

UBC



The University of British Columbia  
 Vancouver, British Columbia  
 Volume 38, Number 13  
 September 3, 1992

**Pharmaceutical giant funds centre**

**\$15 million invested in genetic research**

By **CONNIE FILLETTI**

Merck Frosst Canada Inc., the country's leading pharmaceutical manufacturer, will invest \$15 million to establish a Centre for Molecular Medicine and Therapeutics at the University of British Columbia.

UBC President David Strangway hailed the centre, announced Sept. 1, as a milestone for collaborative scientific research activity.

"The important partnerships we are forging with industry and government herald major new advances for the country's health care," he said.

Advanced Education, Training and Technology Minister Tom Perry said: "I am very pleased to see this significant investment in the province's pharmaceutical sector. It recognizes the national reputation for excellence of British Co-

lumbia's biotechnology researchers."

Linking funding of the centre to the passage of Bill C-91, tabled earlier this year by the federal government to extend patent protection on new drugs, Michael Tarnow, president of Merck Frosst Canada Inc., said: "By providing a legislative environment which protects the results of our scientific research, government encourages investments such as that being announced today."

This commitment represents the single largest extramural grant for research in the history of Merck, the world's largest pharmaceutical company.

"The goal of this centre will be to use new technology in understanding the mechanisms which cause diseases with genetic components, See **MERCK** on Page 3

**Record numbers of students turned away**

By **GAVIN WILSON**

UBC is turning away greater numbers of prospective students than ever before this fall.

More than 3,300 applicants who meet minimum university requirements have been refused admission for the 1992-93 winter session, an increase of 40 per cent over last year's figure of 2,414.

In a scenario being played out at universities and colleges throughout the province this fall, UBC is caught between growing demand and a limited number of spaces.

But UBC Registrar Richard Spencer, whose office released the figures, cautioned that the number of refused applicants is not a true reflection of the number of people who won't find a place in B.C.'s post-secondary system.

Many prospective students are applying for more than one program at UBC and a large number also apply to several institutions. The total number of applications to B.C. institutions is greater than the number of individual applicants, he said.

"It appears to be true there are not enough spaces in post-secondary education in B.C., but the shortage is very different from the sum of all applications that are refused," Spencer said. "The real shortage is difficult to pin down."

At UBC, thousands of applicants either do not meet minimum university entrance requirements, fail to follow through and complete their applications, or submit them too late to meet application deadlines, he added.

And nearly half of those who are offered admission to a given program ultimately do not register in it, usually because they have accepted an offer from another institution.

Enrolment in all programs is determined by quotas, most of which have remained constant for several years. In the case of first-year Science, however, the quota has actually declined, reducing enrolment by 200 students since 1990-91.

Final registration figures are not yet available, but they will be approximately equal to enrolment quotas in those programs in which there is a shortage of spaces.

In total, UBC received about 23,000 applications from prospective students seeking entry this fall into undergraduate quota programs that have about 5,400 places (not including applicants to Law, Medicine, Dentistry and Education).

In first- through fourth-year Arts, there were 9,859 applicants for 2,250 places. About 1,964 otherwise qualified applicants were turned away.

In first-year Science, 5,617 applicants were vying for 1,200 places. A total of 1,060 qualified applicants were refused.

There is steady growth in applications to post-baccalaureate programs as well. Law, which accepts just 240 new students each year, had 2,583 applications.

The competition for places means that students applying for admission to UBC programs this fall need higher grade point averages than ever before.

Although a grade point average of 2.5 is the minimum that is technically required for admission to the university from secondary school, applicants must now have averages of at least 3.00 for admission to first-year Arts, 3.17 to first-year Science and 3.19 to first-year Engineering.

Although some believe the increasing grade point averages are a result of higher grades issued See **DEMAND** on Page 2

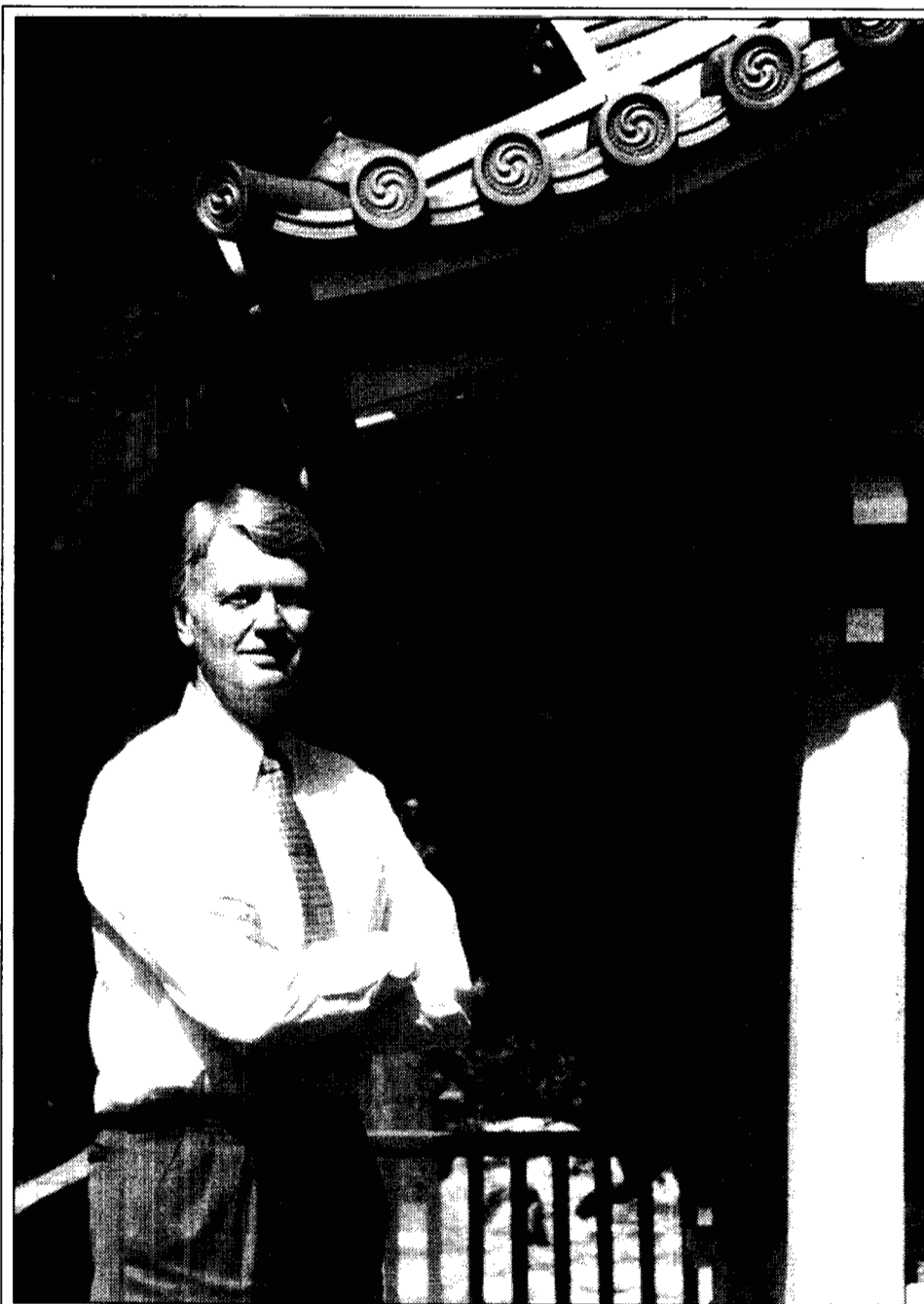


Photo by Charles Ker

**Chasing the Four Tigers**

*Mark Fruin, newly appointed director of UBC's Institute of Asian Research, says the key to understanding the economic success of Asia's Four Tigers — Hong Kong, Korea, Taiwan and Singapore — lies with their traditional past. The institute's five regional centres will provide a forum where Asianists, traditional and modern, can explore contemporary policy and research issues. See profile, page 3.*

**UBC extends sympathy to grieving Concordia**

Acting on behalf of the university community, UBC President David Strangway has sent a letter of condolence to Concordia University Rector Patrick Kenniff following the shooting deaths of three faculty members there last week.

"That a tragedy of this magnitude should occur at a Canadian university is unthinkable, and yet, as past events have shown, it is sadly all too real," Strangway said.

"As we grieve the passing of valued colleagues, we hope that one day such anguish and despair will no longer darken Canadian univer-

sity campuses. Let us all work together to make that day a reality."

Three members of Concordia's engineering faculty were killed and two others were wounded, one critically, when a gunman opened fire in a university building.

Concordia Professor Valery Fabrikant was arrested at the scene and now faces three counts of first-degree murder and two of attempted murder.

Fabrikant had been feuding with fellow professors and the university administration over his tenure and research.

**Inside**

**DARK MATTER:** UBC astronomers have brought science closer to unravelling the mysteries surrounding the mass which makes up a large part of the universe, but cannot be seen. **Page 2**

**SHRUM BOWL:** Organizers hope to boost attendance at this year's football classic, which takes place on September 12. **Page 14**

**25 YEARS LATER:** Arts One started as a pilot program 25 years ago. Some former students look back. **Forum, Page 16**



## Gender neutral hero?

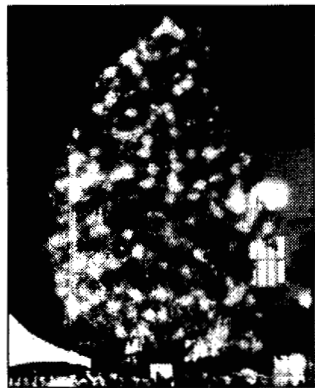
Editor:

In the interests of promoting the use of gender neutral language at UBC, perhaps you could propose an alternative to the phrase "unsung hero" (UBC Reports, Volume 38, Number 12, page 3).

I came across the same situation when giving out awards for girls in a field hockey organization that had originally been a male-only organization. At least I was able to give my award to an "unsung heroine" although a term that used neither hero nor heroine would have been preferable.

I will be interested to read in future issues whether you have come up with an alternative.

Margaret Ellis  
Central Networking  
Information and Computing Systems



*The Giant Sequoia*

## Recipe for failure

Editor:

So "ill health downs giant redwood tree"! Nonsense! "A report prepared by a professional arborist suggests the tree's energy bank is nearly exhausted." Prove it. This tree has been starving to death because it can no longer reach into its "energy bank." So what happened here?

All trees depend on water entering through their roots to bring nutrients to the cells. Large trees growing on the UBC campus are mainly rooted above the impermeable basal till that occurs at varying depths. They draw their water and nutrients from this relatively shallow zone of soil. Without water the roots cannot take up the required nutrients. The effect of increased paving is to reduce the amount of water available in the soil. The effect of root "pruning" similarly reduces water availability for the tree. Either lack of water or lack of roots renders the soil nutrients unavailable. The effect of such nutrient unavailability can be seen in the declining condition of the oaks on the Main Mall, as well as in the "giant redwood tree" by the Main Library.

So who killed this tree? Though some are more guilty than others, we all did. Let's consider our recipe for failure. How to kill a tree: a step by step method.

1. Select an inappropriate species for the site, i.e. a giant redwood (native to California forests) on the south side of a light coloured building.
2. Plant the tree, then alter its environment, by extending the building on one side by paving the ground all around it.
3. Drape it with lights, for festive and symbolic reasons and leave the wires on year round, to cause possible damage.
4. Top the tree, when it develops a bare trunk near its crown, thus allowing the possible entrance of disease.
5. Declare this tree to be a heritage tree! (Surely this should not be a cause of the tree's death? Read on.)
6. Construct a raised planter around the tree, to discourage people from leaning bicycles on it and stapling notices to it. Cut a metre deep trench around the tree for the planter's foundation, cutting through every lateral root that extends from the tree in the surface layer.
7. Declare the tree a hazard and chop it down, because even if it is not yet dead and might recover, it will look sick for several years.

Now we know why we failed, let's try and learn from our mistakes. If the tree must be cut down, we should have a thorough post mortem. The information gained should become part of an inventory of campus trees; to serve as a warning.

Margaret E.A. North  
Geography

## California dreaming

Editor:

In your article on page 3 of the August 13 issue, reporting the impending fate of the Sequoiadendron giganteum outside the Main Library, you refer to the tree as a "California Redwood."

The Latin and the English don't correspond! The common name for Sequoiadendron giganteum is giant sequoia. Calling it a redwood may be justifiable, as this is indeed one of the three trees in the redwood family, but the California redwood (or coast redwood) is Sequoia sempervirens.

This will not do — I can tell you are un-read on your woods!

Incidentally, it is ironic that this campus specimen of a species that includes some of the oldest and most massive trees on earth should come to its end so soon.

Michael La Brooy  
Head, TRIUMF Information Office

## Preserve living labs

Editor:

Re: "Ill health downs giant redwood tree" p. 3. vol 38 (12).

Your article did not mention a factor which probably contributed in a major way to the giant tree's "ill health," i.e. the recent construction of a flower bed around its base. In order to make forms for deep concrete walls to surround the garden, a large trench was dug around the tree, and witnesses say that large roots were cut. In addition, tons of soil were placed on top of the shallow roots, minimizing their air supply. The installation of the flower bed over the roots was followed by development of symptoms in the next severe dry spell. It is difficult to imagine that this factor was not mentioned in the professional arborist's report that was referred to in the above article.

While wood from the dead giant redwood by the library can be used in a symbolic way in a UBC building, let's learn about our other trees and honour them while they're alive. Our campus trees are essential to the UBC landscape and are part of the UBC experience for us all. Although looking lovely is reason enough to cherish them, for students in Science, Agriculture and Forestry they are a living laboratory for their courses. Active steps need to be taken to establish the whole campus as an Arboretum. The establishment of an up-to-date campus inventory is a necessary first step to recognition of the importance of our trees.

Edith Camm, Assistant Professor  
Botany/Forest Sciences

## The root of the matter

Editor:

In your issue of August 13, you described the demise of the giant redwood tree in front of the Main Library. I am sure I am not alone in having noticed that the tree's decline was much more marked following the execution of some fool's decision to build a concrete planter around its base during this past year. Until then, the redwood was carrying on life quite normally. The construction of the planter, however, entailed the destruction of some of the tree's roots, sawn through to make room for a neat little concrete box. The trauma to the remaining roots occasioned by heat transferred to them through the concrete, and by the disturbing of the topsoil around the base for the sake of the plants installed in the planter, seem to have tipped the balance. Perhaps, as well, the bark mulch used in the planter was noxious to the tree's roots (as seems to have been true for two other trees — not redwoods — in a bed adjacent to the psychiatry hospital, which died off two or three years ago following the application by gardeners of bark mulch to that bed).

I can only hope that the next time someone gets the urge to meddle with a tree that is doing quite well on its own, that urge will be quashed by common sense, further study, someone else's better judgement, or by sober reflection on such cases as this.

Rick Baker  
UBC Bookstore

## Nature of dark matter illuminated

By GAVIN WILSON

UBC astronomers Harvey Richer and Gregory Fahlman have shed new light on the so-called dark matter of outer space.

Despite the enormous mass of material in our galaxy, which has an estimated 100 trillion stars, there is not enough to explain the large-scale dynamic behavior of the galaxy as a whole.

Scientists postulate that this missing or "dark" matter must exist, but no one has been able to show what form it takes.

"If Newton's law of gravity is in place — and no one is willing to challenge that — then it should exist," said Richer, who recently completed a year-long sabbatical at the Institute of Astronomy at the University of Cambridge. "But there are several competing theories about what dark matter consists of."

In an article published this summer in the prestigious British scientific journal Nature, Fahlman and Richer, both professors in the Dept. of Geophysics and Astronomy, report findings that show that small stars — thought by some to be dark matter — do not exist in sufficient numbers to account for the missing mass.

Previous studies of globular clusters of stars by Richer and Fahlman show that the number of stars rises steeply in inverse proportion to their mass. In other words, there are many more light stars than heavy ones.

This supported the theory that much of the galaxy's mass may be in the form of the smallest stars, "brown dwarfs" so low in mass they are incapable of igniting their nuclear fuel.

To further test this, Richer and Fahlman used automated image analysis to look at the distribution of the smallest and faintest stars in a portion of the galaxy's outer reaches, called the spheroid.

Although, as expected, they found that there are many more small stars than large stars in the spheroid, Richer's and Fahlman's calculations give a total mass at least 10 times too low to supply the required dark matter content for the galaxy.

Richer said the data, gathered "under superb conditions" at the Canada-France-Hawaii telescope in Hawaii, is the best and most complete yet used to investigate the number of low-mass stars in our galaxies.

## Demand increasing

Continued from Page 1

by high school teachers, Spencer said he doubts that this is a significant factor.

"There may be some grade inflation, but we know the real quality of applicants is going up every year. We used to receive applications from the whole range of high school graduates. Now it is the stronger students who are applying."

