of B.C. The recommendation, made in a report written by Mr. Leask for the Justice Development Commission, was discussed at a recent meeting of the B.C. branch of the Canadian Bar Association, which went on record as favoring extended legal aid and opposing provincial government control of legal services.

★ ★ ★

Dr. Bruce MacBryde, a research associate and associate editor of the Flora of B.C. Program for UBC's Botanical Garden, is the co-author with his wife, **Olga Herrera-MacBryde,** of a taxonomic identification manual, prepared with the aid of two Central American researchers, entitled "Prevalent Weeds of Central America."

The manual is currently being published in both English and Spanish for the International Plant Protection Centre at Oregon State University. Mrs. Herrera-MacBryde is also associated with the Botanical Garden's Flora of B.C. Program as a research assistant.

★ ★ ★

Prof. William M. Armstrong, who resigned as deputy president of UBC recently to become chairman of the newly created Universities Council of B.C., is the recipient of the 1974 Canadian Engineers' Award of the Canadian Council of Professional Engineers.

Prof. Armstrong, the third recipient of the gold medal award, was cited as an "ardent and continuous supporter of Canadian professional and technical organizations and societies" who has "served the public interest through his involvement in higher education and his work with the Science Council and National Research Council of Canada."

★ ★ ★

Prof. Myrne Nevison has been elected chairman of the Department of Counselling Psychology in UBC's Faculty of Education. **Dr. Peter Olley** has been named associate director of the Division of Student Teaching in the Education faculty. **Dr. Reginald D. Wild** will serve as acting associate director of the Secondary Division of the Education faculty.

★ ★ ★

Ms. Pat Thom, director of daytime programs in UBC's Centre for Continuing Education, gave a paper on continuing education for women at a UNESCO-sponsored conference on "Woman and Her Human Rights" in Kingston, Jamaica, in December, 1974.

★ ★ ★

Forty Japanese school teachers will be at UBC from July 27 to Aug. 24 to participate in an intensive program in speaking and understanding English. The program will be offered through UBC's Centre for Continuing Education under a contract with the Council on International Educational Exchange in New York. Arrangements for the program were made by **Dr. John Howes,** of UBC's Asian Studies department, and his wife, Lyn.

Faculties issue national statement

Continued from Page One

once again a primary concern of mankind. The community is turning to the scientists it has trained for help, Dean Shaw said, but the 11 faculties still face old obstacles in their attempts to respond.

"The role the 11 faculties play in the agricultural industry is a complex one," he said. "First of all, we're the only source of people who are trained in agriculture or veterinary medicine in Canada. No one else trains them.

"We're also expected to upgrade the abilities of working farmers, many of whom have had little agricultural training, through extension courses in the rural communities. And we have an obligation to provide courses to keep the people we have graduated up-to-date in their fields.

"And we're also expected, as highly trained scientists, to try to solve some of the problems the industry is facing through research."

The teaching done by the 11 faculties is financed through the provincial governments, Dean Shaw said, and research is financed by Ottawa, mostly through the Canadian Department of Agriculture.

TRADITIONAL WAY

"The traditional way of increasing the activity of a group at a university is to give them more research money. Pour more money into research and other areas of activity are also affected," he said.

"Part of a graduate student's training, for example is to do part of the research that needs to be done."

One reason why the 11 faculties are being starved of research money, he said, is because the research-granting agencies have been unable to provide the 11 faculties with sufficient funds.

This is in spite of a policy adopted by the federal government three years ago requiring federal governments to contract out their research requirements whenever possible, so that expertise is built up in the industry and universities rather than solely in government labs.

Despite the wishes of the federal cabinet, Agriculture Canada remains the only department which spends about 99 per cent of its research budget internally.

The situation would be bad even if a large amount of money were available for agricultural research. But there isn't. Out of about $1.5 billion spent on scientific and technological research in Canada each year agriculture and its related sciences get less than 10 per cent.

The 11 faculties have issued a national statement, prepared under the aegis of the prestigious Science Council of Canada, outlining their plight.

The statement says that despite widespread government and public lip-service to the importance of increasing food production through education and research, the 11 faculties are chronically underfinanced.

The result is that the intellectual resources of the faculties "are being exploited to only a fraction of their potential," the statement says.

The number of students graduating from the faculties "is insufficient to fill new vacancies, let alone remedy the accrued shortage of past years.

"The shortage of livestock veterinaries is a national problem for which every Canadian is ultimately paying in increased meat prices.

CRITICALLY SHORT

"In certain agricultural disciplines, professionals are also in critically short supply, to the extent that government agencies have had to hire a significant proportion of their professional staffs outside Canada."

The statement also warns that the producing farmer, who often has had little or no training in agriculture, shouldn't be the "forgotten man" of agricultural education, as he tends to be today.

