

UBC REPORTS

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February 20, 1986

Government announces funds for education

The announcement last week by the provincial government of a three-year, \$110-million Fund for Excellence in Education incorporates principles that have been enunciated over the years by successive UBC presidents, including the current chief executive officer, Dr. David Strangway.

The fact that funds will be available on a multi-year basis will allow universities to plan programs without the uncertainty of knowing whether funds will be forthcoming in future years, President Strangway said.

"I'm also pleased," the president said, "that provision has been made in the fund for adjustments to regular operating budgets of

universities. This recognizes that we continue to be faced with rising costs associated with inflation and the declining value of the Canadian dollar."

He added that the fund also reflects the need for special funding to initiate or expand Centres of Excellence that reflect government priorities.

Since arriving at UBC last November, Dr. Strangway has met regularly with the premier and other ministers and their deputies to discuss the needs addressed in last week's announcement.

Dr. Strangway said that on a prorated basis the three public universities could receive as much as \$24 million from the fund to share between them.

Last week's announcement listed the following government priorities in relation to university centres of excellence: bio-technology, Pacific Rim studies, computer systems, forestry research, international business and links with B.C. cultural industries such as film and the arts.

UBC Reports spoke to faculty members involved in each of the centres of excellence areas and asked them about the possibilities in their areas. Here's what they had to say.

PACIFIC RIM STUDIES: Prof. Terry McGee, the head of UBC's Institute of Asian Research, says UBC's position as a major centre for study of Asia and the Pacific has been somewhat eroded recently because funds haven't been available to replace faculty members who have retired or resigned.

"We have on paper the most comprehensive set of teaching programs on Asia and the Pacific in Canada," he said, "as well as outstanding library facilities and research expertise."

"Our greatest need is for funds to close the gaps in faculty expertise and fund researchers who can carry out projects that focus on contemporary developments in the Asia-Pacific region."

Prof. McGee also sees the Asian research institute taking a leading role in providing services to the business community in matters related to the Pacific Rim and in providing short-term courses to social studies teachers in secondary schools.

"Our own Asian Centre provides an excellent physical setting for all these activities," he adds.

COMPUTER SYSTEMS: The head of UBC's Department of Computer Science, Prof. Jim Varah, sees UBC developing a Centre for Excellence through the recently established Centre for Integrated Computer Systems Research, a joint initiative of the computer science department and the Department of Electrical Engineering.

The centre would serve as a focus for interdisciplinary research in computer science and engineering and facilitate research ventures of a cooperative nature with industry and government.

There is a particular interest in developing cooperative research projects with industrial firms at the local and national levels, Prof. Varah said, and several firms have already expressed interest in joint work to expand research initiatives and aid the transfer of computer technology to the marketplace.

He said academic personnel with University appointments would also hold executive appointments at the centre, which would also need funds for support staff and the purchase of computing equipment.

BIO-TECHNOLOGY: UBC is as strong if not stronger in biotechnology research than any university in Canada. For example, UBC holds 30 per cent of grants awarded to 30 or more Canadian universities for biotechnology research under the National Research Council's program for Industry-Laboratory Projects.

The University has a long history of genetic engineering research, beginning with the presence on campus in the 1950s of Dr. Har Gobind Khorana, who subsequently won a Nobel Prize for solving the genetic code controlling the way genes makes products. He later created a man-made gene, the basic hereditary unit.

UBC's strengths in genetic engineering could have a major impact on:

1. Diagnosis and treatment of a variety of human and animal diseases;
2. Industrial fermentation and bio-product engineering research; and
3. Planting research, including such areas as increasing the resistance of commercial crops to frost or disease.

UBC's strength in the area of biotechnology has already attracted a \$35-million Biomedical Research Centre for the commercial production and clinical assessment of interferon. The project is in collaboration with the Terry Fox Medical Research Foundation and the Wellcome Foundation of the U.K.

A virtually untouched area is the application of genetic engineering to the forest industry, another major biotechnology objective of the University.

FORESTRY RESEARCH: Dean Robert Kennedy of UBC's Faculty of Forestry said the funding could assist UBC in expanding areas of research that would have direct and

significant cost benefits to B.C.'s forest industry. "Four areas of research that I would particularly like to see accelerated are studies in harvesting methods, wood science, vegetation management and studies on seedling quality," he said. "Transportation and harvesting costs account for 50 per cent of the total operating costs of most saw mills. Better harvesting methods could dramatically reduce the overall costs of producing lumber. Another means of decreasing costs and conserving forest resources is through better utilization of lumber and wood products. At the moment builders use more lumber than necessary in their structures because they do not have enough information on the physical and engineering properties of wood (strength,

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See EXCELLENCE

Robot used in surgery

The first set of 75 clinical trials involving what is believed to be the first use of a robot in a surgical procedure anywhere in the world, has just been completed in Vancouver.