Spencer said some of the reasons why demand is increasing so rapidly may include the Lower Mainland's burgeoning population and an increasing number of people from Asian cultures, many of whom place a high value on continued education.

As well, B.C. still has one of Canada's lowest participation rates in post-secondary education. As the province's economy moves away from its traditional resource base, greater numbers of people will seek higher education, Spencer said.

# Universities turn to private industry for research funds

By **CONNIE FILLETTI**

With research money from government granting agencies becoming increasingly difficult to obtain, Canadian universities have been turning to private industry to support their research needs.

"The Bristol-Myers Squibb grant and the Merck Frosst investment are major advancements in UBC's relationship with industry for real research and development," says Bernard Bressler, associate vice-president of research, health sciences.

Bressler's position was created two years ago to ensure that UBC focused on attracting research money from the pharmaceutical industry.

In 1991, UBC received \$2 million in research funds from the pharmaceutical industry. Since January of this year, more than \$800,000 has been acquired, including another donation from Merck Frosst of \$250,000 to be split between the establishment of a Doctor of Phar-

macy Fellowship and scholarships for sciences and applied sciences.

Bressler hopes that UBC can expect more investment from the nation's drug companies if an anticipated change in federal patent laws receives parliamentary approval.

Known as Bill C-91, the legislation would extend the multinational drug companies' patent protection for new drugs by three years.

"Extended patent protection should result in more of the multinationals conducting a greater portion of their research and development in Canada," Bressler explained.

The pharmaceutical industry recently announced plans to invest \$400 million in capital and research spending over the next five years if the legislation passes.

Bressler believes the next hurdle is for B.C. to acquire a larger portion of the money spent by drug companies on research and development.



**Bressler**

"In 1991, the province received just three per cent of the total investment by the industry in Canada, but in terms of drug sales, British Columbians consumed 12 per cent of all pharmaceuticals sold in the country," Bressler said.

By comparison, the populations of Quebec and Ontario (each consumed approximately 22 per cent of the nation's therapeutic drugs) received 47 and 43 per cent of the pharmaceutical industry's research dollars respectively.

Bressler said that Quebec's fiscal policies — such as providing a provincial tax credit to the pharmaceutical industry — are largely responsible for encouraging continued investment by the industry in that province.

He added that B.C.'s Ministry of Economic Development is starting to follow Quebec's lead, and a provincial strategy for attracting more money from the pharmaceutical industry is imminent.

# Cocaine cravings mapped in brain

By **CONNIE FILLETTI**

UBC neuroscientist Chris Fibiger has discovered a way to map the precise locations in the brain that are affected by cocaine and drugs used to treat schizophrenia.



**Fibiger**

"These drugs activate a gene called c-fos, which produces a protein used to visualize individual nerve cells whose activity has been altered by the abuse substances," Fibiger explained.

"Identifying the presence and location of c-fos protein may permit the rapid evaluation of new drugs for schizophrenia."

Fibiger, head of the Division of Neurological Sciences in UBC's Dept. of Psychiatry, has also identified the area of the brain that is activated to create the intense craving for cocaine experienced by recovering addicts.

He is currently investigating ways to evaluate the effects of the drug in the brain.

"This may be a key to understanding why cocaine addicts, who are trying to cure their addiction, relapse," Fibiger said.

Fibiger has been awarded a \$500,000 Bristol-Myers Squibb unrestricted neuroscience research grant which will allow him to continue his study on the biochemistry of the brain over the next five years.

"We feel that this funding commitment gives the institutions and investigators who participate in the program the opportunity to pursue ideas which may otherwise not receive funding," said Tim Meakin, president of Bristol-Myers Squibb Canada.

UBC is the only Canadian university to receive one of 11 neuroscience research grants of \$500,000 awarded since the inception of the program four years ago.

The research grant is part of a \$39-million program of unrestricted grants, sponsored by Bristol-Myers Squibb since 1977, in the areas of neurosciences, cancer, nutrition, orthopedics, pain, infectious disease and cardiovascular disease.

Fibiger's research over the past 20 years has been supported by grants totalling more than \$4 million by the Medical Research Council of Canada.

# Merck Frosst Canada funds genetic research

Continued from Page 1

such as heart disease and disorders of the nervous system," said UBC Genetics Professor Michael Hayden, who will head the new centre.

"We are confident that this will lead to novel approaches to treatment."

It is anticipated that a new facility will be established with a target date

of 1993 for commencement of research operations.

Scientists at the centre will be collaborating with researchers from the Canadian Genetic Diseases Network, headquartered at UBC and directed by Hayden.

Approximately 60 per cent of Canadians will develop or die from a disease with a genetic component.



## Profile

# Institute binds Asia's past to future vision

By **CHARLES KER**

It's Monday afternoon in UBC's Asian Centre where Mark and Noah Fruin are hard at work. The former is peering intently over his teenaged son's shoulder while he sorts through computer files.

A guest arrives, greetings are exchanged and as Fruin Sr. settles down to talk about his recent appointment, Noah returns to the laptop.

"He knows more about setting it up than I do," Fruin remarks with a chuckle. "It's new, so hopefully I haven't botched it up too badly."

No matter. It's Fruin's knowledge of contemporary Asia, not modern software, that landed him the job as director of UBC's Institute of Asian Research.

Taking over from founding director Terry McGee, Fruin has been charged with overseeing an ambitious expansion of the 14-year-old institute.

During the last year, the Faculty of Graduate Studies and the university Senate formally approved a restructuring plan to create five new research centres in Japanese, Korean, South Asian, Southeast Asian and Chinese (including Hong Kong and Taiwan) Studies.

With a BA in history, an MA in East Asian regional studies and a

PhD in Japanese social and economic history, all from Stanford University, Fruin has a solid grounding in Asia's traditional past. Added to this is a 20-year teaching career in five countries (including a brief stint at UBC) where he focused on the more contemporary issues of international and comparative management, business and economic history.

**"Too often a lot of policymaking has been done on what we know about ourselves and what we think we know about Asia."**

Fruin took a particular interest in Japan following an undergraduate exchange program between Keio University and Stanford in 1964. It was an Olympic year and the experience left a lasting impression.

"That was an exciting time with Japan emerging as the world model for economic development and performance and it remains the most advanced industrial economy today," he said. "What were once considered quaint and exotic Asian subjects when I began my studies, have suddenly become terribly important."

Fruin's last full-time academic posting before arriving in Vancouver was

at France's European Institute of Business Administration (INSEAD), reputedly the world's largest international business school. There, as professor of strategy and management, Fruin taught how Japanese firms develop, network and position themselves in the international marketplace.

According to Fruin, the study of networks is a "hot" social science with

Japan, again, the undisputed leader in corporate networking.

But while he applauds the bringing together of Asian Studies and Social Sciences, Fruin still points to language and culture as being the key elements to understanding Asia.

Most western social scientists, he explains, think of their disciplines as being universal when, in fact, they are restricted to the experience of Western Europe and North America since the 18th century.

"It's in that relatively narrow slice of time and geography that these supposedly universal theories of human behavior appeared and much of it just

doesn't apply to the Pacific Rim region," said Fruin.

"Too often a lot of policymaking has been done on what we know about ourselves and what we think we know about Asia."

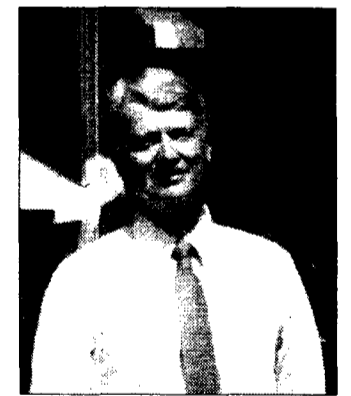
But Fruin also notes that people are becoming more open-minded about learning from Asia. They are recognizing that it takes a certain kind of knowledge to understand what's going on in the region and to benefit from developments there.

The institute, Fruin says, will be the mechanism through which Asianists, traditional and modern, can get together and explore the more contemporary policy and research concerns of various regions. Also, non-Asianist academics from across the campus will be encouraged to join the institute and centres' research and conference activities.

In so doing, Fruin said the institute will be much more open in its quest to develop a long-term university strategy by mapping out programs dealing with the Asia-Pacific region as a whole.

Through inter-disciplinary and multi-disciplinary research projects, Fruin added that the institute will "start preparing us now for what we'll need to know 10 years from now."

Throughout the coming academic year, each of the five centres will offer a series of regular seminars and lec-



**Fruin**

tures on regional issues open to business, government and community groups, as well as university academics.

Apart from his duties as director, Fruin plans to continue with his own research and writing. His second book, *The Japanese Enterprise System: Competitive Strategies and Corporate Structures*, is due out from Oxford University Press this month and two more books are in the works.

He also plans to teach part-time in the Faculty of Commerce and Dept. of History.

Though his residency status is temporary and his appointment at UBC open-ended, Fruin confides that he's "in for the long-haul."

September 6 -  
September 19**TUESDAY, SEPT. 8****Campus Tour For New Students**

School and College Liaison Office's guided walking tour for new students leaves the Student Union Building's south plaza today at 12:45pm. Allow approx. 1 1/4 hours. Call 822-4319.

**Modern South Asia Seminar**

Welcoming Meeting/Report Of Management Committee. Prof. John R. Wood, Political Science. Asian Centre 604 from 12:30-2pm. Refreshments. Call 822-4688.

**Statistics Workshop**

On Segmented Multivariate Regressions. Shiyong Wu, Statistics. Angus 321 at 4pm. Refreshments. Call 822-3167; messages, 822-2234.

**WEDNESDAY, SEPT. 9****Campus Tour For New Students**

School and College Liaison Office's guided walking tour for new students leaves the Student Union Building's south plaza today at 12:45pm. Allow approx. 1 1/4 hours. Call 822-4319.

**Orthopaedics Grand Rounds**

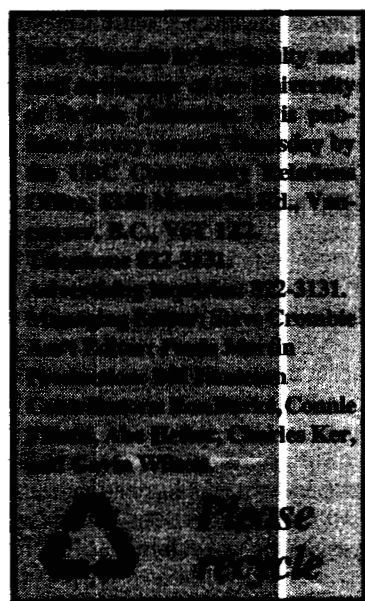
Report Of The Combined Meeting Of The Orthopaedic Associations Of The English Speaking World. Chair: Dr. Robert W. McGraw. Speakers: Richard Kendall, MD; Alastair Younger, MD; Bas Masri, MD. Eye Care Centre Auditorium at 7am. Call 875-4646.

**UBC Anglican Community Worship Service**

Eucharist. Celebrant, Reverend Bud Raymond, Anglican Chaplain. Lutheran Campus Centre Chapel at 7:15am. Call 224-5133.

**THURSDAY, SEPT. 10****Campus Tour For New Students**

School and College Liaison Office's guided walking tour for new students leaves the Student Union Building's south plaza today at 12:45pm. Allow approx. 1 1/4 hours. Call 822-4319.

**CALENDAR DEADLINES**

For events in the period September 20 to October 3, notices must be submitted by UBC faculty or staff on proper Calendar forms no later than noon on Tuesday, September 8, to the Community Relations Office, Room 207, 6328 Memorial Rd., Old Administration Building. For more information call 822-3131. The next edition of UBC Reports will be published September 17. Notices exceeding 35 words may be edited. The number of items for each faculty or department will be limited to four per issue.

**Physics Colloquium**

Atomic And Molecular Manipulation With The Scanning Tunnelling Microscope. Don Eigler, IBM Research Division, Almaden Research Centre, San Jose, CA. Hennings 201 at 4pm. Call 822-3853.

**TUESDAY, SEPT. 15****University Womens' Club Reception**

For new members. Hycroft from 7-10pm. Call 224-4407.

**Institute of Asian Research Seminar Series**

Understanding Consumers Moving Between Cultures: Hong Kong Immigrants In Canada. Prof. David Tse, Commerce/Business Administration. First of the series offered by the Centre for Chinese Research. Asian Centre 604 from 12:30-1:30pm. Call 822-4688.

**Lectures In Modern Chemistry**

The Complete Coordination Chemistry As A Basis For Modeling The Heme Proteins. Prof. Daryle H. Busch, Chemistry, U. of Kansas, Lawrence, KS. Chemistry 250 South Block at 1pm. Refreshments at 12:50pm. Call 822-3266.

**Statistics Workshop**

Proper Dispersion Models. Dr. Bent Jorgensen, Statistics. Angus 321 at 4pm. Refreshments. Call 822-3167; messages, 822-2234.

**Medical Genetics Seminar**

Molecular Genetics Of Human Lipoprotein Lipase Deficiency. Dr. Robin Ma, post-doctoral research fellow, Medical Genetics. IRC #3 from 4:30-5:30pm. Refreshments at 4:20pm. Call 822-5312.

**CRWSSR Lecture**

Rituals And Resistance: Nurses' Work In Canadian Hospitals. Kathryn McPherson, York U. Sponsored by the Centre for Research in Women's Studies/Gender Relations. Family/Nutritional Sciences 50 at 12:30pm. Call 822-9171.

**Museum Of Anthropology Public Discussion**

The Transforming Image. Join Bill McLennan, First Nations artists and exhibition coordinators in informal discussions. Free with Museum admission. MOA Gallery 5 at 7:30 pm. Call 822-5087.

**FRIDAY, SEPT. 11****Obstetrics/Gynaecology Grand Rounds**

Hypoplastic Left Heart Syndrome. Speakers: Dr. I. Kornfeld, Dr. D. Farquharson, Dr. D. Sandor. University Hospital, Shaughnessy Site D308 Lecture Theatre at 8am. Call 875-3108.

**Paediatrics Grand Rounds**

Genes, Nutrients And Hormones - Their Roles In Modulating Human Physical Growth And Development. Dr. John F. Crigler, Jr., chief emeritus, Endocrinology, Children's Hospital, Boston, MA. G.F. Strong Auditorium at 9am. Call 875-2118.

**Health Care/Epidemiology Grand Rounds**

The Impact Of Free Trade On Health Care In Canada. Nelson Riis, MP, Deputy/House Leader, NDP. All welcome. James Mather 253 from 9-10am. Call 822-2772.

**Pulp/Paper Centre Seminar**

A Review Of Tracer Reactions For Investigating Mixing. Prof. J.R. Bourne, Chemical Engineering, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland. Pulp/Paper Centre seminar room 101 at 10am. Call 822-8560.

**Chemical Engineering Weekly Seminar**

The Clathrate Process For The Concentration Of Pulp Mill Effluent. Cathrine Gaarder, graduate student, Chemical Engineering. Chemical Engineering 206 at 3:30pm. Call 822-3238.

**SATURDAY, SEPT. 12****Museum Of Anthropology Family Story Hour**

Stories Of Resistance. Latin American actress and storyteller, Ursula Taylor. Free with Museum admission. MOA Rotunda at 1pm. Call 822-5087.

**MONDAY, SEPT. 14****Mechanical Engineering Seminar**

Wavelet Analysis Of Vibration. Prof. David Newland, U. of Cambridge. Civil/Mechanical Engineering 1202 from 3:30-4:30pm. Refreshments. Call 822-6671.

**WEDNESDAY, SEPT 16****Senate Meeting**

The Senate, UBC's academic Parliament, meets at 8pm in Room 102 of the Curtis (Faculty of Law) Building, 1822 East Mall.

**Orthopaedics Grand Rounds**

Recent Advances In Internal Fixation Of The Cervical Spine. Chair: Dr. Robert W. McGraw. Speaker: Dr. Marcel Dvorak, Spine Service. Eye Care Centre Auditorium at 7am. Call 875-4646.

**Anatomy Seminar**

Human Evolution: Bipedalism And Language. Dr. Charles E. Sloneker, Anatomy. Friedman 37 from 12:30-1:30pm. Call 822-2059.

**Institute of Asian Research Seminar Series**

Declining Family Care vs Expanding Role Of Public Services: Study Of Social And Legal Aspects Of The Japanese Experiences. Prof. Daisaku Maeda, Japan College of Social Work, Tokyo, Japan. First of six interdisciplinary graduate seminars offered by the Centre for Japanese Research. Asian Centre 604 from 12:30-1:30pm. Call 822-4688.

**Geography Colloquium Series**

Hutton To Horton: Views Of Sequence, Progression And Equilibrium In Geomorphology. Barbara Kennedy, Geography, Oxford U. Geography 201 from 3:30-5pm. Refreshments at 3:25pm. Call 822-5612.

**THURSDAY, SEPT. 17****Board Of Governors' Meeting**

UBC's Board of Governors meets in the Board Room, second floor of the Old Administration Building, 6328 Memorial Rd. The open session starts at 9am.