The statement lists a series of problems being created by new pressures on agriculture. Research, the statement says, should be carried out on alternative land uses, plant species optimally suited to marginal farmland, efficiency of various livestock feeding methods, waste disposal, and use of farm and industrial wastes as livestock feeds, among others.

A research project which Dean Shaw would like to see started would decrease or eliminate the dependence of many wheat and other grain farmers on fertilizers, most of which is produced from petroleum. It has been estimated that one gallon of gasoline – including the use of fertilizers and machinery – is needed to produce one bushel of corn.

Dean Shaw would like to see work on developing a natural substitute for nitrogen fertilizer. Certain plants such as peas, alfalfa and clover restore the nitrogen content of the soil naturally, after their roots become infected by a certain soil-borne bacteria. It might be possible to develop a strain of wheat or barley or other cereal grain which has the nitrogen-fixing ability so that soil fertility is maintained naturally.

LITTLE BEING DONE

So far, he says, little work is being done on this possibility.

Part of the statement includes a section by Dr. Roger Gaudry, chairman of the Science Council of Canada, which has frequently pointed out the lack of co-ordination of research done in federal and provincial labs and on university campuses.

"What is needed," Dr. Gaudry says, "is first for the faculties to be strengthened. The federal government's role in this is to be much more generous in funding of agricultural and veterinary research ....

"Short-term measures will at best only delay our problems. The future quality of Canadian agriculture requires a coherent set of national agricultural strategies and a coherent set of agricultural research policies."

New psychology program starts

UBC's Department of Psychology is pioneering a program of community psychology in Canada.

Prof. Park Davidson, director of the Clinical/Community Psychology program, predicts that within a decade other universities across Canada will copy it.

Traditionally, Prof. Davidson said, clinical psychologists have treated in an office on a one-to-one basis patients who already have severe problems. But new psychological techniques now make it possible for clinical psychologists to work with groups of people in preventing psychological problems or handling psychological problems in the community.

Because the new type of work will emphasize self-help, prevention and work within communities rather than treatment of individual patients in a hospital, it is referred to as community psychology.

During the 1974-75 session, UBC offered for the first time training at the undergraduate, bachelor-degree level in community psychology and recently the graduate program was changed to accommodate the new emphasis on community psychology.

"The development of the kind of community psychology program we have here is the result of a survey I did for the Science Council of Canada in 1971," Prof. Davidson said. "I visited every clinical psychology program in Canada with a mandate from the Council to write recommendations on the future direction of clinical psychology in Canada.

"I saw during the survey the tremendous change that has occurred in social work teaching in the past four or five years. I'm convinced that social workers are going to be the major mental health professional working on the front line within a decade.

"Another profession that is changing very quickly is nursing. Nurses are increasingly moving out of hospitals and getting involved in direct assistance to people in the community."

Social work and nursing will assume greater responsibility for detecting and managing behavior problems in the community before they become so critical that they end up in hospital, he said.

"The community psychologist's role will be to help nurses, social workers and others in managing these problems. The community psychologist will provide the psychological technology, will work out the behavioral problems needed, and assist whoever is working directly with the people in the community," Prof. Davidson said.

Prof. Davidson recently became president-elect of the Canadian Psychological Association. His visits to other universities in the past few months as a result of his election have reinforced his conviction that the UBC program will become the model for programs across Canada, he said.

Another important contribution community psychologists will make is to help test the effectiveness of mental health programs, he said. Government agencies are anxious that the mental health programs they fund are effective and they want them evaluated. Graduates from the UBC program will be able to assist in providing this service, he said.

"Another interesting aspect of our program is that we are arranging to get our students out of metropolitan Vancouver for part of their community training.

"One of the serious problems with most of the clinical psychology programs in Canada is that students do their internship training in the centre of big cities where there are all kinds of mental health resources.

"But more and more community psychologists are working in smaller communities, and have to deal with mental health problems without these back-up facilities," Prof. Davidson said.

"We are trying very hard to get our students into the interior of B.C."

Press book tops list in Eaton's award program

A book published by the University of B.C. Press has been chosen as the outstanding book about B.C. published in 1974 in an awards program sponsored by Eaton's department store.

Land, Man and the Law, by the late Robert E. Cail, a volume about the disposal of Crown Lands in B.C. from 1871 to 1913, received the top award in the program.

Two other UBC Press books, *Exploring Vancouver*, by Mr. Harold Kalman, of UBC's Fine Arts department, and photographer John Roaf, and *Visitors Who Never Left*, by Chief Kenneth B. Harris and Ms. Frances Robinson, who teaches in UBC's Department of Fine Arts, were among the group of 10 books chosen by a panel of judges as the outstanding books about B.C. published in 1974.

Eaton's will purchase $1,000 worth at retail value of *Land, Man and the Law* and turn them over to the B.C. Department of Education for distribution to B.C. schools.