The robot was developed by researchers at UBC, the Vancouver General Hospital, the Health Sciences Centre Hospital on the UBC campus and Andronic Devices Ltd. The team that created the robot was led by Dr. James McEwen, director of the Biomedical Engineering Department at both the Vancouver General Hospital and the Health Sciences Centre Hospital, and adjunct professor in UBC's Electrical Engineering Department.

The clinical trials of the procedure began last March 12, about a month before the well-publicized debut of another surgical robot in California.

The robot is used in a new type of procedure for the diagnosis and treatment of injured knees. Dr. Brian Day, assistant professor in UBC's Department of Orthopaedics has carried out the majority of the surgical trials using the robot at the Health Sciences Centre Hospital at UBC.

Dr. Day helped pioneer and perfect in Canada a new surgical procedure called arthroscopy, which removes or repairs knee cartilage using one-centimeter incisions. A surgical instrument is inserted into one incision and is guided in its work by an optical scope which is inserted into a second incision. Before the new operation was introduced, the entire knee joint had to be opened.

"Because I am completely occupied with the scope and surgical instrument, I need an assistant to hold and move the patient's leg into different positions during the operation," Dr. Day said. "The solution is a robot that manipulates the leg into precise positions for me."

Dr. McEwen's group designed and built the pneumatically-powered robot, which is linked to an IBM personal computer. The robot holds the patient's leg and moves it on command.

"The prototype we developed can be operated by the surgeon either through a control panel or by voice command," Dr. McEwen said. "Dr. Day can simply say 'attention', 'move the leg to the right', 'lower the leg', or any other of a variety of commands we can program the robot to understand."

"The robot tells Dr. Day through a voice synthesis system that it has understood the command before it carries it out. Communication between surgeon and robot is verbal."

He said the success of the prototype has shown that robots can be used in many other operations where mechanical assistance is needed by the surgeon.

Trudeau accepts honorary degree

A seventh honorary degree recipient has been added to those being honored at UBC's spring Congregation ceremonies on May 28, 29 and 30. Former Prime Minister The Right Honourable Pierre Elliott Trudeau will receive the degree of Doctor of Laws in recognition of his many contributions to Canadian society.

Also receiving honorary degrees will be Maestro Kazuyoshi Akiyama, Vancouver businessman Joseph H. Cohen, The Honourable R.G. Brian Dickson, Chief Justice of Canada, anthropologist Audrey Hawthorn, chemist Jack Halpern and the Bishop of Prince George, J. Fergus O'Grady.

Tuition fees set

Tuition fee increases ranging from 3.5 to 4 per cent have been approved by UBC's Board of Governors for the 1986-87 fiscal year.

As a result, normal-load fees for undergraduates will range from a low of \$1,320 in Arts to a high of \$2,288 in Medicine and Dentistry.

Increases for degree programs in Arts, Commerce, Education and Science reflect an increase in the per-credit-unit fee basis from \$85 to \$88.

Tuition fees for students in the Faculty of Graduate Studies have been adjusted to reflect an objective to have the same fees apply at the first-, second- and third-year doctoral and the first- and second-year master's level.

UBC Board opposes apartheid policies

The Board of Governors unanimously approved a resolution stating its "unqualified opposition to the racial policies of apartheid in South Africa" at its meeting on Feb. 6.

UBC President David Strangway said the Board had directed its finance committee to review the federal government's report on corporate responses to the questionnaire Code of Conduct Concerning the Employment Practices of Canadian Companies Operating in South Africa with the objective of preparing a list of companies in which the UBC's operating, endowment and staff pension funds would not invest.



UBC sculptor Richard Prince holds model of his work entitled "Alchemy of Invention," which will be one of several pieces by Canadian artists on display at Canada Place, the Canadian Pavilion at Expo 86. Elements of the sculpture include plastic waveforms, a wooden boat, a ladder and Halley's comet. Two graduates of UBC's fine arts degree program, John Watts and Lise Lemieux, are also creating works for the pavilion.