**Physics Colloquium**

Radar Investigations Of Earth Approaching Asteroids. Steve Ostro, Jet Propulsion Laboratory, California Institute of Technology. Hennings 201 at 4pm. Call 822-3853.

**Institute of Asian Research Seminar Series**

Aging In Japan. Prof. Daisaku Maeda, Japan College of Social Work, Tokyo, Japan. First of six interdisciplinary public lectures offered by the Centre for Japanese Research. Asian Centre Auditorium from 4:30-6:30pm. Call 822-4688.

**UBC Anglican Community BBQ**

To mark the beginning of 92/93 term. All faculty, staff, students/friends welcome. Lutheran Campus Centre (Garden) at 4:30pm. Call 224-5133 to RSVP.

**FRIDAY, SEPT. 18****Obstetrics/Gynaecology Grand Rounds**

Gestational Diabetes. Dr. David Thompson, Dr. Jerome Dansereau. University Hospital, Shaughnessy Site D308 Lecture Theatre at 8am. Call 875-3108.

**Paediatrics Grand Rounds**

M.R. Paediatrics. Dr. Ken Poskitt, ; Dr. Gordon Culham, Radiology; Dr. Robyn Cairns, radiologist. G.F. Strong Auditorium at 9am. Call 875-2118.

**Health Care/Epidemiology Grand Rounds**

Current Projects Of The Vaccine Evaluation Centre. Dr. David Scheifele, Paediatrics. James Mather 253 from 9-10am. All welcome. Call 822-2772.

**Institute of Asian Research Seminar Series**

Economic And Social Well-Being Of Korea For 1960-1990: A Regional Development Perspective. Dong-Ho Shin, Interdisciplinary PhD candidate. First of the seminar series offered by the Centre for Korean Research. Asian Centre 604 from 12:30-1:30pm. Call 822-4688.

**Chemical Engineering Weekly Seminar**

Earthquake Preparedness In The Workplace And Home. Al Hokarson, asst. chief, UBC Fire Department. Chemical Engineering 206 at 3:30pm. Call 822-3238.

**NOTICES****Rhodes Scholarships**

Application forms for 1993 are now available in the UBC Awards Office. Deadline for completed applications is Oct. 23, 1992.

**Fine Arts Gallery**

Open Tues.-Fri. from 10am-5pm. Saturdays 12-5pm. Free admission. Main Library. Call 822-2759.

**Executive Programmes**

Business seminars. Sept. 14-15: Construction Claims, \$950. Sept. 17-18: Implementing The Strategic Plan, \$975. Call 822-8400.

**Giant Deer Antlers Fossil Exhibit**

Survival of the fittest or evolution gone wild? View the M.Y. Williams Geological Museum's giant deer antlers fossil exhibit. Weekdays, 9am-5pm. Sat., 10am-5pm. Collectable Earth specimen shop open weekday afternoons plus Saturday. Free admission. Call 822-5586.

**Statistical Consulting/Research Laboratory**

SCARL is operated by the Department of Statistics to provide statistical advice to faculty and graduate students working on research problems. Forms for appointments available in Ponderosa Annex C-210. Call 822-4037.

**Professional Development For Language Teachers**

Four-part Saturday morning series on Managing the Language Classroom and evening workshops including Teaching in the Pacific Rim, Oct. 13-Nov. 24. Call 222-5208.

**ESL Evening Classes**

Ten courses include Conversation skills, Speaking Skills for Seminars/Meetings, Basic Writing/Grammar, Advanced Composition, TOEFL Preparation. Start date: Sept. 28/29; classes: twice a week. Call 222-5208.

**Computer Applications For ESL Speakers**

Learn about microcomputers or WordPerfect 5.0 and improve your English language skills at the same time. Call 222-5208.

**Sexual Harassment Office**

Advisors are available to discuss questions and concerns on the subject. They are prepared to help any member of the UBC community who is being sexually harassed to find a satisfactory resolution. Call Margaretha Hoek at 822-6353.

Calendar continued on page 13



# Employment Equity Census Analysis

## UNIVERSITY OF BRITISH COLUMBIA



September 3, 1992

Dear Colleague,

This analysis of the employment equity census data examines UBC's progress toward its May 1991 goals. The report was prepared by Dr. Sharon E. Kahn, Director of Employment Equity, and was approved by the President's Advisory Committee on Employment Equity. The report suggests that the University must actively recruit members of the designated-groups and continue to create initiatives that support a work environment where members of these groups can compete fairly for jobs at all levels throughout the University.

I would like to thank those faculty and staff who have responded to the employment equity census and to encourage any employee who has not yet completed a census form to do so. Please address any comments about UBC's employment equity program to Dr. Kahn, c/o President's Office.

Yours sincerely,

David W. Strangway

## Introduction

In February 1990, the University of British Columbia sent the employment equity census to 6,974 employees, including part-time, casual, and temporary staff. The initial census distribution was followed by a second distribution to non-respondents in March 1990. UBC now collects these data from all newly hired employees on an on-going basis.

In May 1991, the Office of Employment Equity reported the results of the initial census (*UBC Reports*, May 16, 1991). The report compared the representation of designated-group members—women, aboriginal people, members of visible minorities, and persons with disabilities—with two external employment pools: the 1986 Canadian labour force and doctoral degrees granted nationally to women. Based on that analysis of the composition of UBC's workforce relative to qualified external employment pools, the President's Advisory Committee on Employment Equity (PACEE) then recommended hiring goals for the University's employment equity program (See Table 1).

This report examines UBC's progress toward the recommendations made in May 1991, describes the representation of designated groups in UBC's workforce as of December 1991, and compares two snapshots of the UBC workforce—December 1990 and December 1991. In addition, the report con-

cludes with a discussion of future steps in UBC's employment equity program.

## Recommendation A

The first recommendation of the May 1991 Report was that UBC hire women to fill at least 35% of vacant tenure-track faculty positions. During the 1991/92 academic year, women were appointed to 38% (35 out of 91) of new tenure-track appointments. Thus, in the first year following the setting of hiring goals, the University met its goal for faculty women. In addition, PACEE recommended that the 35% overall figure be adjusted for individual faculties and departments according to their respective applicant pools. In the fall of 1991, Vice-President Academic, Daniel R. Birch, requested that the deans submit to him written statements of their faculties' goals for hiring women into tenure-track positions as well as the procedures and guidelines by which they planned to implement this goal.

Finally, Recommendation A urged the University to devise means to attract and retain the best-qualified faculty women. For the 1991/92 year, women's representation among tenure-track faculty increased to 19.1% from 17.9% in the previous year. Similarly, in all faculty ranks, both tenured and non-tenured, women's participation rose from 19.1% in 1990/91 to 20.4% in

Table 1

### 1991 Recommendations for Hiring

Consistent with UBC's Policy on Employment Equity, which states that individual achievement and merit are the fundamental criteria for employment decisions, the President's Advisory Committee on Employment Equity recommends the following:

A. To ensure that UBC reflects the percentage of women in the applicant pool of doctoral degree recipients in Canada, UBC should hire women to fill at least 35% of vacant tenure-track faculty positions. (This is an overall figure and must be adjusted for individual faculties and departments according to their respective applicant pools.) As universities across Canada seek to increase the number of women in their faculties, competition for the women in this pool will increase. Therefore, UBC should devise means to attract and retain the best-qualified women.

B. In order to reflect the numbers of women, aboriginal people, members of visible minorities, and persons with disabilities currently employed in external labour pools, UBC should add the following qualified individuals to its staff with all reasonable dispatch:

| Abella Category<br>Current # of employees | Hiring Goal to Eliminate<br>Current Shortfall |
|---|---|
| Upper Level Managers (5)                  | 1 woman                                       |
| Professionals (2626)                      | 39 women                                      |
| Supervisors (137)                         | 2 aboriginal people                           |
| Foremen/women (42)                        | 2 persons with disabilities                   |
|   | 3 women                                       |
|   | 3 members of visible minorities               |
|   | 1 person with disability                      |
| Sales Workers (89)                        | 1 aboriginal person                           |
|   | 3 persons with disabilities                   |
| Service Workers (508)                     | 8 persons with disabilities                   |
| Skilled Crafts & Trades (148)             | 3 women                                       |
|   | 2 aboriginal people                           |
| Semi-Skilled Manual Workers (40)          | 1 woman                                       |
|   | 1 aboriginal person                           |
|   | 2 members of visible minorities               |
|   | 1 person with disability                      |
| Other Manual Workers (373)                | 5 aboriginal people                           |

C. UBC should review its goals for hiring members of designated employment-equity groups annually keeping in view the long-term objective of a workforce that reflects the distribution of potential candidates with appropriate qualifications, including women, aboriginal people, visible minorities, and persons with disabilities.

1991/92. In addition to faculty employment-equity hiring plans, several other initiatives designed to attract and retain qualified faculty women are underway. The Director of Employment Equity, and the President's Advisor on Women and Gender Relations are working with representatives from the Academic Women's Association and the Status of Women Committee of the Faculty Association to improve the UBC work environment for women. Examples of current projects are a study to investigate potential barriers to women faculty's progress through academic ranks, a campus-wide committee for women's safety, and on-going efforts to raise awareness concerning the effects of obsolete stereotyping on the professional climate.

## Recommendation B

The second recommendation set specific numerical goals to correct UBC's

shortfall from qualified external labour pools. To compare UBC's workforce profile with the 1986 Canadian labour force, all faculty and staff positions at UBC were categorized into Abella categories (See Table 2). The 12 Abella categories were derived from Employment and Immigration Canada's Standard Occupational Coding, which classifies jobs according to a variety of criteria, such as responsibilities, education, training, and experience.

## Limits of the Analysis

As the overall response rate to UBC's employment equity census remains less than 100%, the Employee Database, which reports the number of women employed in various capacities, was used to examine the situation of women within the University. For the other designated groups—aboriginals, visible minorities, and persons with disabilities—the University had not previously collected data; therefore, the census data on these three groups

# UNIVERSITY OF BRITISH COLUMBIA

## EMPLOYMENT EQUITY CENSUS ANALYSIS



**Table 2**

Listed below are the Abella categories defined by the Federal Contractors Program and examples of UBC positions that fall within each category:

| Abella                              | UBC   |
|-------------------------------------|---|
| 01 Upper Level Managers             | President, Vice-President   |
| 02 Middle and other Managers        | Associate Vice-President, Dean, Head, Director, Admin. Asst., Admin. Supervisor, Personnel Officer, Coordinator, Asst. Registrar, Food Service Manager  |
| 03 Professionals                    | Accountant, Genetic Assist., Research Engineer, Programmer/Analyst, Social Science Researcher, General Librarian, Professor, Assoc. Professor, Assist. Professor, Instructor, Lecturer, Research Associate, Physician, Research Nurse, Counsellor |
| 04 Semi-Professionals & Technicians | Research Assist., Research Assist. Technician, Engineering Technician, Lab. Asst., Dental Assist., Medical Artist, Editor, Information Officer, Coach   |
| 05 Supervisors                      | Secretary 5, Word Processing Coordinator, Administrative Clerk, Section Head, Residence Life Coordinator, Executive Chef, Head Hostess  |
| 06 Foremen/women                    | Assist. Head Service Worker, Head & Sub-Head Gardener, Head & Sub-Head Electrician, Head & Sub-Head Carpenter, Area Supervisor, Custodial Supervisor  |
| 07 Clerical Workers                 | Secretary 1, 2, 3 & 4, Clinical Secretary 1 & 2, Clerk Typist, Data Entry Operator, Computer Operator, Library Assist. 1, 2, 3, 4 & 5, Communications Operator, Clerk 1, 2 & 3, Clinical Office Assist. 1, 2 & 3, General Clerk, Program Assist.  |
| 08 Sales Workers                    | Sales Clerk, Bookstore Assist., Sr. Bookstore Assist., Computer Sales Assist.   |
| 09 Service Workers                  | Patrolperson, Cook, Assist. Cook, Kitchen Help, Bartender, Waiter/Waitress, General Worker (Heavy & Light), Sales Attendant, Residence Attendant, Kiosk Attendant   |
| 10 Skilled Crafts & Trades          | Sheet Metal Worker, Electrician, Carpenter, Plumber, Steamfitter, Maintenance Engineer 1 & 2, Locksmith   |
| 11 Semi-Skilled Manual Workers      | Truck Driver, Apprentice, Clerk Driver, Farm Worker 2 & 3, Milker   |
| 12 Other Manual Workers             | Service Worker 1 & 2, Sr. Service Worker, Gardener, Service Worker-Ice Maker, Painter, Labourer   |

were drawn solely from the employment equity census. The lack of a 100% response to the employment equity census, although not relevant to the analysis of the profile of women in UBC's workforce, does limit the analysis of the other three designated groups. Thus, decreases in representation of minority designated-group members may reflect both decreases in hirings over time as well as decreases in response rates to the census. There may always be members of the three designated groups—aboriginal people, visible minorities, and persons with disabilities—who choose not to complete the employment equity census, and thus, the data may always underrepresent members of these groups.

Another consideration in analyzing the employment-equity census data concerns the fluidity of UBC's workforce. The initial census data was frozen for

analysis in May 1990, but because UBC's faculty increases in size from September through May whereas the non-academic staff size fluctuates in a different seasonal pattern, we have chosen to compare subsequent snapshots at the same point in the calendar year—December. Thus, for this analysis, we compare three points in time: May 1990, December 1990, and December 1991. Snapshot data also limits the analysis because, though it is possible to calculate increases and decreases in the size of an employee group, it is not possible to differentiate hirings and terminations from promotions. Therefore, even if the proportion of staff who self-identified as minority group members remained the same from one snapshot to another, until we analyze flow data, we do not know how many individuals may have been hired, left, or promoted during that period.

**Table 3 - Designated Groups in UBC's Workforce**

| Abella Category                     | % Women |        |        | % Aboriginals * |        |        | % Visible Minority * |        |        | % Disabled * |        |        |
|-------------------------------------|---------|--------|--------|-----------------|--------|--------|----------------------|--------|--------|--------------|--------|--------|
|                                     | May'90  | Dec'90 | Dec'91 | May'90          | Dec'90 | Dec'91 | May'90               | Dec'90 | Dec'91 | May'90       | Dec'90 | Dec'91 |
| 01 Upper Level Managers             | 0.0     | 0.0    | 0.0    | 0.0             | 0.0    | 0.0    | 20.0                 | 20.0   | 20.0   | 0.0          | 0.0    | 0.0    |
| 02 Middle & Other Managers          | 50.1    | 50.5   | 51.0   | 2.0             | 2.1    | 1.5    | 4.7                  | 5.8    | 5.8    | 4.5          | 3.8    | 4.5    |
| 03 Professionals                    | 27.8    | 31.4   | 32.3   | 1.0             | 1.1    | 1.1    | 12.0                 | 13.0   | 13.9   | 3.9          | 3.6    | 3.0    |
| 04 Semi-Professionals & Technicians | 48.3    | 48.9   | 49.0   | 0.5             | 0.9    | 0.5    | 25.4                 | 28.3   | 29.1   | 3.4          | 3.0    | 3.4    |
| 05 Supervisors                      | 80.3    | 81.5   | 83.3   | 1.0             | 0.8    | 1.6    | 21.4                 | 21.3   | 21.6   | 4.9          | 5.6    | 5.4    |
| 06 Foremen/women                    | 7.1     | 4.9    | 4.2    | 0.0             | 0.0    | 0.0    | 9.1                  | 12.5   | 14.3   | 3.1          | 3.2    | 2.9    |
| 07 Clerical Workers                 | 89.0    | 89.2   | 88.3   | 2.3             | 2.2    | 1.7    | 24.2                 | 25.9   | 27.7   | 3.8          | 3.3    | 3.3    |
| 08 Sales Workers                    | 52.8    | 58.3   | 57.4   | 0.0             | 0.0    | 0.0    | 32.9                 | 30.6   | 26.9   | 1.5          | 1.4    | 1.7    |
| 09 Service Workers                  | 56.9    | 54.8   | 58.0   | 4.3             | 3.5    | 3.2    | 36.2                 | 33.8   | 33.6   | 6.6          | 6.6    | 5.6    |
| 10 Skilled Crafts and Trades        | 2.7     | 3.5    | 2.8    | 0.0             | 0.0    | 0.0    | 13.0                 | 13.0   | 15.6   | 11.3         | 9.7    | 10.4   |
| 11 Semi-Skilled Manual Workers      | 12.5    | 11.9   | 14.9   | 0.0             | 0.0    | 0.0    | 6.3                  | 11.2   | 12.5   | 6.3          | 5.6    | 6.3    |
| 12 Other Manual Workers             | 38.1    | 39.1   | 39.7   | 1.6             | 1.4    | 1.5    | 27.5                 | 27.1   | 28.1   | 8.7          | 7.8    | 7.8    |
| TOTAL                               | 48.2    | 49.1   | 49.7   | 1.5             | 1.5    | 1.3    | 18.2                 | 19.2   | 19.9   | 4.3          | 3.9    | 3.8    |

\*Based on census response.