Mr. Cail completed his study in 1955 while a graduate student in history at UBC. He was killed in an automobile collision in 1958 while working on his Ph.D. at the University of Minnesota.

A fourth book included in the Eaton's awards program was *Vancouver (Canadian Cities)*, by Prof. Walter Hardwick, of UBC's Geography department.

Judges were Prof. Margaret Prang, head of UBC's History department; Prof. Walter Young, head of the Department of Political Science at the University of Victoria; and Prof. Gordon Elliott, of the English department at Simon Fraser University.

UBC REPORTS

Vol. 21, No. 7 – April 30, 1975. Published by the University of British Columbia and distributed free. UBC Reports appears on Wednesdays during the University's Winter Session. J.A. Banham, Editor. Louise Hoskin and Anne Shorter, Production Supervisors. Letters to the Editor should be sent to Information Services, Main Mall North Administration Building, UBC, 2075 Wesbrook Place, Vancouver, B.C. V6T 1W5.

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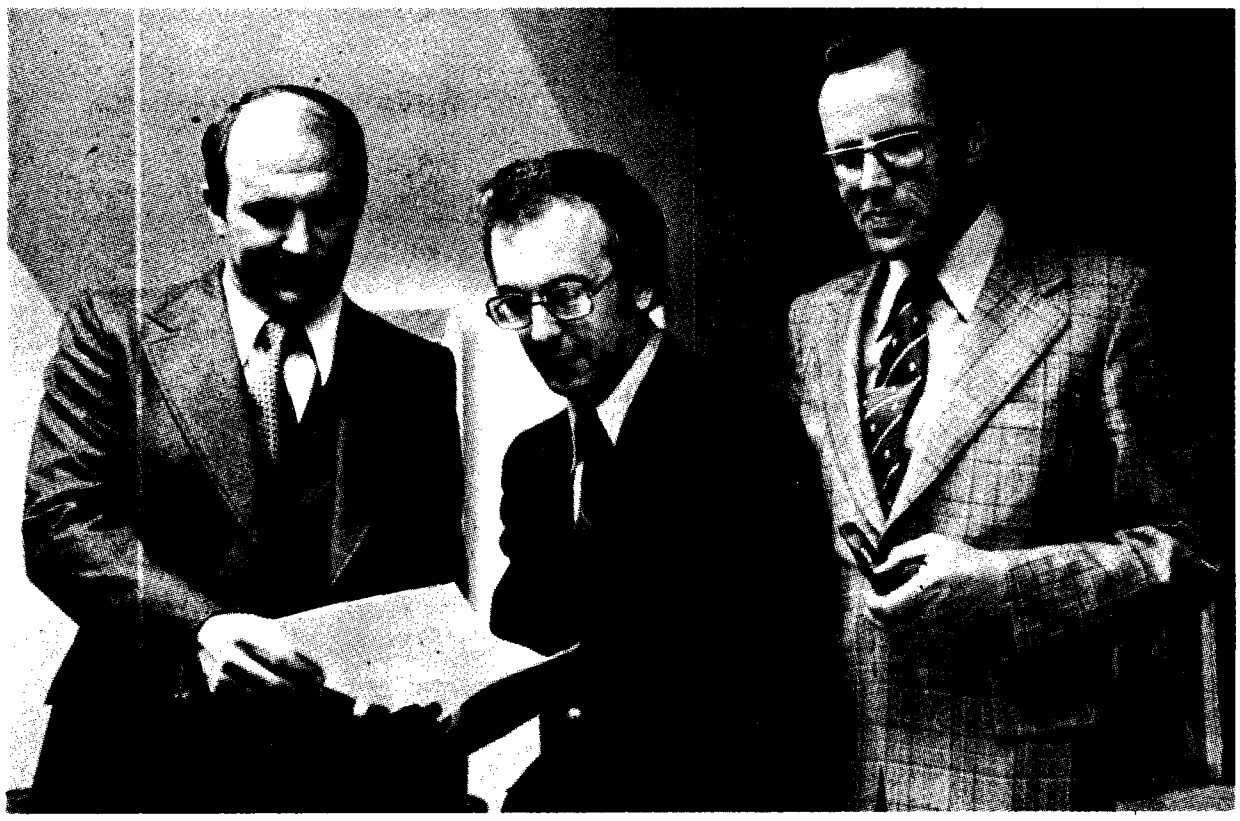
PREPARED FOR UBC REPORTS BY THE UBC ALUMNI ASSOCIATION

UBC 60



Discussing plans for the 1975 Alumni Fund campaign are, left to right, Dr. M.T. "Mickey" McDowell, 1974 chairman of the Alumni Fund; Mr. E. Roland Pierrot, incoming fund chairman; and Mr. James F. McWilliams, the incoming chairman of the fund's allocation committee. Picture by John Mahler.