UBC active in fight against heart disease

February is heart month in our province and UBC would like to thank the B.C. Heart Foundation for its continued support of research into heart disease. The Heart Foundation has contributed more than \$11.5 million towards heart research in the province since 1980. Most of that money — about 90 per cent — has gone to UBC researchers. Outlined on this page are a few of the 81 research projects currently being funded at UBC by the Heart Foundation.

Researchers at UBC are involved in a wide range of studies which could have a profound impact on the way heart disease is treated in our society.

Researchers in UBC's Faculty of Pharmaceutical Sciences, for example, are carrying out innovative research on a compound called vanadate, which may one day be responsible for lowering the rate of heart disease among diabetics.

Dean of Pharmaceutical Sciences Dr. John McNeill, who along with a group of colleagues from his faculty is carrying out research on the compound, says vanadate could either replace insulin or augment insulin in the treatment of diabetes.

Heart problems are much more common for diabetics than non-diabetics, Dr. McNeill said. "Seventy per cent of diabetics die of heart disease compared with 50 per cent of the rest of us."

Dr. McNeill said researchers at UBC entered this important field of study about six years ago when they developed an animal model of a diabetic's heart condition using rats.

"We found a means of producing with a great deal of consistency a heart condition close to that of a human in these diabetic rats," he said.

While working with the diabetic rats researchers came across some scientific papers which indicated that in isolated tissue cultures of fat cells and skeletal muscle cells the application of vanadate — formed from vanadium and oxygen — could increase the transfer of sugar into the cells.

"That's one of the things that insulin does," said Dr. McNeill.

The researchers then found that adding vanadate to the drinking water of diabetic rats allowed control of the animals' conditions, apparently without the side effects associated with insulin.

"We found we were able to control the blood sugar of the animals and the heart function was totally normal," said Dr. McNeill. "The test animals also did not experience problems with their vision normally associated with diabetes."

Since vanadate would be administered orally it would be easy to control the dosage and, used in conjunction with insulin, could smooth over the peaks and valleys in which the blood of a diabetic patient has either too much or too little insulin.

Dr. McNeill said veterinarians may also benefit from this research, since diabetes in pets such as cats and dogs is more difficult to control than diabetes in humans.

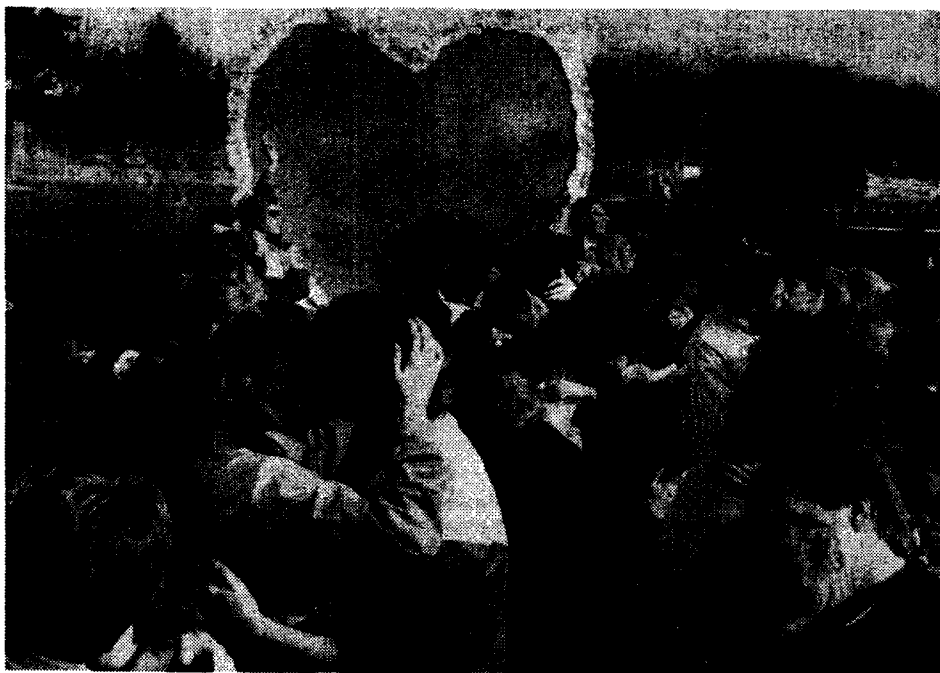
Another researcher concerned with evaluating new heart drugs is Dr. Charles Kerr, an assistant professor in UBC's Department of Medicine.