### Designated Group Employees by Abella Group

Table 3 compares the percentage of designated-group employees in each Abella group for May 1990, December 1990, and December 1991. Overall, the data suggest that between December 1990 and December 1991, the percentage of women and visible minority employees increased. Women's participation in the UBC workforce increased from 49.1% in December 1990 to 49.7% in December 1991; visible minority employees who responded to the census increased from 19.2% in December 1990 to 19.9% in December 1991. These increases over a one-year period are especially encouraging when compared with the May 1990 data where women represented 48.2% and visible minorities 18.2% of UBC employee faculty and staff. The data suggest a steady increase in the percentage of women employees at UBC: 1.5 percentage points in less than two years; and similarly, a steady increase in the percentage of visible minority employees: 1.7 percentage points in less than two years.

Unfortunately, the data do not reveal such an encouraging picture for the other designated groups: the percentage of aboriginal and disabled respondents to the employment equity census decreased between December 1990 and 1991. In December 1990 aboriginal census respondents made up 1.5% of the total respondents at UBC, compared with 1.3% in December 1991. In May 1990, aboriginal respondents also had comprised 1.5% of the overall respondent employee base. Similarly, the percentage of employees who self-identified in the census as disabled decreased between December 1990 and 1991 from 3.9% to 3.8%.

### Designated Group Employees and Recent Hirings

For this analysis, we refer to all employees who were present in the December 1991 snapshot but not in the December 1990 snapshot as "new hires." Table 4 compares the percentage of designated-group members employed in December 1991 with their representation among the group of faculty and staff newly

hired since December 1990. Table 5 shows the number of employees who were present in the December 1991 snapshot but not present in the snapshot one year earlier.

### Women, December 1990-1991

The percentage of women employees increased in seven Abella groups with the largest increases in *Service Workers* (54.8% to 58.0%) and *Semi-Skilled Manual Workers* (11.9% to 14.9%) (See Table 3). In the Abella groups where women's participation increased over the course of the year, the percentage of women among new hires exceeded the percentage of women one year earlier (See Table 4). For example, in *Semi-Skilled Manual Workers*, the percentage of newly-hired women (27.3%) was much higher than the percentage of women in that Abella group in December 1991 (14.9%). These data suggest a general shift toward increased representation of women in a majority of Abella categories. Overall, women represented 49.7% of UBC employees in December 1991 and 60.3% of faculty and staff hired since December 1990 (See Table 4).

On the other hand, the percentage of women employees fell in four Abella groups, and in three groups—*Upper Level Managers*, *Foremen/women*, and *Skilled Crafts & Trades*—there were no women among employees newly hired, although UBC had set goals to hire women in these three groups. These three Abella groups had the lowest percentage of women in December 1991: 0.0%, 4.2%, and 2.8% respectively. The drop in the percentage of women in *Foremen/women* (4.9% to 4.2%) is particularly noteworthy: hiring was done in the Abella group *Foremen/women*, but none of these new hires were women (See Table 5). Similarly, there were seven new hires in the Abella group *Skilled Crafts & Trades*; again, the hiring appears to have been of men, not women.

### Aboriginal People, December 1990-1991

The data in Table 3 show an overall decrease in the percentage of employees who self-identified as aboriginal people. Furthermore, the data in Table 4 reveal that aboriginal respondents represented 1.3% of UBC faculty and staff in December 1991, but only 1.0% of new hires. Yet, there were three Abella groups where the representation of aboriginals responding to the census increased or remained static. The most significant increase occurred in *Supervisors* (0.8% to 1.6%). Although this



# UNIVERSITY OF BRITISH COLUMBIA EMPLOYMENT EQUITY CENSUS ANALYSIS

Table 4 - Designated Groups, December 1991, Compared with New Hires (Dec. '90 - '91)

| Abella Category                | WOMEN    |           | ABORIGINALS |           | VISIBLE MINORITY |           | DISABLED |           |
|--------------------------------|----------|-----------|-------------|-----------|------------------|-----------|----------|-----------|
|                                | %        | **%       | %           | **%       | %                | **%       | %        | **%       |
|                                | Dec. '91 | New Hires | Dec. '91    | New Hires | Dec. '91         | New Hires | Dec. '91 | New Hires |
| 01 Upper Level Managers        | 0.0      | 0.0       | 0.0         | 0.0       | 20.0             | 0.0       | 0.0      | 0.0       |
| 02 Middle & Other Managers     | 51.0     | 59.4      | 1.5         | 0.0       | 5.8              | 10.3      | 4.5      | 10.3      |
| 03 Professionals               | 32.3     | 46.5      | 1.1         | 1.6       | 13.9             | 20.9      | 3.0      | 1.1       |
| 04 Semi-Professionals & Tech.  | 49.0     | 57.1      | 0.5         | 0.0       | 29.1             | 28.8      | 3.4      | 2.3       |
| 05 Supervisors                 | 83.3     | 100.0     | 1.6         | 0.0       | 21.6             | 25.0      | 5.4      | 0.0       |
| 06 Foremen/women               | 4.2      | 0.0       | 0.0         | 0.0       | 14.3             | 0.0       | 2.9      | 0.0       |
| 07 Clerical Workers            | 88.3     | 91.5      | 1.7         | 1.6       | 27.7             | 29.7      | 3.3      | 3.2       |
| 08 Sales Workers               | 57.4     | 55.6      | 0.0         | 0.0       | 25.9             | 27.3      | 1.7      | 0.0       |
| 09 Service Workers             | 58.0     | 67.4      | 3.2         | 0.0       | 33.6             | 17.3      | 5.6      | 0.0       |
| 10 Skilled Crafts and Trades   | 2.8      | 0.0       | 0.0         | 0.0       | 15.6             | 20.0      | 10.4     | 0.0       |
| 11 Semi-Skilled Manual Workers | 14.9     | 27.3      | 0.0         | 0.0       | 12.5             | 0.0       | 6.3      | 0.0       |
| 12 Other Manual Workers        | 39.7     | 12.5      | 1.5         | 0.0       | 28.1             | 57.2      | 7.8      | 0.0       |
| TOTAL                          | 49.7     | 60.3      | 1.3         | 1.0       | 19.9             | 23.7      | 3.8      | 2.5       |

\* Calculated by dividing the number of women new hires (number of women present in Dec. '91 who were not present in Dec. '90) by the total number of new hires  
 \*\* Calculated by dividing the number of designated-group respondents among new hires by the total number of new hire respondents

Table 5 - Designated Group New Hires (Employees present in December 1991 who were not present in December 1990)

| Abella Category                | WOMEN                 |      |       | ABORIGINALS   | VISIBLE MINORITIES | DISABLED      |
|--------------------------------|-----------------------|------|-------|---------------|--------------------|---------------|
|                                | Actual New Hires Data |      |       |               |                    |               |
|                                | Female                | Male | Total | New Hire Data | New Hire Data      | New Hire Data |
| 01 Upper Level Managers        | 0                     | 1    | 1     | 0             | 0                  | 0             |
| 02 Middle & Other Managers     | 38                    | 26   | 64    | 0             | 5                  | 5             |
| 03 Professionals               | 207                   | 238  | 445   | 3             | 41                 | 2             |
| 04 Semi-Professionals & Tech.  | 128                   | 96   | 224   | 0             | 25                 | 2             |
| 05 Supervisors                 | 4                     | 0    | 4     | 0             | 1                  | 0             |
| 06 Foremen/women               | 0                     | 2    | 2     | 0             | 0                  | 0             |
| 07 Clerical Workers            | 225                   | 21   | 246   | 2             | 38                 | 4             |
| 08 Sales Workers               | 10                    | 8    | 18    | 0             | 3                  | 0             |
| 09 Service Workers             | 87                    | 42   | 129   | 0             | 5                  | 0             |
| 10 Skilled Crafts and Trades   | 0                     | 7    | 7     | 0             | 1                  | 0             |
| 11 Semi-Skilled Manual Workers | 3                     | 8    | 11    | 0             | 0                  | 0             |
| 12 Other Manual Workers        | 2                     | 14   | 16    | 0             | 4                  | 0             |
| TOTAL                          | 704                   | 463  | 1167  | 5             | 123                | 13            |

percentage increase doubled in one year, it is important to compare this increase with the Table 5 data on new hirings during the same year. Only four people were hired into the *Supervisors* group; thus, the increase in aboriginal people probably was produced by the hiring of one person who self-identified as aboriginal. The other Abella group showing an increase in aboriginal respondents was *Other Manual Workers* (1.4% to 1.5%); however, this increase compares poorly with the May 1990 figure of 1.6%. Thus, what appears to be a small increase during the year also reveals an overall decrease from the initial employment equity census.

In four Abella groups, the number of employees who self-identified as aboriginal people declined, and relative to the May 1990 data, this decline was steady and consistent in *Service Workers* and *Clerical Workers*. In both *Semi-Professionals & Technicians* and *Middle & Other Managers*, the decrease was reduced relative to the May 1990 data. For example, in May 1990, aboriginals responding to the census comprised 0.5% of *Semi-Professionals & Technicians*; in December 1990, the percentage rose to 0.9%; but by December 1991, the percentage of aboriginal respondents returned to 0.5%.

There continued to be no representation of aboriginal people in five Abella categories: *Upper Level Managers*, *Foremen/women*, *Sales Workers*, *Skilled Crafts & Trades*, *Semi-Skilled Manual Workers*. Relative to larger Abella groups, these five have fewer jobs available, and thus it would take longer to increase the representation of designated-group members in them. Nonetheless, Table 5 shows that there had been some hiring in each of these five Abella groups.

### Visible Minorities, December 1990-1991

Table 3 shows that the percentage of employees who self-identified as visible minorities increased moderately in eight Abella categories, remained the same in two Abella groups, and decreased in two groups. The variance in the size of increase among groups ranged from a high of 2.6% in *Skilled Crafts & Trades* to a 0.3% increase in *Supervisors*. In several Abella groups—*Skilled Crafts & Trades*, *Foremen/women*, and *Clerical Workers*—there has been a steady increase in the proportion of employees identifying as visible minorities since May 1990.

Interestingly, the two groups with the largest increase in visible minority respondents—*Skilled Crafts & Trades* and

*Foremen/women*—showed the largest decrease in the percentage of women employees. These two male-dominated Abella groups appear to be increasing their ranks by hiring visible-minority men, rather than women.

Decreases in the percentage of visible minority respondents to the census occurred in only two Abella groups: *Sales Workers* (30.6% to 25.9%) and *Service Workers* (33.8% to 33.6%). The decrease in *Service Workers* was small relative to the large proportion of visible minorities in the group, but the dip in respondents in *Sales Workers* was large, particularly when we compare the proportion of visible minorities in the May 1990 data (32.9%) to their representation in December 1991 (25.9%). Although the decrease in visible minorities among *Service Workers* was small over one year, Table 4 shows the discrepancy between the representation of visible minorities among census respondents who were newly hired and their levels in December 1991 was large: 17.3% among new hires compared with 33.6% in December 1991.

Although there were three Abella groups with no visible minority respondents among the newly hired, overall the percentage of newly-hired visible minority respondents (23.7%) exceeded the percentage of visible minority respondents in December 1991 (19.9%). This increase is particularly dramatic among *Professionals* and *Other Manual Workers* responding to the census. In December 1991, 13.9% of respondents among *Professionals* identified as visible minorities and 28.1% of *Other Manual Workers*. Among the newly-hired respondents to the census, visible minorities were 20.9% of *Professionals* and 57.2% of *Other Manual Workers*. Moreover, the data for *Middle & Other Managers* is particularly positive for visible minorities. In December 1991, this Abella group had the lowest percentage of visible minority employees responding to the census (5.8%), whereas 10.3% of the newly-hired *Middle & Other Managers* self-identified as visible minorities.

### Persons with Disabilities, December 1990-1991

Overall, the data in Table 3 show a decrease in the percentage of UBC employees who self-identified as disabled (3.9% to 3.8%). As well, the data in Table 4 reveal that persons with disabilities represent only 2.5% of newly-hired faculty and staff since December 1990. There were increases in some Abella groups—*Middle & Other Managers* (3.8%

|  | % change in total employees<br>May '90 - Dec. '91 | Adjusted Goal *  | Net difference in workforce<br>May '90-Dec. '91 |
|--|---|--|---|
| May 1991 Goal  |   |  |   |
| Upper Level Managers<br>1 woman  | 20.0  | 1 woman  | —   |
| Professionals (Non-faculty)<br>39 women<br>2 aboriginal people   | 20.7  | 47 women<br>2 aboriginal people  | 168 women<br>4 aboriginal people                |
| Supervisors<br>2 persons with disabilities   | 22.6  | 3 pers. with disabilities  | 2 pers. with disabls.                           |
| Foremen/women<br>3 women<br>3 members of visible minorities<br>1 person with disability                                      | 14.3  | 3 women<br>3 members of v.m.<br>1 person with disability                   | (1) woman<br>2 members of v.m.<br>0             |
| Sales Workers<br>1 aboriginal person<br>3 persons with disabilities  | 5.6   | 1 aboriginal person<br>3 pers. with disabilities                           | —<br>0  |
| Service Workers<br>8 persons with disabilities   | 21.1  | 10 pers. with disabilities   | 0   |
| Skilled Craft & Trades<br>3 women<br>2 aboriginal people   | (5.0)   | 3 women<br>2 aboriginal people   | 0<br>—  |
| Semi-Skilled Manual Workers<br>1 woman<br>1 aboriginal person<br>2 members of visible minorities<br>1 person with disability | 17.5  | 1 woman<br>1 abor. person<br>2 members of v.m.<br>1 person with disability | 2 women<br>—<br>1 member of v.m.<br>0           |
| Other Manual Workers<br>5 aboriginal people  | 0.5   | 5 aboriginal people  | 0   |

\* May 1991 hiring goals adjusted to account for change in workforce between May 1990 and December 1991.

to 4.5%), *Semi-Skilled Manual Workers* (5.6% to 6.3%) and *Skilled Crafts & Trades* (9.7% to 10.4%)—however, none of these increases were steady climbs relative to the May 1990 data. For example, in May 1990, disabled respondents comprised 4.5% of *Middle & Other Managers*; that percentage dipped to 3.8% in December 1990, but returned to 4.5% in December 1991. Similarly, in *Semi-Skilled Manual Workers*, the May 1990 data (6.3%) belies the apparent increase in the data as of December 1991 (6.3%). There is a

positive development among newly-hired employees in *Middle & Other Managers* where newly-hired disabled respondents (December 1990-1991) were twice their representation in December 1991—10.3% and 4.5% respectively.

Unfortunately, the data for other Abella groups is not encouraging. In four Abella categories, the percentage of disabled respondents decreased, and in three of these four groups, the December 1991 figure was lower than the May 1990 figure. Thus, there appears to be a consist-



ent decrease of disabled respondents to the census in *Professionals* (3.6% to 3.0%), *Supervisors* (5.6% to 5.4%), *Foremen/women* (3.2% to 2.9%), and *Service Workers* (6.6% to 5.6%). Although the new hires data in Table 5 reveal that new employees were hired into these four Abella groups, it appears that the percentage of newly-hired employees with disabilities was not sufficient to maintain the previous level of participation by employees with disabilities. Similarly, in two Abella categories—*Clerical Workers* and *Other Manual Workers*—the percentage of disabled respondents remained the same, but the percentages in these two groups declined relative to the May 1990 data. In eight of the Abella groups, there were no disabled respondents among newly-hired employees.

There are several possible explanations for the decrease of persons with disabilities among census respondents other than the obvious and simple one: UBC is not hiring qualified persons with disabilities. It is also possible that because disability is confounded with age, new hires may be on average younger, and thereby perceive themselves to be able-bodied, relative to the faculty and staff in the initial census, who represented twenty past years of hirings. In addition, individuals with a disability may have been more likely to self-identify in the initial census because they were already established in UBC's workforce, whereas persons newly appointed may be reluctant to acknowledge their limitations. And finally, in light of the promotion of employment equity programs and improvements in technical aids, individuals may be less likely to view themselves as limited in the kind or amount of work they can do than they were in the past. Certainly, as UBC becomes accessible to persons with disabilities, there should be an increasing emphasis on ability rather than disability. (The Bank of Nova Scotia and the Toronto Dominion Bank have launched a legal challenge to the description of the term "persons with disabilities" as defined in the federal *Employment Equity Act*. The banks argue that persons with disabilities who are appropriately employed and effectively accommodated are less likely to identify themselves as disadvantaged in employment.)