Interior visits postponed

A very crowded spring engagement calendar will prevent, for the time being, the tentatively scheduled visit of UBC's president-designate, Dr. Douglas Kenny, to Prince George and the West Kootenay area.

Alumni branches in Ottawa and Victoria got a chance to sample some fine Canadian theatre when the Stratford Shakespearean Company visited their cities on its first Canadian tour. Ottawa alumni who saw a *Comedy of Errors* gathered for a reception at the National Arts Centre prior to the performance. In Victoria, it was an opening-night, final-curtain reception attended by a large number of alumni and the cast of the play, *Two Gentlemen of Verona.*

'Gears' honor president

Just about everyone associated with UBC's Engineers – alumni, faculty past and present, and new Applied Science graduates – with the possible exception of that slightly blue lady and her horse, is planning to be at the Vancouver Hyatt Regency on Saturday, May 10.

That's the night that the illustrious (or infamous, if you prefer) Red Horde of UBC pays tribute to its favorite math prof – UBC's retiring president, Dr. Walter Gage – and celebrates the fact that he is just retiring from the job of president, and not from (in their eyes) the most important job of teaching Engineers their sums.

A planning committee, headed by Mr. Don Brynildsen, last year's Engineering Undergraduate Society president, and Marty Tupper, the current EUS president, has arranged a program of outstanding speakers from the decades of the president's years on campus.

The evening begins with a reception from 6:30 p.m. with dinner at 8:00 p.m. Rumor has it that a large supply of extra buns has been ordered for the event.

Engineers who would like to join in this salute to President Gage should call Doug Aldridge at the University Resources Council, 228-6657, for information and reservations.

Medical school celebrates

UBC's Faculty of Medicine is celebrating its first 25 years with a campus-based symposium on June 4, 5 and 6.

The program is planned to provide an opportunity for the more than 600 graduates of the faculty (of whom 80 per cent live in B.C.) to participate in the event. It will be a chance to renew old acquaintances and "share the knowledge of the roster of distinguished guest speakers."

The first day's speakers will be looking at the future patterns in health care. One of them, Dr. Thomas McKeown, a UBC graduate who is pro-vice-chancellor and professor of social medicine at the University of Birmingham, England, will give a Cecil and Ida Green Lecture – which is open to the public – at 2:00 p.m. His topic is the "Determinants of Human Health: Behavior, Environment and Therapy."

Thursday's program will look at the future of medical education. In the afternoon, Dr. John Evans, president of the University of Toronto, gives the Dr. John F. McCreary Lecture. An informal anniversary dinner at the Hotel Vancouver is planned for the evening.

Science policy and medical research come under discussion on the final day, starting with the Alumni-Wesbrook Lecture by Sir Richard Doll, regius professor of medicine, Oxford, and followed by Dr. Roger Gaudry, chairman of the Science Council of Canada and rector of McGill University, giving a broad perspective on medical research and science policy in Canada. All lectures take place in Lecture Hall No. 2, Woodward Instructional Resources Centre, UBC.

The Faculty of Medicine is looking for help in collecting material for its archives. If you have any old photographs or memorabilia hidden away that you'd care to contribute to the project, they will be gratefully received by mail or in person at the continuing education office, Health Sciences. Any alumni that would like to arrange reunions for their classes on the evening of June 4 should also get in touch with the continuing education office, Health Sciences.

For a brochure outlining the full program and the guest faculty, contact the Continuing Education in Health Sciences Office, IRC, University of British Columbia, Vancouver, B.C., V6T 1W5 (228-2626).

NEW ADDRESS?

... or maybe a new name?

Let us know and UBC will still come to you through the *Chronicle* and *UBC Reports.* (Follow you to the ends of the earth we will!)

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The Steps and the Spirits

. . . OF UBC'S FIRST 60 YEARS ARE RECALLED BY DAVID BROCK AND FRIENDS AT THE 1975 ALUMNI DINNER-DANCE, REPLACING FOR THIS YEAR THE ALUMNI ANNUAL DINNER.

Friday, May 30, 1975 – Bayshore Inn
Reception: 6:00 p.m.
Dinner: 7:00 p.m.

Early reservations advised. Tickets $12 a person, includes dinner and dance. Table bookings accepted. Call or write UBC Alumni Association, 6251 N.W. Marine Drive, Vancouver, B.C., V6T 1A6, 228-3313, (8:30 a.m. – 4:30 p.m.)

REPLY CARD

Please send me tickets at $12 each for Alumni Dinner-Dance at the Bayshore Inn. Enclosed is a cheque for $..... payable to the UBC Alumni Association.

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Mail to: UBC Alumni Association, 6251 N.W. Marine Drive, Vancouver, B.C. V6T 1A6.