Dr. Kerr estimates that four or five potential drugs aimed at controlling arrhythmias (irregular heart beats) are brought out each year. Not all make it past the rigorous testing procedure and onto the medical market. Dr. Kerr and his colleagues are currently examining three new heart drugs — Propafenone, Amiodarone and Flecainide.

"Since there are patients who don't respond to or don't tolerate some drugs it's a good idea to have as many different drugs as possible to treat arrhythmias," said Dr. Kerr. Flecainide, which he describes as "very potent and different from other anti-arrhythmia drugs that exist", will likely be available on the market within a year along with the other two drugs he is testing.

Dr. Kerr and his colleagues are also attempting to get funding for a program under which they would implant 'defibrillators' in patients who had suffered a "fatal" heart failure and been resuscitated.

The \$18,000 device, developed in the U.S.,



It probably won't make the Guinness Book of World Records (Most people kissing, same time, one place) but UBC's St. Valentine's Day Kissoff on McInnes Field last week raised more than \$700 for the Heart Fund.

"senses" when a patient has gone into cardiac arrest and, through an electrical patch sewn onto the heart itself, administers an automatic shock to restore the heartbeat.

Dr. Kerr said that for a patient the experience would be like awakening from a faint.

"You would just black out from the heart failure and while you were unconscious the device would shock the heart back into action."

The obvious benefit of the device, Dr. Kerr said, is that it performs automatically and without human intervention.

Dr. Kerr said doctors don't know how many people in the Lower Mainland might be candidates for the device, but says he estimates the number to be about five or six a year. "There may be a lot more down the line once the program becomes better known."

Dr. Kerr is also studying a technique called trans-esophageal pacing, in which a tube is passed through a patient's nose and down his esophagus to rest behind the atrium of the heart. A wire passed down the tube carries an electrical current to the heart, pulsed to restore normal rhythm. "We have been working on this technique for the past five years and have done a lot to refine it," said Dr. Kerr.

In another leading edge area of research Dr. John Ledsome, head of UBC's Department of Physiology, is carrying out studies on a potent hormone discovered about three years ago in Eastern Canada.

Dr. Ledsome said the volume of blood and the amount of fluid in the body appears to be controlled by a hormone called atrial natriuretic peptide, a substance that is found in quantities of about 50 picograms (a picogram is a million millionth of a gram) per millilitre of blood.

Despite its minute quantity, the short-lived hormone, which is secreted by the heart itself, appears to have a profound biological effect.

"We are trying to discover what causes it to be released and what it controls," Dr. Ledsome said. "Finding a way to induce a heart to secrete the hormone on a continual basis might suggest a better therapy for high blood pressure."

However, he said, the only biological signal that appears to cause an animal's heart to produce the hormone is the stretching of the organ, either by increasing the volume of blood or increasing the heart rate to produce an increase in size.

Dr. Ledsome said the hormone is apparently critically important to animals because the gene producing it has been "conserved" or retained since the early days of evolution.

"Our hormone is almost identical to that found in sharks, which are very primitive organisms," Dr. Ledsome said. "The hormone in sharks alters chlorine excretion through a gland the shark has."

In the higher animals, Dr. Ledsome noted, the hormone is highly similar from one species to the next — the human version differs from the rat version in only one of its 28 amino acids.

"This is unusual. There's usually two or three amino acids difference between human and rat hormones," he said.

Since the discovery of the hormone about three years ago it has been the focus of many

researchers and drug companies who are spending millions of dollars trying to produce a form that will remain in the blood for long periods of time. "The natural substance remains in the blood for about 1.5 minutes," Dr. Ledsome said.

The hormone also appears to play a role in the prevention of heart failure, being found at between six and 10 times the normal level in the blood of patients suffering heart failures.

Dr. Charles Tomlinson, an assistant professor in the Department of Medicine, is conducting research aimed at identifying heart damage in patients treated with anti-cancer drugs before the damage become irreversible.

Working with a computer program and ultra-sound scans, Dr. Tomlinson is hoping to show changes in the actual shape of the left ventricle of the heart — indicating the beginnings of damage — in time to save the organ from serious damage.

"In the past by the time we were able to identify the damage it was already serious and irreversible," he said. Dr. Tomlinson's theory is that early indications of damage to the heart should be presented by minute changes in the actual shape of the organ.

The computer program allows him to assign a numerical value to a heart and show over a series of scans whether the value is changing.

"The beauty of ultra-sound is that it is totally non-invasive, you can do it all day, every day, and not harm the patient," he said.