### Employment-Equity Hiring Goals

In May 1991, UBC set employment-equity hiring goals that would assist in building a workforce representative of the pool of potential candidates with appropriate qualifications, including women, aboriginal people, visible minorities, and persons with disabilities. Table 6 compares both UBC's original and adjusted goals for hiring designated-group members with the net increase of designated-group members in UBC's workforce during the period May 1990 to December 1991. An adjustment of the original hiring goals was necessary because these goals were set from snapshot data frozen in May 1990; and since that time, the UBC workforce has fluctuated in size. Table 6 shows the original hiring goals adjusted for increases and decreases in each Abella group since May 1990. For example, the original hiring goal for women in *Professionals* was 39, but since the total number of employees in that Abella group increased 20.7% between May 1990 and December 1991, the adjusted goal for hiring women in *Professionals* is 47.

UBC met or exceeded its hiring goals for women and aboriginal people in *Professionals*, and women in *Semi-Skilled Manual Workers*. Thus, UBC achieved its hiring goals in only three out of seventeen specific goals despite the fact that in many of the areas where hiring goals had been set, the University did hire.

### Recommendation C

The final recommendation of the May 1991 Report was to review employment-equity hiring goals annually. UBC did achieve its goal to hire women to fill at least 35% of vacant tenure-track faculty positions, but the University did not achieve the majority of its goals to hire women and minorities into non-academic positions.

There are three factors that may explain why UBC has not achieved its 1991 hiring goals. First, despite UBC's 1990 review of its employment systems (*UBC Reports*, November 29, 1990), the University's employment practices still may disadvantage members of the designated groups. Second, although UBC has made changes to its employment systems, the seven-month period between setting the goals in May 1991 and the latest snapshot, December 1991, may not have been long enough for the University to meet all of the 1991 hiring goals. Third, given the low response rate (44%) to the employment equity census from newly-hired employees, Table 6, no doubt, underrepresents the actual number of hires since December 1990. If we assume an equal proportion of designated-group members among those who did not respond to the census, the estimate of designated-group members hired recently may be over twice as large as the figures given for census respondents.

Nonetheless, the 1991 hiring goals reflected Statistics Canada data on the 1986 labour force. Already out-of-date in 1991, these data will be revised soon. No doubt, future Canada census data will require additional hiring goals if UBC's workforce is to become representative of the pool of potential candidates with appropriate qualifications, including women and minorities. Thus, at a minimum, the University must continue to add qualified individuals to its faculty and staff in accordance with the employment-equity hiring goals set in May 1991.

### Future Directions in UBC's Employment Equity Program

The analysis of UBC's progress toward its 1991 hiring goals suggests that the University confronts different challenges for women and visible minorities than for aboriginal people and persons with disabilities.

The data for aboriginal people and persons with disabilities indicate that these designated groups are underrepresented in the UBC workforce, and to date, UBC has been unsuccessful in achieving its hiring

goals for these designated groups. Furthermore, there is evidence of decreasing populations of employees who self-identify as aboriginal people and persons with disabilities. Taken together, the results of the analysis suggest that special employment-equity measures must be directed to these two designated groups if UBC is to meet its employment-equity hiring goals. Future employment equity strategies for aboriginal people and persons with disabilities must focus on active recruitment measures and the creation of a supportive work environment for members of these two groups.

On the other hand, the analysis suggests that women and visible minorities are employed at UBC in increasingly large numbers, but despite such increases, UBC still is not meeting its hiring goals set in 1991. Therefore, employment equity efforts must be directed not only to attracting qualified women and visible minority faculty and staff, but also to promoting well-qualified members of these designated groups into high-level positions. For these two groups—women and visible minorities—employment equity strategies must focus on career development and advancement. With reference to all four designated groups, the following is clear: if UBC is to make progress toward its employment-equity hiring goals, the University must provide faculty and staff involved in personnel

decisions with training in human rights practice as well as gender, cultural and disability issues.

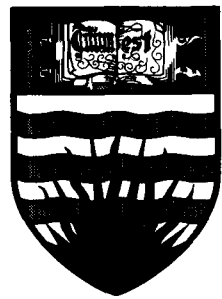
The 1991 employment-equity hiring goals were included in UBC's Employment Equity Plan (*UBC Reports*, November 14, 1991), which was developed to facilitate the achievement of fair and equitable employment opportunities and working conditions for all faculty and staff. In addition to numerical hiring goals, the Plan described forty steps designed to support the successful integration of designated-group members into the UBC work environment. These steps include outreach recruitment, information and awareness training sessions for supervisory and managerial staff, and provision of career development opportunities.

Future directions for UBC's employment equity program have been identified and approved in UBC's Employment Equity Plan. The analysis of the University's progress to-date towards meeting its hiring goals affirms the necessity for strong, continuing efforts to implement all steps in the Plan, including active measures to increase the number of qualified designated-group members—particularly aboriginal people and persons with disabilities—in candidate pools, and to maintain working conditions that support the successful integration of designated-group members at all levels throughout the University.

#### PRESIDENT'S ADVISORY COMMITTEE ON EMPLOYMENT EQUITY

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# REPORT ON INSTRUCTIONAL USE OF INFORMATION TECHNOLOGY

## Prepared for

Dr. Bernard S. Sheehan,  
Associate Vice President, Informa-  
tion & Computing Systems

## Prepared by

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January 30, 1992

## MEMORANDUM

**From:** Bernard S. Sheehan  
Associate Vice-President  
Information & Computing Systems

**Re:** Instructional Use of Information Technology

The attached report was prepared by the Committee for Instructional Use of Information Technology and was received by the Campus Advisory Board on Computing (CABC).

This CABC Committee set about to collect and document current practice and future plans for the use of information technology in learning and teaching at UBC. The questionnaire to some 121 department heads and others was returned at the very high response rate of 77%, lending considerable value to the report and underscoring campus interest in this topic. Besides presenting and analyzing the survey results, the report briefly describes these technologies.

The Instructional Use of Information Technology Committee recommends that efforts be made to inform the campus of the potential of these technologies; that current practices of reward for achievement and innovation in teaching be reviewed; that funding for instructional technology be made available, particularly to departments; and that the physical state of UBC classroom space be improved. The Committee notes that efforts should be focused at the local departmental level.

If you have comments or additional information that would be useful to the work of the Committee, please forward them to Carol Bird, Committee Secretary, or to myself.

success stories.

When Dr. Wyatt's challenge arrived at UBC early in 1991, it was discovered that there was a lack of information about the current practice at UBC. To address this issue, Dr. Bernie Sheehan, Associate Vice President, Information and Computing Systems, established a committee of the CABC chaired by Dr. Tony Kozak, Associate Dean of Forestry, for which one of the terms of reference was to collect and document current practice and future plans for the use of information technology in learning and teaching at UBC. The other members of the committee are Christopher Clark, Clinical Dental Sciences, Faculty of Dentistry; Douglas Beder, Physics Department, Faculty of Science; James Caswell, Department of Fine Arts, Faculty of Arts; Siegfried Stierner, Civil Engineering, Faculty of Applied Science; Martha Whitehead, Sedgewick Library, University Library; Peter Gouzouasis, Department of Visual and Performing Arts in Education, Faculty of Education; Carol Bird (secretary), University Computing Services. The main activity of the committee has been to gather this information using a questionnaire. This report presents the analysis of the responses to the questionnaire and makes some recommendations resulting from this analysis.

## Summary of Recommendations

The following are the recommendations of the committee, based on the results of the survey that was circulated.

### **Inform Faculty about the Technology**

It is recommended that faculty be made more aware of the possibilities of the technology through such units as University Computing Services, the Library, the Faculty Development Office and Education Computing Services through specialized seminars at the departmental or faculty level, department/faculty visits, and resource collections. These units should be appropriately mandated and well supported.

### **Faculty Reward Structure**

It is recommended that the Senior Appointments Committee of UBC be asked to study the issue of how to reward achievement or innovation in teaching and to report their solution to the departments. Faculty overwhelmingly concur that educational software develop-

ment and technical innovation should be among the factors considered for tenure and promotion.

### **Funding**

It is recommended that funding at the departmental level be made available by the President's Office for instructional technology to be used for course development, equipment for faculty members, classrooms and laboratories. Also, funding is needed for purchasing software and hiring technical support staff.

### **UBC Classrooms**

It is recommended that the University Administration investigate and find an immediate solution to the problem of the deplorable state of UBC's classrooms.

## Introduction

Some faculty members have used computers as part of their instructional role for two decades or longer. So what is different about information technology? Information technology has arisen as a separate technology through the convergence of computing, telecommunications and video techniques. Computing

provides the capacity of storing and processing information, telecommunications the vehicle for communicating it, and video provides high quality display of images. The linking of video disk, sound, projection systems, microcomputers and high speed networks provides the potential for dynamic changes in classroom and individual instruction—a new vehicle for the instructor and the students in their "adventure of the spirit and the mind."

There is a great deal of activity in this area at many North American educational institutions. Beginning in 1987, EDUCOM<sup>1</sup> and NCRIPAL<sup>2</sup> have sponsored a Higher Education Software Awards competition, the purpose of which is to improve the quality and indirectly the quantity of educational software, and promote the effective use of computer technology in higher education. During that time they have rewarded over a hundred winning software programs and innovative uses of the computer from a field of more than 1000 entrants. At the 1990 EDUCOM conference, Dr. Joe Wyatt, Chancellor of Vanderbilt University, challenged the member universities and colleges to identify 100 examples in higher education of how teaching and learning have been enhanced through the use of information technology. At the 1991 EDUCOM conference, Dr. Wyatt presented 101

## The Questionnaire

In the summer of 1991, a questionnaire was sent to the heads of all academic departments and schools and to some service unit directors who are associated with instruction. The questionnaire was designed to capture information about the level of knowledge, current use and interest in the more popular information technologies. The committee was interested in how the technology was being used for instruction in both the classroom setting and in the individual or group learning setting. Equipment is of limited use without effective software. The committee wanted to identify the source of the software used: was it developed at UBC, acquired from another university, or purchased from a vendor? If it was developed locally, we wanted to know what software packages, commonly referred to as authoring tools, were used for the development of courseware. The respondents were asked for comments on funding sources, current and future plans, as well as for general comments. Each department was asked to identify faculty members who are actively using or interested in using information technology for instruction. Lastly, they were asked to indicate the usefulness of a number of support resources if these were supplied locally or centrally.



## REPORT ON INSTRUCTIONAL USE OF INFORMATION TECHNOLOGY

Page 10

## Description of the Technology

The responses to the questionnaire identified a general lack of basic understanding of the technology. This section gives a brief description of the technology referenced in the questionnaire, both hardware and software.

### Video Disk

Video disks, compared to other visual media, are more durable, interactive and easier to use. A video disk can store 30 minutes of fully random accessible motion images or 54,000 still images. Video disks can be used independent of a microcomputer by using bar codes or a remote control unit. However, they are most effective when used in concert with the microcomputer. There is a wide range of information available on this media. Also the cost of producing your own disk has declined significantly over the past two years. Titles from one catalogue include: Encyclopedia of Animals, Physics and Automobile Collisions, National Art Gallery, Joseph Campbell and the Power of Myth, The Bachdisc, 20 disks from the PBS Nova Series, and 40 disks from the National Geographic Documentaries. In addition, this catalogue advertises availability of new and vintage films using the media in a format which doesn't support random access. The disks range in price from \$30 to \$100 US.

### Automated Video Tape/Slides

Video cassette readers and slide projectors can be controlled by a personal computer. Interesting presentations can be assembled using multiple slide projectors, images that fade in and out, and slides or film clips cued by the textual presentation. A minimum of human intervention is required at the time the information is presented.

### CD-ROM

CD-ROM is short for compact disk read-only memory. The media is capable of storing large quantities of data, in some cases the equivalent of approximately 250,000 pages of text on standard sheets of paper. The disk reader can be interfaced with a personal computer, thus allowing for fast access to the data and processing of the retrieved data. Audio and graphics can also be stored on the disks. This media is used for such applications as encyclopaedias, dictionaries, thesauri, catalogues, medical and legal information, and bibliographies. Some instructional software is distributed using this medium, particularly when it uses large databases of information.

As an example of the dynamics of this media, six weeks after the gulf war Warner New Media and TIME magazine released *Desert Storm: The War in the Persian Gulf*, their first multimedia magazine on CD-ROM. The disk consists of original dispatches from TIME correspondents, pool reports,

audio recordings, and more than 300 photographs, indexed for direct access. Using this disk and the appropriate hardware and courseware, a journalism student can follow the development of a story from the reporter in the field to the final article in the magazine. Alternatively a historian can use this information during a lecture or seminar discussion, as part of an independent guided study program, and as another source of information in their research. The most interesting aspects of this example are the variety of sources of information, the ease of access for analysis, and the speed at which this volume of information was made available. History takes on a new meaning.

### Microcomputer/Overhead Projector

Overhead projectors can be used in conjunction with a microcomputer to project the information displayed on the microcomputer monitor onto a screen. An LCD projection panel is connected to the microcomputer and sits on top of an ordinary overhead projector. The projection panels range from monochrome to thousands of colours. Some are capable of projecting a moving image.

Using this technology, the instructor can prepare the entire lecture on the microcomputer using a word processing package in conjunction with presentation or authoring software. In addition, the instructor can teach complex concepts or solve complicated problems during the lecture using the power of the microcomputer. For example, the concept of integration is very difficult to teach freshmen. With the aid of a computer the instructor can explore the various approximation techniques, such as Simpson's and the trapezoidal rules, and prompt the student to discover the best approximation and the concept of truncation errors. The concepts studied in complex analysis courses are difficult to visualize because the graphs of complex functions are difficult to draw. An instructor at the University of Wisconsin has developed a computer graphics package which uses colour to display the values of a complex function. With this tool, the Fundamental Theorem of Algebra or Weierstrass' Theorem of Singularities can be strikingly illustrated. The computer takes the drudgery out of lengthy calculations and thus allows the instructor to demonstrate concepts using real world problems. This gives the lecture added relevance.

### Video Projection System

For larger classrooms, a three beam colour projection system is required to make full utilization of the above technologies. It interfaces directly with video disk and CD-ROM players and with microcomputer equipment. Although this system is expensive, the other alternatives have serious drawbacks, such as small images, poor colour reproduction, ghosting of moving images or incompatibility with high resolution monitors.

### Presentation/Authoring Software

There are a number of programs on the market which allow you to produce the visual aids for a presentation or lecture using a microcomputer. This software is referred to as presentation software. Typically these products include such features as outlining, drawing charts and graphics, automatic production of slides or overheads with a consistent design and format, layering within a slide to emphasize a point. Usually the programs work in conjunction with your favourite word processing or spreadsheet packages so that tables, text, and graphs can be moved from other documents, notes, or programs to the presentation. Finally, the product can be used on a microcomputer in the classroom to present the lecture, or to produce overhead transparencies or 35mm slides.

Authoring tools have a much higher level of sophistication. These software products allow the instructor to develop courseware for individual or group learning situations as well as classroom presentations. They provide an easy-to-use interface with the material on multimedia hardware such as that described above. They provide the ability to prompt the student for correct answers, to track student progress, to link information from various media for easy exploration by the student. Using the appropriate hardware, the instructor can include such material as film clips, digitized sound either produced by the instructor or obtained by any other source, motion sequences produced by graphing packages, and scanned material. For example, an instructor preparing a session on the Cuban missile crisis could use material such as sequences of John F. Kennedy's speeches from a video disk, a map of the USA and Cuba from a geographic software package, text from a CD-ROM encyclopedia, rock and roll music from LP recordings, and articles scanned from various newspapers that covered the crisis. Using authoring tools these items can be combined in any sequence with textual material produced by the instructor and/or with narrative comments in the instructor's voice. This provides for professional and stimulating course material. The student can get a real appreciation of the times in which the event occurred.

## Analysis of the Responses

The most significant impression one receives from the responses to the questionnaire is the degree of interest in the topic—the overall response rate of 93 out of 121, 77%, is remarkably high for a questionnaire.

### Hardware

There were several questions wherein comparisons of the various information technologies may be made. These questions asked for current knowledge of, current use of, and future plans for

(interest in) the various hardware technologies as they apply in classroom presentation and in individual or group learning settings. At the low end is the video disk—there is a general lack of knowledge and use of this technology, but there is a high degree of interest in learning more about it. In the intermediate range is automated videotape/slides, and CD-ROM; there is more use made of automated videotape/slides in the presentation setting (32% of respondents make at least some use). The clear leaders are microcomputer/overhead projectors and video projection systems in the presentation settings, and especially microcomputers in the individual or group learning setting. The general impression is that most departments see these as the most likely routes for them, although this is affected, for some departments, by the lack of current availability of useful material for other media.

A number of respondents indicated they did not know precisely what was meant by the labels attached to the various information technologies in the questionnaire. It seems that there would be some advantage in demonstrating these technologies: if faculty knew they had some access to the equipment, and if they had some familiarity with its capabilities, then they would be more alert to the possibilities of obtaining useful material from colleagues at conferences and meetings. UBC has not obtained as much material from other universities as might be expected.

### Microcomputers Used

The majority of departments are using IBM PCs or compatibles with 65% stating them as a preference. 13% prefer Macintoshes and 22% use both platforms.

### Sources of Instructional Material/Courseware

A question on source of materials yields some interesting results. Respondents were asked where they obtained materials and 35% were locally developed, 7% came from other universities, and 19% were purchased from vendors. It is likely that in some cases the vendors were in fact other universities.

*This indicates a willingness of some of our faculty to devote significant portions of their time to improving their classroom presentations; this is in spite of the fact, made clear in numerous comments on the questionnaire, that the university places little or no emphasis on teaching skills when it comes to career advancement, or in funding allocations.*

Some written comments also make clear that faculty are willing (in spite of the previous comment), to devote some effort to using these new technologies, but are deterred by two factors: if they are starting from a state of near ignorance, they perceive the amount of technical literature that might be relevant to be daunting, and they would like some guidance on how to begin and what is really relevant; secondly, they are not really familiar with the possibilities. This again reinforces the view



that some demonstration facilities and initial guidance would be useful.

### **Presentation and Authoring Tools**

The questions on knowledge of, use of and future interest in tools—such as authoring tools, and presentation graphics tools—show, as one might expect, a lot more familiarity with presentation graphics. Again, as with the video disk, there is a lot of interest in the authoring tools, which is interpreted as a desire to know more about them since they might be of use, rather than a commitment to actually using them.

### **Support Resources, Local and Central**

The final question asks whether use would be made of central or local support facilities. Departments were asked to respond to the following support resources: fully equipped microcomputer laboratory facilities, support centre with demo equipment and software, workshops and seminars, library of printed information, development assistance, knowledgeable consultants, and fully equipped classrooms. The main feature of these responses is what one would expect: if departments had the local facilities, they would use them, and they would use them more than central facilities. The level of "no use" responses was very low for all central or local facilities (with two exceptions discussed later). There were some differences in the perceived usefulness of the various facilities, but the real exceptions were microcomputer laboratories and fully-equipped classrooms: here departments answered more strongly that they would make frequent use of local facilities, and this was the only area where significant numbers responded that they would make no use of central facilities (39% and 32%).

## **Analysis of the Comments**

### **Funding**

There were 38 responses to the request for funding information. Fifteen departments commented that there was little or no funding, and that any work done in this area was solely the result of the initiative of individual faculty members; ten departments provided support from departmental funds; five departments indicated grants as the source of funding, sometimes supplemented by departmental funds (the source of these grants was not specified, except in one case where a faculty research grant was cited). In the case of the remaining eight departments, four specified outside agen-

cies (including VGH as one of these), two specified higher UBC administration sources, and two a combination of these.

### **Current Plans**

About half of the responding departments (28/52) indicated either no plans, or minor plans, often of an ad hoc nature. A third of these departments cited reasons for this lack of plans—the three basic reasons cited were lack of knowledge, lack of commitment by faculty, and lack of financial and other resources. The last was the most commonly cited (over half). The lack of commitment was attributed to two factors: first, there is a certain amount of inertia, with some faculty "tied to 'lecturing,'" and second, there is a reluctance of some faculty to devote time to "projects not recognized for tenure and promotion," particularly young tenure track faculty members.

The other 24 departments had more concrete plans: several of these were contingent upon funding, some departments are in the process of purchasing hardware.

### **General Comments**

Many departments took the time to make insightful comments. For the purposes of this report a few direct quotes are brought forward. These are organized into two categories.

#### **Need for more information**

"Our department is in great need of this type of technology, but is unaware of specific developments and what is available at what \$ and true cost." "My knowledge of how these technologies could be in any way valuable to us is too limited to make sense of this questionnaire." "It is hard for me to predict which avenues will be most useful until gaining some experience of the relevant technologies." "We would value knowing about technology for teaching and quick summaries that would allow quick access and usage." "...lack of interest may only reflect our ignorance of what techniques are available or the level of support that is currently available at UBC. Perhaps seminar organized through TAG to rectify this problem would be helpful." "I think that it is probably correct that we do not know enough about the possibilities and so have not seriously considered what opportunities might occur to use the systems in our teaching."

#### **Need for more support for instruction**

"What a delight it would be to teach in a classroom that is well ventilated, where the microphones work properly and the projectors have quiet fans! If there are funds available for upgrading classrooms, wouldn't it be much more cost-effective to add more sophisticated equipment with limited application only as a second step after a basic update of the facilities has been undertaken?" "Our faculty (and, from what I can see, most of the University, except Medicine) are 20-30 years behind times in using new technology to help teach." "There is a general feeling that the

University should be more seriously supporting teaching at UBC." "We need help to teach." "All this 'high-tech' stuff sounds so wonderful - the reality for most of us is far different! The classrooms are generally in a pitiful state - broken chairs, scarred furniture, blinds that are permanently stuck or missing, no curtains, poor ventilation, paint peeling, etc., etc. ...The technology discussed here is hardly the main issue; indeed it is, in a real sense, a trivial issue. The much more fundamental problem is management and maintenance of an appropriate classroom environment." "The projection of slides in the large lecture halls in IRC (e.g. IRC2) is quite poor. "...university only pays lip service to teaching and our students are deprived of the benefits of what is possible."

## **Recommendations**

### **Inform Faculty about the Technology**

The survey clearly shows that a high proportion of respondents are unfamiliar with the available technology and software. This is in considerable contrast to the situation at leading North American universities. It is recommended that faculty be made more aware of the possibilities of the technology. This should be part of a continuing process of quality improvement in education. This should be accomplished through such units as University Computing Services, the Library, the Faculty Development Office and Education Computing Services through seminars, department/faculty visits, and resource collections. These units should be appropriately mandated and well supported. Seminars would be most effective at department level or faculty level (for small faculties) and especially designed for the individual disciplines.

### **Faculty Reward Structure**

It is recommended that the Senior Appointments Committee of UBC be asked to study the issue of how to reward achievement or innovation in teaching and to report their solution to the departments. The most commonly cited reason for not devoting time and effort to such projects is that such efforts are not recognized for tenure and promotion. Faculty overwhelmingly concur that educational software development and technical innovation should be among the factors considered for tenure and promotion.

### **Funding**

It is recommended that funding be made available by the President's Office for instructional technology to be used for

course development, equipment for faculty members, classrooms and laboratories. Also, funding is needed for purchasing software and hiring technical support staff. The respondents indicated that funding would be most effective at the departmental level.

### **UBC Classrooms**

Although it was not the subject of a question in the questionnaire, several respondents could not resist commenting on the deplorable state of UBC's classrooms. It is recommended that the University Administration investigate this problem and find an immediate solution.

## **Acknowledgments**

The committee would like to thank each Department Head and faculty member who took time from their busy schedule to fill in yet one more questionnaire in a year of questionnaires. The high response rate is a testimony to the commitment of these individuals to their students and their learning/teaching role.

The committee would also like to acknowledge and thank Jon Nightingale and Malcolm Greig, both of University Computing Services, for their assistance in preparing the questionnaire and the report, and in analyzing the responses.

## **References**

- a. Electronic Learning, November/December 1991, Vol 11, No 3.
- b. *Instructional Delivery Systems*, July/August 1991.
- c. *Videodiscoversy, Educational Videodisc Catalog*, 1990-91.
- d. Helen Skala, University of Wisconsin - La Crosse, *Computer Graphics Applications in a Complex Analysis Course*, IBM Academic Computing Conference, June 1991.

<sup>1</sup> EDUCOM is a non-profit consortium of more than 500 colleges and universities and other institutions, founded in 1964 to facilitate the introduction, use, and management of information technology in higher education. It provides a forum for the exchange of ideas on computer applications that address critical issues in technology for higher education. EDUCOM holds a major conference each year in October.

<sup>2</sup> The National Center for Research to Improve Postsecondary Teaching And Learning was founded at The University of Michigan with a grant from the U.S. Department of Education's Office of Educational Research and Improvement. The center was closed in 1991.

# Meet UBC's Board of Governors

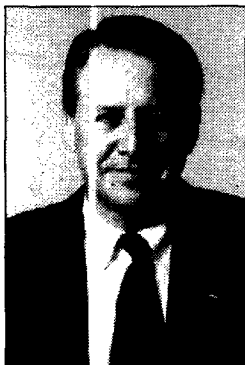
UBC's Board of Governors is responsible for the management, administration and control of all aspects of the university's operations, including its property, revenue and the appointment of senior officials and faculty.

Under the University Act, the Board of Governors comprises the chancellor, the president, eight persons appointed by the cabinet of the provincial government, two faculty members elected by the faculty, two full-time students elected by the students and one person elected by and from the full-time employees of the university who are not faculty members.

The 1992 members of the UBC Board of Governors are:

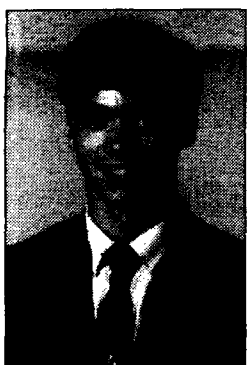
**KENNETH BAGSHAW, Q.C.**, chair of

UBC's Board of Governors, was appointed to the board in 1987. He completed three years of an undergraduate Arts program at UBC before graduating from the university's Faculty of Law in 1964, receiving the Law Society Gold Medal for first place standing. Bagshaw is a partner with the Vancouver law firm Ladner Downs and specializes in business, transportation and engineering law. He is active in community affairs and served as president of the Vancouver Art Gallery.



*Bagshaw*

**JARET CLAY**, a graduate of UBC's



*Clay*

Faculty of Science, was elected by students to the board in 1992. He received a B.Sc. in Biopsychology in 1992 and intends to pursue a career in chiropractic medicine in the fall of 1993. Clay has served as a senior director of Intramurals, on the executive of the Psychology Students' Association and as a member of the Science Undergraduate Society executive. He has worked extensively with the mentally handicapped and currently serves as co-ordinator of AMS Frosh Week.

**BARBARA CROMPTON**, founder and

president of The Fitness Group, was appointed to the board in 1990. The Fitness Group specializes in exercise, nutrition and stress management programs in the commercial and corporate sectors. A graduate of UBC (B.Ed. '72),



*Crompton*

Crompton received the Maxwell A. Cameron Award in her graduating year for academic excellence and most outstanding teaching performance in the Faculty of Education. She was recently appointed to the board of the Vancouver Board of Trade as well and to the board of IDEA, a 30,000 member organization of fitness professionals.

**RONALD GRANHOLM**, president and



*Granholm*

CEO of Computrol Security Systems, was appointed to the board in 1987. He graduated from B.C.'s Institute of Chartered Accountants in 1959, specializing in general and financial management. He received an MBA from Simon Fraser University in 1972. Granholm was past chair and governor of the Business Council of B.C. and is active with the Vancouver Art Gallery. He is a past director of the Vancouver Board of Trade, B.C. Transit and the Metropolitan Transit Operating Company.

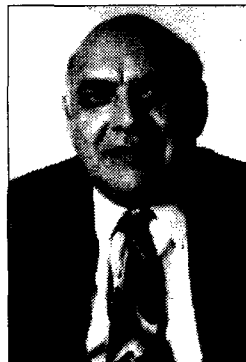
**ARTHUR HARA**, chairman of the board of

Mitsubishi Canada Ltd., was appointed to the board in 1987. A native of Vancouver, he attended Kobe University of Economics in Japan and is a graduate of the Advanced Management Program of the Harvard School of Business Administration. Hara also serves as chair of the board of the Asia Pacific Foundation. He was invested as a Member of the Order of Canada in 1985 and was elevated to Officer of the Order of Canada in 1992. He was presented with an honorary LLD from UBC in 1990.



*Hara*

**ASA JOHAL**, founder and president of Terminal



*Johal*

Sawmills Ltd., and president and CEO of Terminal Forest Products Ltd., was appointed to the board in 1990. Born in India, he emigrated to Canada at age two and attended school in south Vancouver. Johal is president of the International Punjabi Society of B.C., a director of B.C.'s Children's Hospital and a patron of Science World. He received an honorary LLD from UBC in 1990, the Order of B.C. in 1991 and was named a Member of the Order of Canada in 1992.

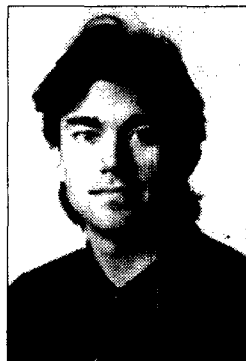
**TONG LOUIE**, chairman and CEO of H.Y.

Louie Co. Ltd., was appointed to the board in 1990. A UBC graduate (Agriculture '38), Louie is also chairman, president and CEO of London Drugs Ltd., and vice-chairman and director of IGA Canada Ltd. He was named Entrepreneur of the Year for B.C. in 1987 and was awarded with the Outstanding Community Volunteer Leader Award by the YMCA of Greater Vancouver in 1988. Louie was named a Member of the Order of Canada in 1989 and was presented with the Order of B.C. in 1991. He received an honorary LLD from UBC in 1990.



*Louie*

**DEREK MILLER**, a graduate of UBC's



*Miller*

Faculty of Science, was elected by students to the board in 1991. He received a B.Sc. in Marine Biology in 1990 and has recently completed a diploma program in Applied Creative Non-fiction Writing at UBC. Miller received the 1991 Outstanding Contribution Award from the Science Undergraduate Society for his work with The 432 student newspaper. He is a member of the Canadian Science Writers' Association and currently serves as a director of the Alma Mater Society.

**SIDNEY MINDESS**, a UBC professor

of Civil Engineering, was elected by faculty to the board in 1987. Born in Winnipeg, he received his undergraduate degree at the University of Manitoba before attending Stanford University where he received MS and PhD degrees in Civil Engineering. Mindess holds fellowships with the American Ceramic Society and the American Concrete Institute. His special areas of interest include the properties of concrete as a construction material and materials testing.



*Mindess*

**DOUGLAS NAPIER**, a steamfitter in the

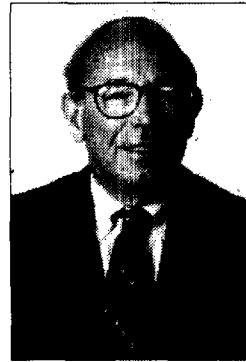


*Napier*

Dept. of Plant Operations, was elected by staff to the board in 1990. He apprenticed as a steamfitter and pipefitter for five years after graduating from high school in Vancouver. Napier joined UBC in 1972 and has been actively involved as a member of the university's Health and Safety Committee. He also served in various capacities with the Canadian Union of Public Employees, Local 116, for more than 15 years and is involved with numerous community associations.

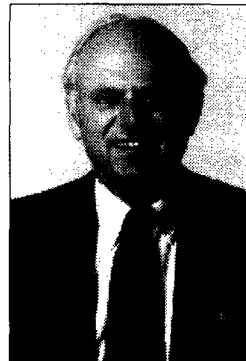
**RICHARD NELSON**, former chair and CEO

of B.C. Packers Ltd., was appointed to the board in 1987. Born in New Westminster, he received a B.A.Sc. in Mechanical Engineering from UBC in 1953 and earned a master's degree in Business Administration from the Harvard Graduate School of Business Administration in 1955. Nelson serves as a director of Toronto-based George Weston Ltd. and the Manufacturers Life Insurance Co., as well as a director of the Vancouver Port Corporation.



*Nelson*

**MICHAEL PARTRIDGE**, regional vice-



*Partridge*

president of group sales for London Life Insurance Co., was appointed to the board in 1991. A UBC graduate (B.Comm. '59), he has served as vice-president and president of the UBC Alumni Association and was co-chair of the David Lam Management Research Endowment Fund. Partridge received the Blythe Eagles Volunteer Service Award in 1987 and was a recipient of the 1990 UBC Alumni 75th Anniversary Award of Merit.

**DENNIS PAVLICH**, a UBC professor of

Law, was elected by faculty to the board in 1990. He received both his undergraduate and LLB degrees from the University of Witwatersrand in Johannesburg, South Africa before graduating from Yale University Law School with an LL.M. degree in 1975. Pavlich has served as an attorney of the Supreme Court of South Africa and as a member of the Canadian Association of Law Teachers. His research and scholarly activities include real property law.



*Pavlich*

**LESLIE PETERSON, Q.C.**, Chancellor of



*Peterson*

UBC, has served continuously as a member of the board since 1978. He received his post-secondary education in Alberta, Quebec and England before receiving his LLB from UBC in 1949. He was an elected member of B.C.'s Legislative Assembly between 1956 and 1972, serving as minister of Education, minister of Labor and as Attorney General. Peterson is a senior partner with the Vancouver law firm Boughton Peterson Yang Anderson and specializes in commercial, corporate, transportation and administrative law. He is a member of the Order of B.C.