At present Dr. Tomlinson said, he is doing work with patients who have suffered heart failure in an attempt to ascertain the effects of heart drug therapy.

"The idea is to establish a base line with the first scan, then conduct further scans to show whether there is any change over the base line." Dr. Tomlinson said animal studies indicate that heart damage is observable at an early stage with this new approach.

Meanwhile, a group of UBC researchers at St. Paul's Hospital is launching a study aimed at determining whether obese people really do have a higher incidence of hypertension than people of normal weight.

Dr. Robert Rangno, an associate professor in the Department of Medicine who runs a hypertension clinic at the hospital as well as doing research into the disease, said conventional wisdom suggests that obese people have a hypertension rate about three

times the normal rate.

This, he said, would produce a hypertension rate of about 15 per cent in the obese population.

However, preliminary research has suggested this percentage is wrong and that the actual rate of hypertension in obese people under the age 45 may be closer to the normal five per cent.

"If the rate is actually 15 per cent we would like to determine what the factor is that is producing the higher rate and find a way of controlling it," Dr. Rangno said.

"This might indicate that the cause of hypertension in obese people may differ from the cause of the disease in lean people."

If it turns out that conventional wisdom is in error, Dr. Rangno said, the study may set new guidelines for blood pressure testing for obese people, freeing many from the inconvenience of medication aimed at controlling a condition they do not have.

Dr. Rangno said a preliminary finding of the study, funded by the Heart Foundation, is that the blood pressure readings on many obese patients may be inaccurate because of the size of the blood pressure testing equipment used on them.

In the study, which so far has found a lower incidence of hypertension in obese people than conventional data would predict, patients are measured with a conventional blood pressure cuff and another reading is taken using a catheter inserted into the patient's brachial artery.

"We hope to see whether hypertension is as prevalent as conventional data suggests. If it isn't, much greater care should be taken in diagnosing it so we can avoid expensive and unnecessary treatment in some individuals."

When some obese people lose weight, Dr. Rangno added, blood pressure drops, leaving researchers with the question of whether losing weight is a treatment for hypertension or whether the original diagnosis of hypertension was incorrect.

Dr. Jim Axelson, a professor of pharmaceutical sciences, is working with colleagues to provide new and critical information on problems associated with multi-drug therapies.

In their discipline, known as "pharmacokinetics", they are concerned with tracing the course of drugs through the phases of absorption, distribution in the body, metabolism and excretion. An area of prime concern to the researchers is the possible diminishing of drug effectiveness because of the actions of a second or third drug.

For example, said Dr. Axelson, one drug that speeds up elimination of substances from the body might reduce the effectiveness of a heart drug by causing it to be expelled too quickly from the body. Another concern is the possibility of a combined effect such as that produced by alcohol and barbiturates. "In the case of alcohol and barbiturates, the combination is deadly. Since most heart patients are treated with more than one drug at a time, we are on the lookout for increases in toxicity or decreases in effectiveness."

Dr. Axelson said he and his colleagues Drs. Charles Kerr, John Price, Keith McErlane and Frank Abbott administer sub-clinical doses of the test drug combined with other substances and chart the course of the drug by analysing a series of blood and urine samples.

The goal, Dr. Axelson said, is to design more efficient drug therapies using the least amount of drug to achieve the maximum benefit.

In 1985-86 alone, the B.C. Heart Foundation provided support for 81 UBC researchers in the Faculties of Medicine, Science and Pharmaceutical Sciences for studies related to heart disease.

Vice-President, Student and Academic Services

Applications and nominations are invited for the position of Vice-President, Student and Academic Services, at The University of British Columbia.

The new vice-presidential position will report to the president and is responsible for, but not limited to, the library, computing—both central and distributed, and student services. At the present time, these activities involve a budgetary expenditure of approximately \$40 million.

Qualities should include strong academic background and university administrative experience. Please address application or nominations before April 30, 1986 to:

**President David W. Strangway
The University of British Columbia
6328 Memorial Road
Vancouver, B.C. V6T 2B3**

In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents.

Two vice-presidential positions created

The approval by UBC's Board of Governors on Feb. 6 of recommendations for the creation of two new vice-presidential positions is part of a plan to reorganize administrative responsibilities in the President's Office.

President David Strangway, who made the recommendations to the Board, said the new vice-presidential positions reflect the increasing importance of research activity at UBC and the need for strategic planning in the student and academic service areas.

The recommendations approved by the Board provide for:

- * A new position of Vice-President, Research, which amounts to an upgrading from associate vice-president, research, a position which has been discontinued; and
- * A new position of Vice-President, Student and Academic Services, who will be responsible for the UBC Library system, computing, the Centre for Continuing Education, high school and college liaison, registration functions, awards and financial aid, housing and liaison with student groups.

In a letter last week to UBC faculty deans, department heads and directors of institutes and schools, President Strangway said the University would launch a nationwide search for a suitable appointee to the latter position.

As part of the same package of recommendations, the Board approved the appointment of Prof. Peter Larkin to the new post of vice-president, research, and confirmed the appointment of Prof. Daniel Birch as UBC's vice-president, academic.

Prof. Larkin, who has held the post of associate vice-president, research, in the President's Office since 1980, is one of Canada's best-known scientists and is a former head of the Department of Zoology and dean of the Faculty of Graduate Studies.

Prof. Birch has been acting vice-president, academic, since March, 1985. Until a search committee has completed its work, Prof. Birch will also serve as acting vice-president, student and academic services.

In his role as vice-president, academic, Prof. Birch will be responsible for the academic

aspects of UBC's research and teaching program and for liaison with the deans of UBC's 12 faculties on matters of policy and budget.

Prof. Birch is a former dean of UBC's Faculty of Education (1981-85), a post he also held at Simon Fraser University before he was named that university's associate vice-president, academic, in 1975.

UBC's fourth vice-president, Bruce Gellatly, will continue in the position of vice-president,

administration and finance.

Dr. Strangway said his recommendations to the Board were the result of a review of the organization of the President's Office carried out since he officially became UBC's chief executive officer on Nov. 1, 1985.

He said his decision to recommend vice-presidential status for the individual in charge of research stemmed from the fact that externally funded research activity at UBC has now reached a level of \$60 million annually.

Excellence Continued from Page 1

durability, etc.). Wood science research could provide this information, resulting in more efficient use of forest resources."

Another important area of research, said Dean Kennedy, is vegetation management -- controlling vegetation that may kill or impede the growth of newly-planted seedlings. "Research into developing better and stronger tree seedlings is also critical to the forest industry," he said. "UBC is already involved in research to develop seedlings that have a good chance of surviving replantation and will grow quickly to their full potential." A nursery with one million tree seedlings was established recently at UBC.

INTERNATIONAL BUSINESS: Dean Peter Lusztig of UBC's Faculty of Commerce and Business Administration said additional funding could allow him to build on the established strengths of his faculty in the areas of trade policy and international finance. "It could help us to assist the province, and ultimately, Canada," he said. For example, we could put on workshops and seminars and share additional expertise with government, business and labor to create a better understanding of international business and finance.

"It could definitely give the province a competitive edge in international trade and help establish Vancouver as a major centre for financial services for international trade.

"We could also provide better training for more graduate students. After leaving us, they would take up positions across Canada and

have an impact on the competitive abilities of the organizations they represent."

LINKS WITH CULTURAL INDUSTRIES: The one cultural industry mentioned in last week's government announcement was filmmaking, which is more active in B.C. than anywhere else in Canada because of the depressed value of the Canadian dollar and the fact that "Hollywood likes our scenery and the high-quality production crews that are available in Vancouver," according to Prof. Joan Reynertson, who heads the film program in UBC's theatre department.

She says the biggest need the UBC film program has is a modern production facility with state-of-the-art equipment for training students. UBC has close connections with the B.C. film industry now, she adds, and there are lots of opportunities for expanding those links via such routes as training internships.

Dean Robert Will, who heads the arts faculty, said there are other possibilities for UBC linkages with the culture industry which he would explore when Victoria clarifies questions of duration and continuity of funding.

Other points that emerged from the government's announcement last week were:

- * Educational institutions will be invited to submit proposals for special initiative funding for 1986-87;

- * All decisions on allocations from the fund will be made by the provincial cabinet on a merit basis; and

- * Students will be involved in consultations the government plans to have with educational institutions for their suggestions on what those institutions should be doing.

"The level of research activity can be expected to continue to increase in the next few years," he said, "bringing with it increased volume and complexity in administration and in the need for policy development."

Universities, the president added, must become more entrepreneurial because of federal and provincial government policies of allocating funds on evidence that universities have been successful in obtaining commitments from industry.

President Strangway said he had decided to recommend the creation of a new post of vice-president, student and academic services, because "several of the issues central to our strategic planning arise in the student and academic service areas."