**DAVID STRANGWAY** became a member

of the board upon being appointed president and vice-chancellor of UBC in 1985. The son of medical missionaries, he attended school in Angola and Rhodesia before entering Victoria College at the University of Toronto in 1952 where he earned undergraduate and graduate degrees in Physics. Strangway was a faculty member at the University of Colorado and at the Massachusetts Institute of Technology before joining the Physics Dept. at U of T in 1968. In 1970, he became chief of NASA's Geophysics Branch, responsible for the geophysical aspects of the Apollo missions.



*Strangway*

September 6 -  
September 19

**Diet Composition/Muscle Function Study**



Healthy, non-smoking, sedentary males, 18-35 years needed for 2 testing periods, 10-12 days each. Metabolic rate, body composition and muscle function tested. All meals provided; must be consumed at Family/Nutritional Sciences Building. Call 822-2266.

**High Blood Pressure Clinic**



Volunteers (over 18 years) needed, treated or not, to participate in clinical drug trials. Call Dr. J. Wright in Medicine at 822-7134.

**Seniors Hypertension Study**

Volunteers aged 60-80 years with mild to moderate hypertension, treated or not, needed to participate in a high blood pressure study. Call Dr. Wright in Medicine at 822-7134.

**Drug Research Study**

Male and female volunteers required for Genital Herpes Treatment Study. Sponsoring physician: Dr. Stephen Sacks, Medicine/Infectious Diseases. Call 822-7565.

**Heart/Lung Response Study**

At rest and during exercise. Volunteers aged 35 years and up of all fitness levels required. No maximal testing. Scheduled at your convenience. Call Marijke Dallimore, School of Rehab. Medicine, 822-7708.

**Memory Study**

Interested participants ages 18-75 are invited to come to test their memory as part of study on self-rated and objective memory testing. Call Dina at 822-7883.

**Retirement Study**



Women concerned about retirement planning needed for an 8-week Retirement Preparation seminar. Call Sara Comish in Counselling Psychology at 931-5052.

**Jock Itch Study**

Volunteers 18-65 years of age are needed to attend 5 visits over an 8-week period. Honorarium: \$100 to be paid upon completion. Call Dermatology at 874-6181.

**Stress/Blood Pressure Study**

Learn how your body responds to stress. Call Dr. Wolfgang Linden in Psychology at 822-3800.

**Surplus Equipment Recycling Facility (SERF)**

Disposal of all surplus items. Now offering working refrigerators (apartment size) for \$50. Every Wednesday, 12-5pm. Task Force Bldg., 2352 Health Sciences Mall. Call Rich at 822-2813/2582.

**Fitness Appraisal**

Administered by Physical Education and Recreation through the John M. Buchanan Fitness and Research Centre. Students \$25, others \$30. Call 822-4356.

**Faculty/Staff Non-Contact Hockey**



Faculty/staff members over 50 years of age who are interested in playing recreational, non-contact hockey are invited to come to the UBC arena on Monday evenings from 5:15-6:30pm. Call Lew Robinson at 224-4784.

**Botanical Garden**

Open daily from 10am-6pm. Free admission Wednesday. Call 822-4208.

**Nitobe Garden**

Open daily from 10am-6pm. Free admission Wednesday. Call 822-6038.

# UBC Physics leads country in honors, awards

By GAVIN WILSON

When Physics Professor Robert Kiefl accepted the Herzberg medal as Canada's outstanding young physicist of the year this summer, it was the latest in a long line of accolades for what has become the most celebrated physics department in the country.

Members of UBC's Physics Dept. have won the Herzberg award in three of the past four years, even though the competition is open to all young Canadians physicists. Kiefl's award brought to six the total of Herzbergs awarded to the department over the years.

Other awards tell the same tale. For example, of the 30 Steacie prizes presented by the Natural Sciences and Engineering Research Council since the award's inception, seven have gone to UBC — four of those to members of the Physics Dept. And this is an award open to every science and engineering faculty member in Canada.

As well, UBC claimed 12 of the largest 40 NSERC operating grants awarded to physicists recently, more than any other physics department in the country. Faculty members also win campus-wide teaching awards.

"We have reached a critical mass of very good people," said department Head Brian Turrell, "and that attracts other good people."

Research associates, post-doctoral students, and visiting professors are all drawn to the department by the presence of these top-ranked professors. So many are arriving, in fact, that Turrell does not have office space for all of them.

As well as UBC's reputation and Vancouver's desirability, Turrell credits the department's recruiting philosophy, its close ties to the Canadian

Institute for Advanced Research (CIAR), its excellent technical shops, and the proximity to facilities such as TRIUMF for its success in building a strong faculty.

The department looks at more than teaching and research abilities when recruiting faculty. It favors those who have a wide interest in all aspects of physics and who enjoy interacting with other physicists as well as researchers in other disciplines.

"This makes for a department where new ideas are generated and exchanged all the time," said Turrell.

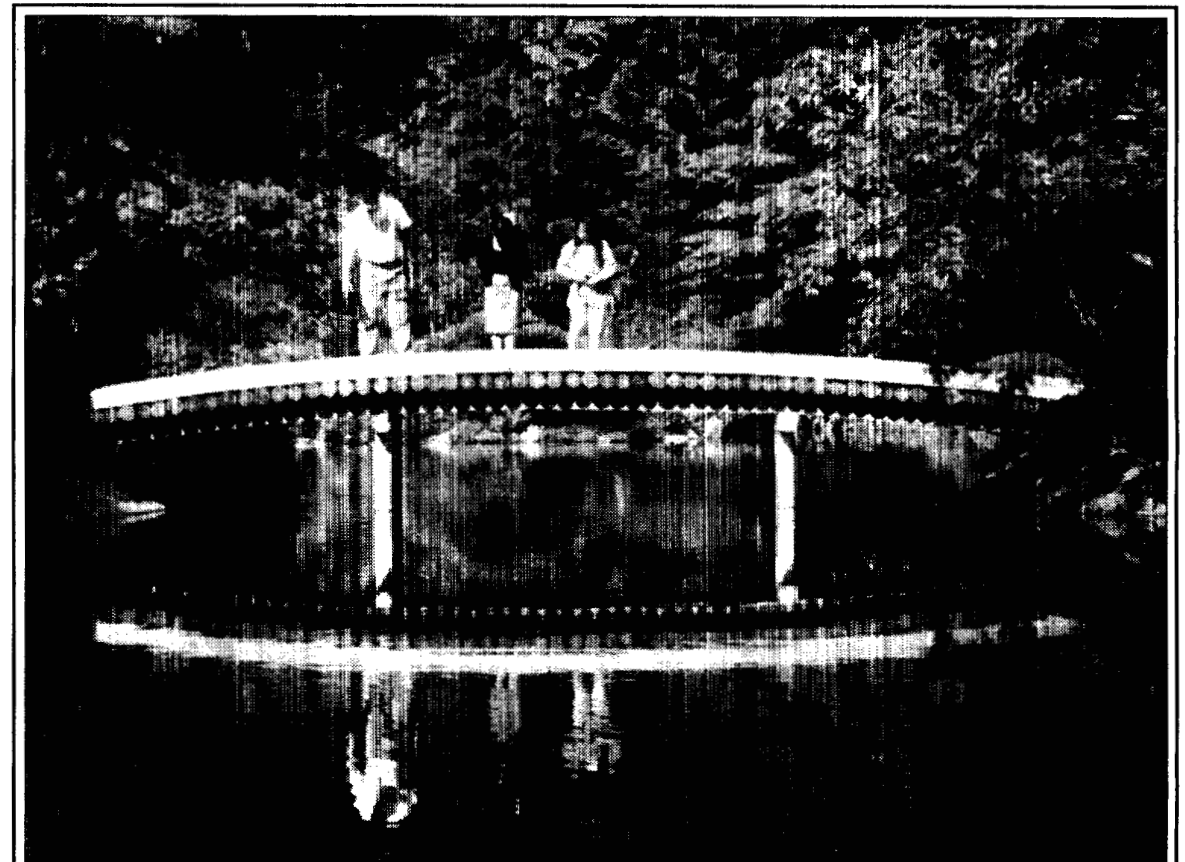
The department also holds weekly colloquia featuring a broad range of speakers. Turrell describes it as "a real focal point for graduate students and faculty."

Other eminent visiting speakers have included Stephen Hawking, celebrated author of A Brief History of Time.

The CIAR, a private institute that encourages high-level research in Canadian-based international networks, is also a drawing card for the department.

UBC Physics has seven CIAR members, more than any other university department in the country, and it was one of the factors that lured Professor Ian Affleck away from Princeton. The CIAR also provides funding and links the department to top researchers worldwide.

The university's proximity to TRIUMF is also a plus, not only for particle physicists, but also for condensed matter physicists who use particles called muons to probe such materials as high-temperature superconductors. The addition of the proposed KAON factory will further enhance the department's reputation, Turrell said.



*Late summer reflections*

Photo by Charles Ker

Waning August sunshine catches trio of Nitobe visitors in reflection on tranquil garden pond.

**Eases parking squeeze**

# Parkade opens in November

By ABE HEFTER

The first of four proposed parkades included in the five-year parking plan is expected to open in November.

The West Parkade near Gate 6 will improve the parking situation on campus this fall, said John Smithman, director of Parking and Security Services.

However, Smithman added, until it is completed, it may be difficult to find a convenient parking spot.

"Over the summer, more space was lost due to construction on prime parking lots. The West Parkade will result in the recovery of 1200 of those spaces.

"Drivers are being encouraged to leave their cars at home in favor of alternate forms of transportation,

while we build parkades to replace the lost space."

Smithman said many programs supporting transportation alternatives exist on campus, including car pools, van pools, commuter matching programs, portable permits and bicycle incentives.

"Many have already joined campus car and van pools. These are excellent ways to decrease our environment and reduce your individual expenses."

The campus has lost parking space for nearly 4,000 cars, resulting in the reduction of available parking in all areas, including the student residential overflow. However, student residential overflow parking is being developed south of Thunderbird Boulevard on the sides of Osoyoos Crescent,

East Mall and West Mall.

"In spite of our losses, when compared to other campuses across North America, UBC has parking services which are second to none in meeting community needs," said Smithman.

Under current plans, the university will regain all lost space by 1998. Smithman said graduated annual increases in parking fees are necessary to pay the cost of building new parkades. Those who pay annual fees by payroll deductions will notice a monthly increase of six dollars in October parking deductions.

New parkades are planned for Northwest Marine Drive in 1994, McInnes Field in 1995 and University Hospital in 1997. Those three parkades will result in an additional 4,000 parking spaces.

# Imaging sonar mimics bats, whales

By GAVIN WILSON

Taking a cue from killer whales and bats, UBC Assistant Professor Matthew Yedlin is using chirps instead of single sound pulses to test a new acoustic remote-sensing device.

Yedlin, who holds a joint appointment in the departments of Electrical Engineering and Geophysics and Astronomy, and is a faculty member at the Centre for Integrated Computer Systems Research, is working on imaging sonar systems.

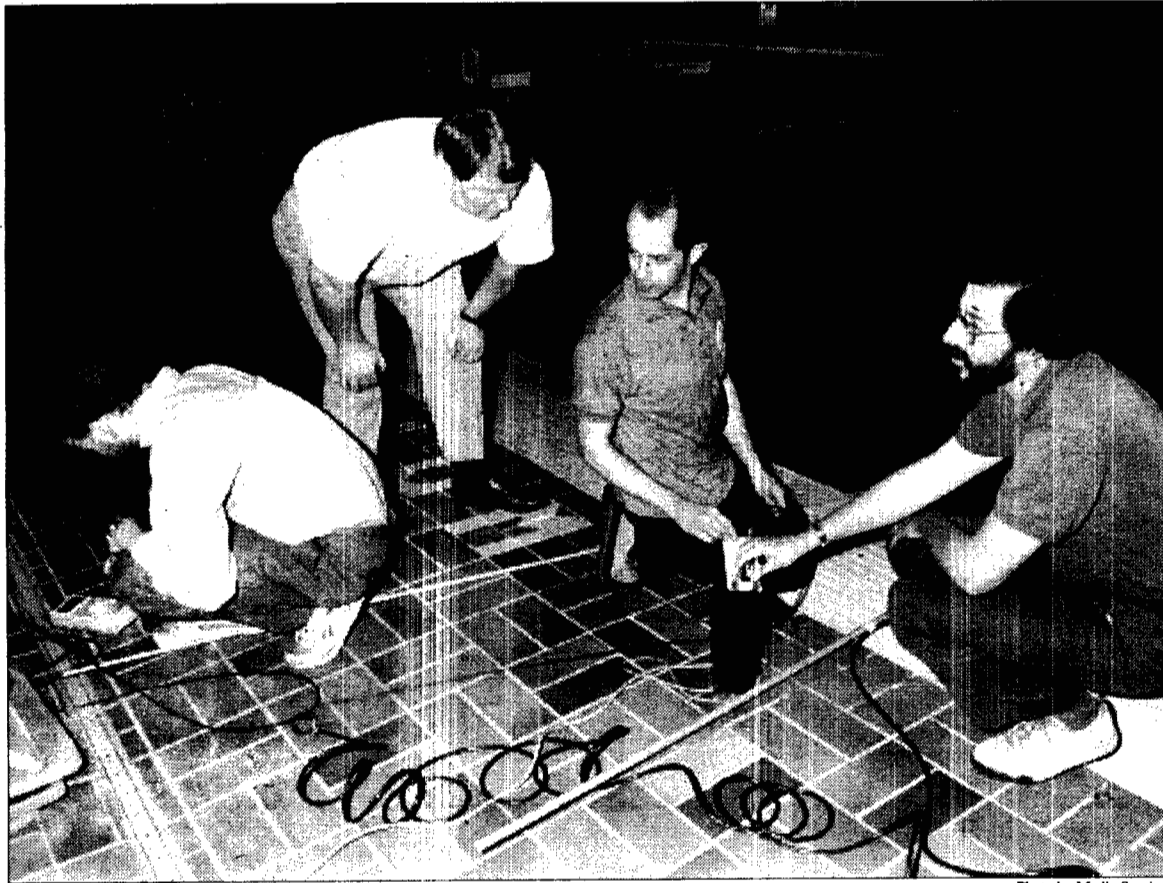
His device, which represents a significant improvement over conventional sonar systems, developed out of research originally conducted with Electrical Engineering Professor Edward Jull.

Future applications of Yedlin's research include environmental tomography, fish counting and medical imaging. This acoustic imaging device is also very useful as a teaching tool to demonstrate the interaction of sound waves with complicated topographical structures.

While earlier versions of the device used millisecond-long pulses, the current apparatus emits a 69-millisecond chirp, which is synthesized on a computer and transmitted to a speaker.

The sound waves travel through the air, reflect from the target and are recorded by a microphone which is also connected to the computer.

An optimal matching technique, commonly used in chirp radar, is then used to calculate the distance to the target.



Testing an acoustic remote-sensing device at the UBC Aquatic Centre. From left, student Garfield Mellema, centre manager Jim Bremner, Prof. Matthew Yedlin and researcher Barry Narod.

This process is repeated from different positions, resulting in an image of the target. A chirp is used instead of a pulse to eliminate the bell-like reverberations of the speaker and to deliver more acoustic energy to the target.

Bats and killer whales emit chirps to locate a target such as an insect or fish, and perform a similar matching procedure as they track it.

Yedlin said his experiments, conducted with former students Garfield

Mellema and Paul Milligan, and colleague Barry Narod, have been simple and inexpensive to build. An extensive software library, written by Mellema, enabled the rapid and accurate collection of data.

Yedlin's device has proven so sensitive that it can detect as few as three layers of tape on a tabletop.

"People are surprised that it is actually able to detect the edge of the tape which is .33 millimetres higher than the surface of the table," he said.

Detection and resolution of these small surface irregularities has prompted Yedlin to expand his studies to imaging in water as well as solid materials. Preliminary tests have been done at the UBC Aquatic Centre.

The most recent test of this technology has been conducted underground in collaboration with Ernie Majer, director of the geotomography group at the Lawrence Berkeley Laboratory, University of California, Berkeley.

In these experiments, a speaker was lowered into a water-filled borehole and chirping sounds emitted by the speaker were successfully recorded in another borehole five metres away.

This recorded data will be used to obtain a two-dimensional image of material in the ground between the boreholes. This is a process known as geotomography, a technique for the reconstruction of an object from its shadow.

This summer, Yedlin is a visiting scientist at the Lawrence Berkeley Laboratory, conducting further tomographic experiments.

## Boosting attendance aim of Shrum Bowl organizers

By ABE HEFTER

This year's edition of the Shrum Bowl between UBC and Simon Fraser University promises to be more than just a football game.

One of the aims of an organizing committee struck to give the annual encounter more continuity is to make it more of a community event.

"We have seen as many as 14,000 jam the stands when the Shrum Bowl was held at Empire Stadium," said Kim Gordon, co-ordinator of interuniversity athletics at UBC and one of the organizing committee members.