He said vice-presidential attention was required for issues such as the next phase of development in central and distributed computing on campus, the provision of library services both on and off the campus and the need to develop student aid practices that will attract top students to UBC.

"At the present time," the president added, "these activities involve annual expenditures of about \$40 million and represent a very important part of University activities."

New rates set for Botanical Garden

New hours and admission rates will be in effect at UBC's Main Botanical Garden and Japanese Nitobe Garden, beginning March 1.

Admission rates for the Main Garden will be \$2 for adults; \$1 for students, seniors and children aged 6 to 12; free for children under 6. Rates for the Nitobe Garden will be \$1 for adults; 50 cents for seniors, students and children 6 to 12; and free for children under 6. Both gardens are free on Thursdays.

These rates apply to all visitors except for members of the Davidson Club, the Friends of the Garden, the Botanical Garden endowment membership program and the Wesbrook Society.

The new Shop in the Garden, found at the entrance to the Main Garden, will open March 1 with unique gifts, gardening books, toys, plants, bulbs and seeds and many other items (228-4208).

UBC CALENDAR

Calendar Deadlines

For events in the period March 9 to 22, notices must be submitted on proper Calendar forms no later than 4 p.m. on Thursday, Feb. 27 to the Community Relations Office, 6328 Memorial Road, Room 207, Old Administration Building. For more information, call 228-3131.

The Vancouver Institute.



Saturday, Feb. 22
Brain, Mind and Language.
Dean Victoria A. Fromkin,
Linguistics, UCLA.

Saturday, March 1
The United Nations: What
Does the Future Hold?
Stephen Lewis, Canadian
Ambassador to the United
Nations.

Lecture Hall 2, Woodward Instructional Resources Centre, 8:15 p.m. Free admission.

MONDAY, FEB. 24

Remote Sensing Seminar.

Feature Extraction Techniques for Automated Interpretations of Remote Sensing Imagery. Mr. Ben Yee, Macdonald Detwiller and Assoc. Ltd. Room 268, MacMillan Building. 12:30 p.m.

Botany Seminar.

The Marine Algal Epiphyte *Microcladia coulteri*: Its Population Structure and its Hosts. Gary Kendrick, Botany, UBC. Room 3219, Biological Science Building. 12:30 p.m.

Mechanical Engineering Seminar.

Academics in China Today. Dr. J.P. Duncan, professor emeritus, Mechanical Engineering, UBC. Room 1202, CEME Building. 3:30 p.m.

Centre for Metallurgical Process Engineering Distinguished Lecturer Series.

Injection of Reacting and Non-Reacting Gases into High Temperature Melts, Modelling and Mass Transfer Studies. Dr. R.J. Batterham, Chief, CSIRO Division of Mineral Engineering. Room 303, Frank Forward Building. 3:30 p.m.

Applied Mathematics Seminar.

A Mathematical Model of Moist Convection. Dr. Christopher Bretherton, Applied Mathematics, University of Washington, Seattle, WA. Room 229, Mathematics Building. 3:45 p.m.

Biochemical Discussion Group.

Regulation of the Enzymes and Genes of Bacterial Bioluminescence. Edward Meighan, Biochemistry, McGill University. IRC 4. 4 p.m.

Neuroscience Discussion Group Seminar.

Stress, Adrenal Steroids and Hippocampal Aging. Dr. Bruce McEwen, Neurobiology, Rockefeller University, New York. IRC 3. 4:30 p.m.

Archaeological Institute Lecture.

Excavations at Neolithic 'Ain Ghazal (Jordan): A New Jericho? Dr. Alan Simmons, University of Nevada. Museum of Anthropology. 8 p.m.

TUESDAY, FEB. 25

School of Library, Archival and Information Studies Colloquium.

The Library of Congress' Centre for the Book. John H. Cole, director, Centre for the Book, Library of Congress. Room 835, North Wing, Main Library. 11:30 p.m.

Botany Seminar.

Leghemoglobin: Engineering a Better Legume. Brian Holl, Plant Science, UBC. Room 3219, Biological Science Building. 12:30 p.m.

Chemistry Seminar.

Interactions and Reactions of Carbohydrates and Proteins. Prof. Stephen G. Withers, Chemistry, UBC. Room 250, Chemistry Building. 1 p.m.

Electrical Engineering Seminar.

Multidimensional Splines for Modeling FET Nonlinearities. Dr. J. Barry, Electrical Engineering, University of Waterloo. Room 402, Electrical Engineering Building. 1:30 p.m.