"However, in recent years, attendance has slipped. We hope to fill Thunderbird Stadium with 6,000 fans for this year's game, September 12, through a series of key promotional endeavors."

One of the promotions will feature a reduced rate for family ticket purchases, through a coupon promotion with the Vancouver Province newspaper.

The committee's efforts have been enthusiastically received by the Alma Mater Society and other student groups, UBC football alumni and Vancouver-area business, said Gordon:

"In the past, planning for each Shrum Bowl game was left to the respective athletic departments at UBC and SFU, with each university hosting the game in alternating years," she explained.

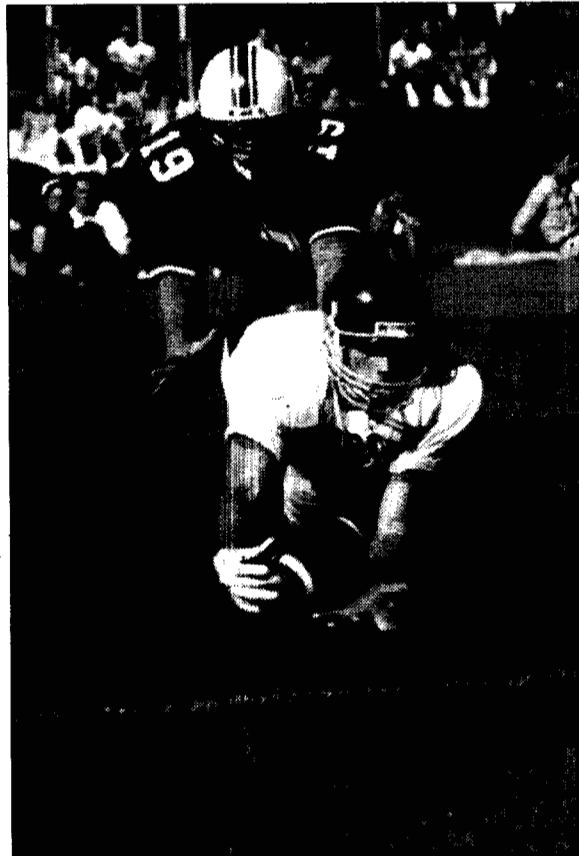
"With strong representation from both universities on a central committee, the Shrum Bowl will receive the ongoing support that it deserves."

The chair of this year's Shrum Bowl organizing committee is Calgary lawyer and former Canadian Football League commissioner Doug Mitchell, a UBC alumnus and former T-Bird football player.

UBC representation on the committee comes from Bob Philip, director of Athletics and Sport Services; former director Bob Hindmarch; Michael Kelly, director of Athletic and Sports Facilities; Don Wells, sports information officer; AMS President Martin

Ertl; Cairen Hanert, AMS director of administration; and Jaret Clay, student representative on the Board of Governors.

The Shrum Bowl was conceived in 1966 to bring together two university football teams that play in the same city, but in different leagues, under different rules, and in different countries.



UBC wide receiver Rob Neid dives for ball during last year's Shrum Bowl game.

UBC plays Canadian football against Canadian universities, while SFU competes in an American League that uses U.S. rules.

Simon Fraser holds a slight edge in competition with a record of 8-6-1, scoring a 20-17 victory in Shrum Bowl XV last year before 5,100 fans at Swangard Stadium in Burnaby.

## Masters Swim Club conquers English Channel

By ABE HEFTER

Dr. Debbie Carlow of Vancouver got to see a little of England and France last month. However, you could hardly call it a summer vacation.

Carlow and five other members of the UBC Masters Swim Club successfully completed a double relay swim of the English Channel Aug. 6. Their 90-kilometre, round-trip took them from Shakespeare Beach, southwest of London, to Cap Gris Nez, France, in 18 hours and 48 minutes.

Each team member swam for three hours, except for Carlow, who put in a fourth hour as the last swimmer home.

It was the first double relay crossing of the English Channel by a Canadian swim team. Carlow, a 32-year-old physician who graduated from UBC medical school in 1990, said her only regret is that the team didn't plan for a triple swim.

"If I could have done it all over again, I would have prepared and planned for a triple swim. Only one other swim team has ever completed a tri-

ple, but, who knows, that might be in our future plans."

Carlow, the team captain, was joined by Shane Collins, John MacMaster, Rob Carpenter, Roy Goodman and Ira Leroi, a fourth-year medical student at UBC.

"There are about 135 members of the UBC Masters Swim Club, which is composed of competitive and recreational swimmers over the age of 25 who train four times a week at the UBC Aquatic Centre. The relay team came together out of that group in January."

Intensive training, which included ocean swims in English Bay and at Ambleside Park, began in March. Water temperatures there were in the 15C range, similar to the conditions they would face in the channel. Carlow said that, as a result, they knew what to expect when they hit the waters off the shores of England.

"We arrived there at the end of July. Our window of opportunity came about a week later, when there was the least amount of difference between low and high tide, in perfect weather."

People

# Stanton named 3M Teaching Fellow

Susan Stanton, a senior instructor of Occupational Therapy in the School of Rehabilitation Medicine, has been named a 1992 3M Teaching Fellow.



Stanton

The fellowships, created in 1986, recognize Canadian university educators who excel in their teaching fields and demonstrate a high degree of leadership and commitment to the improvement of university teaching and learning across disciplines.

Stanton received a UBC Excellence in Teaching Award in 1990.

recently been elected vice-president of the CMOS.

Associate Professor **Mike Tretheway** has been appointed director of teaching development for the Faculty of Commerce and Business Administration.

Tretheway will chair the faculty's teaching development and curriculum committees for the 1992-93 academic year.

The aims of this new position are to continue to improve the quality of teaching and to improve the quality of the curriculum that the faculty has to offer.

Tretheway, at UBC since 1983, teaches in the Transportation and Logistics Division and is a recipient of the Arne Olsen Master Teacher Award.

**Michael Isaacson** has been named as the new head of the Dept. of Civil Engineering, replacing William Oldham, who held the position for eight years.

Isaacson has been assistant head and undergraduate advisor in the department for the past three years, and was previously the department's graduate advisor.

Isaacson's area of research is coastal and ocean engineering, with particular emphasis on ocean waves and their effects on coastal and offshore structures.

His research has focused on such topics as motion response analyses of floating structures, the design of marinas and coastal structures such as breakwaters and wharves, tidal flushing of coastal inlets, and tsunami inundation studies.

Professor **Paul Watkinson** has replaced Kenneth Pinder as head of Chemical Engineering, effective July 1.

Watkinson was instrumental in forming the UBC Coal Research Centre (which has since ceased operations) and served as its director for five years.

Watkinson's research into rotary kilns illustrates the application of chemical engineering techniques to metallurgical processes.

His work in coal research, particularly in gasification and pyrolysis, and in fouling of heat exchangers, helped establish UBC's international reputation in these areas.

**Gordon McBean** has been appointed head of the Dept. of Oceanography.

McBean received his B.Sc. in Physics at UBC and his PhD in Oceanography from UBC's Institute of Oceanography, predecessor to today's department.

A professor and formerly chair of the Atmospheric Science Program in the departments of Geography and Oceanography, McBean is chair of the International Scientific Committee for the World Climate Research Program and a member of international and national committees on climate and global change.

He was awarded the 1975 President's Prize of the Canadian Meteorological and Oceanographic Society (CMOS) and the 1989 Patterson Medal of Environment Canada. He has also

Animal biochemist **James Thompson** has been named as professor and head of the Dept. of Animal Science, effective July 1.

Thompson comes from the University of Alberta, where he was a professor of Animal Biochemistry and, from 1984 to 1989, an associate dean of the Faculty of Graduate Studies and Research.

His research focuses on nutrition and the regulation of intermediary metabolism in both mammals and birds. He will be expanding this research at UBC into the field of animal biotechnology.

As well, Thompson is currently an associated editor of the Canadian Journal of Animal Science.

Information Librarian **Brenda Peterson** has been elected to a one-year term as president of the Academic Women's Association.

The association was formed in 1976 to encourage and promote equal opportunities for women to participate fully in all aspects of university affairs. It also provides a forum for discussion on matters affecting women at UBC.

Membership is open to all women holding temporary or tenured full-time and part-time academic appointments at UBC.

Peterson has been a member of the association since joining the staff of the UBC Library in 1983, and she served as a member of Senate for the past two years. She received both an undergraduate degree in History and a Master's of Library Science degree at UBC.

**Gene Namkoong**, a professor of genetics from North Carolina State University, has been appointed department head of Forest Sciences in the Faculty of Forestry.



Namkoong

His appointment was effective Sept. 1.

Namkoong's research deals with population genetics and breeding for forest trees, as well as biology and bio-diversity.

He recently received the forest service superior scientist award from the United States Dept. of Agriculture. He was also a visiting professor at Seoul National University.

# Jobs, alcohol costly mix

By ABE HEFTER

Alcohol and other drug abuse cost Canadian business an estimated \$15 billion a year, according to a recent survey.

Nowhere is the problem potentially more serious than in the transportation industry, says Len Henriksson, a post doctoral fellow in the Faculty of Commerce and Business Administration.

"The transportation industry involves large, fast-moving vehicles, split-second timing, precious cargoes of goods and passengers, and, at times, hazardous materials."

However, Henriksson added, it's a problem that is not unique to the transportation industry.

At a transportation management forum hosted by Executive Programs in the Faculty of Commerce and Business Administration, Henriksson will address the many basic concepts which he says would apply in just about any business setting.

Familiarity with the basic issues, and the responses available to them, will help managers make better-quality decisions as they attempt to come to grips with the problem of alcohol and other drug abuse in the workplace, he explained.

"The seminar will describe the nature of alcohol and other drug abuse, its impact on industry, and what can be done about it."

Henriksson said the problems associated with alcohol and other drug abuse include increased absenteeism, turnover, accidents and workers' compensation claims, increased discipli-

nary proceedings and decreased productivity, workplace morale and customer service.

"Finding appropriate organizational responses is an inexact science at best," Henriksson said. "There are no quick-fix solutions."

During the seminar, a team of expert speakers will show the participants the broad range of responses available to organizations, and the important medical and labor relations issues relating to alcohol and other drug abuse. Legal concerns will also be addressed, including federal anti-drug requirements expected in the new year.

Participants will also learn the essentials of the performance-based approach to management of problem cases.

"Managers are more skilled at evaluating performance than they are at diagnosing addiction," Henriksson said.

"That's why it is important to distinguish between performance problems such as sporadic work quality, accidents and absenteeism or tardiness, and

the so-called warning signs that might or might not be drug-related."

Henriksson said warning signs include low self-esteem, a change in dress or hygiene, family or marital difficulties and frequent requests for pay advances or transfer.

At the seminar, a panel of industry representatives will describe their efforts to combat the problem and the results that have been achieved.

"Although we always need to remember that alcohol and other drug abuse is only one of the many significant threats to occupational safety and health, its economic and human consequences are serious," Henriksson explained.

"We think our program is an important way of reaching out to the community for that reason."

The seminar, Meeting the Challenges of Alcohol and Other Drug Abuse, will be held at the Ramada Renaissance Hotel in Vancouver Sept. 30-Oct. 1. For more information, contact UBC Executive Programs at 822-8400.

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# Arts One: Alive and well at 25

By **TREVOR MORRISON** and **NADJA DURBACH**

UBC's Arts One program is celebrating its 25th anniversary.

What began in 1967 as a "pilot" program in the Faculty of Arts, today boasts some 5,000 graduates. Without a doubt, the program has emerged as a distinctive and valued feature of undergraduate education at the university.

Arts One means different things to different people.

Graduate Doug Todd, now a columnist for the Vancouver Sun, remembers the program as a comfortable introduction to university because of the support he received from his peers and instructors. For Todd, Arts One was "one of many communities which have played significant roles" in both his personal and professional life.

Ruth Baldwin, currently completing a degree in honors English, entered Arts One after being away from school for over 20 years.

After such a long absence, Baldwin was understandably apprehensive about her first year at UBC. As a mature student with little academic confidence, Baldwin found Arts One an "exciting and unthreatening" re-introduction to learning.

It is not merely the close-knit community experience that makes Arts One unique. The program is unparalleled in its dedication to instilling in students the skills of critical and independent thinking.

Using an interdisciplinary approach, students and faculty collaborate through small seminars and tutorials as well as regular weekly lectures. With an average ratio of one faculty member for 20 students, it makes learning an

active, rather than passive, process. The curriculum, comprising works from Ovid and Plato to Forester and Rushdie, attempts to explore Western civilization while exposing students to cross-cultural challenges to this tradition.

Susan Mendelson, owner of Vancouver's The Lazy Gourmet store, spent her year in Arts One exploring the theme "Ways of Knowing." She said the program broadened her approach to learning and made her realize that "there are many acceptable ways of being and thinking, and that traditional boundaries can and should be challenged."

As curator of the Fine Arts Gallery at UBC, Scott Watson said the program is invaluable because "contemporary thought can no longer be confined to disciplines whose boundaries date to Medieval times."

Former students are virtually united in identifying Arts One as an ideal first year program that forms a broad foundation for further study. It enabled them to see beyond

the boundaries of their field, and to incorporate other disciplinary methods and ideas into their later work.

From its experimental beginnings, Arts One remains a popular and dynamic program comprising 200 eager students and 10 interested faculty each year.

Although the 25th anniversary is a time to celebrate Arts One's past, it is also an opportunity to examine the future of liberal arts education and the role it should play.

To mark this anniversary, on Sept. 26, during Homecoming weekend, a full day of events has been planned. This will include a session at which Bob Rowan, one of the original architects of Arts One, will present his vision of the program and then engage in discussion and debate in the Arts One style with a panel of former students.

In addition, there will be a formal presentation by a distinguished guest on the role of the humanities in contemporary university education. The day will finish with a reception at Cecil Green House for former faculty and students as well as interested members of the general public.

For those wishing more information on the day's events or who are interested in helping track down former Arts One students, please contact us at 822-3430.

*Trevor Morrison and Nadja Durbach graduated from Arts One in 1989.*

*The caricature of former Arts One faculty members adorned the program's brochure a decade ago. Professors, clockwise from top left, are: Paul Burns, Geoffrey Durrant, Geoffrey Creigh, Frank Whitman and Ian Slater.*

In the Aug. 13 Forum, Philip Allingham was incorrectly referred to as a professor of English. He is, in fact, a former sessional lecturer in the Dept. of English.

"...traditional boundaries can and should be challenged."



## Child care demands varied

By **CHARLES KER**

A \$3-million child-care study has found that 60 per cent of Canadian mothers with children under 13 work and are in need of child-care support. Equally significant is that slightly less than half these mothers work irregular hours.

"We've always known that the demands for quality day-care spaces far outstrip supply," said UBC Professor Hillel Goelman, one of four co-investigators in the Canadian National Child Care Study. "We now know these demands are far more varied and complex than previously imagined."

Based on interviews conducted by Statistics Canada in 1988, the study profiles the child-care needs of more than two million families with at least one child under 13. With information drawn from one in every 90 Canadian households, it represents the most extensive research project of its kind undertaken anywhere.

Goelman, an associate director and associate professor of early childhood education at UBC's Centre for the Study of Curriculum and Instruction, said the study's data will force governments to take a more critical look at formulating strategies.

"In the past, a lot of people have guessed at the scope of our child-care problem," said Goelman. "We're now supplying accurate numbers which policy-makers can use to make informed decisions."

In the first of 15 reports, the research team found that child care was used for an estimated 2.7 million children to support parental employment. This included 276,000 infants under 18 months, 276,500 toddlers, 585,100 preschoolers (three- to five-year-olds) 861,400 children six to nine years and 660,700 children 10-12 years old.

Other highlights of the initial report include:

- both parents in 67 per cent of dual-income families, even those with children younger than three, worked full time;

- almost one in six dual-earner couples deliberately arranged work hours to suit child-care needs;

- among the 1.5 million working parents primarily responsible for arranging child care, 28 per cent worked at least one weekend day, 63 per cent had fixed, daytime hours ending at 6 p.m., and 28 per cent worked irregular hours.

The study's second report, to be released later this month, will focus

on where the children are being cared for while their parents work or study.

Goelman said about 57 per cent of children under the age of 13 spend an average of 18 hours a week in some form of non-parental care. He added that the majority of these were in informal or unlicensed family day-care homes.

Goelman also noted that just three per cent of infants of working parents were enrolled in licensed, day-care centres. The largest proportion (18 per cent) of infants were cared for by a relative in the relative's home or in an unlicensed family day care home.

Says Goelman: "If 60 per cent of mothers are working and just three per cent of small kids are in licensed day care, then we've got a major problem."

In a subsequent report he is currently writing, Goelman said the research team will look at what kind of child care arrangements Canadian parents prefer.

The Canadian National Child Care Study is funded primarily through Health and Welfare Canada with additional funds from the Social Sciences and Humanities Research Council of Canada and the provinces of Ontario and New Brunswick.



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