Chemical Engineering Seminar.

Washing of Pulp in a Kamyr Pressure Diffuser by David Lloyd, M. Eng. student, Pulp and Paper; and Oil Well Sand Fracturing: A Case Study by Steven Haywood, M. Eng. student, Pulp and Paper. Seminar Room, Pulp and Paper Centre. 1:30 p.m.

Oceanography Seminar.

Tidal Mixing and Plankton Dynamics. Prof. Malcolm Bowman, Marine Sciences Research Center, State University of New York, Stony Brook, New York. Room 1465, Biological Science Building. 3:30 p.m.

Metallurgical Engineering Seminar.

Determination of Calcium and Magnesium Activities in Some Liquid Alloys. E. Samuelson, Metallurgical Engineering, UBC. Room 317, Frank Forward (Metallurgical) Building. 3:30 p.m.

CUSO Development Education Series.

Why Work Overseas? Representatives from several development organizations in Vancouver. For further information phone the CUSO office at 228-4886. International House, UBC. 7:30 p.m.

Tuesday Mini-Series - Concert #1.

An Evening of Late 18th & 19th Century Chamber Music, featuring Department of Music members John Hoban and Eric Wilson with guest pianist Randolph Lokanson from Seattle, WA. Tickets are \$5 or \$10 for the series of 3 concerts (next dates March 4 & March 11). UBC music students free. Proceeds benefit the Department of Music Scholarship Fund. Recital Hall. 8 p.m.

WEDNESDAY, FEB. 26

Pharmacology & Therapeutics Seminar.

Long-lasting Synaptic Potentiation in Hippocampus. Ms. J. W. Goh, Pharmacology & Therapeutics, Faculty of Medicine, UBC. Room 317, Basic Medical Sciences Building, Block C. 12 noon.

Cecil and Ida Green Lecture.

The Nature of the Mental Dictionary. Prof. Victoria Fromkin, Linguistics, University of California, Los Angeles. Room 106, Buchanan Building. 12:30 p.m.

Anthropology and Sociology/Political Science Seminar.

Current Issues in Marxist Theory of Classes. Guglielmo Carchedi, Economist, Instituut voor Economische Sociologie at the University of Amsterdam. Room 207-209, Anthropology and Sociology Building. 12:30 p.m.

Wednesday Noon-Hour Concert.

Music of Beethoven performed by Toby Saks on cello and Neal O'Doan on piano. Free. Recital Hall, Music Building. 12:30 p.m.

Geography Colloquium.

Some Highlights of Cordilleran Geomorphology 1865-1985. Dr. Michael J. Bovis, Geography, UBC. Room 301, Geography Building. 3:30 p.m.

Geophysics and Astronomy Seminar.

In Situ Testing of Soils with Particular Emphasis on P and S Wave Velocities. Dr. R. Campanella, Civil Engineering, UBC. Room 260, Geophysics and Astronomy Building. 4 p.m.

Animal Resource Ecology Seminar.

Niche Shifts During Ontogeny: Responses to Ecological Opportunity. Dr. Earl Werner, Kellogg Biological Station, Michigan State University. Room 2449, Biological Science Building. 4:30 p.m.

Canadian Association for Information Science.

Computer Assisted Retrieval of Images Stored on Video Disk. Mr. Merv Richter, Eloquent Systems, Vancouver. B.C. Research Conference Room, 3650 Wesbrook Mall, UBC. 7:30 p.m.

THURSDAY, FEB. 27

Grand Medical Rounds.

Pathogenesis of Diarrhea. Lessons from the Laboratory. Prof. J.R. Hamilton, Chief, Pediatric Gastroenterology, Toronto Sick Children's Hospital. Ground Floor Lecture Hall, Acute Care Unit, Health Sciences Centre Hospital. 12 noon.

Occupational Health and Safety Seminar.

Ocular Injuries. Dr. John Richards, Ophthalmology, UBC. IRC 3. 12:30 p.m.

Essay Skills Workshops.

Nancy Horsman of the Office for Women Students will give three one-hour workshops to assist students increase their skills in preparation of essays. They will be held three Thursdays, Feb. 27, Mar. 6 & 13. Room B212, Buchanan Building. 12:30 p.m.

H. R. MacMillan Lecture in Forestry.

Protected Areas, Conservation and Development. Harold K. Eidsvik, Senior Policy Advisor, Parks Canada. Foyer display by Parks Canada. Frederic Wood Theatre. 12:30 p.m.

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