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Pictures by Don Ryan

Mrs. Eileen Dailly, B.C.'s animated Minister of Education, recently discussed her educational ideas with UBC Assistant Information Officer John Arnett.

CONSULTATION THE KEY IN EDUCATION

By John Arnett

It's probably indicative of the real deep-down feelings of British Columbia's new Minister of Education that one of the first changes to occur within the Legislature under the New Democratic Party government was a small victory for the cause of equal rights for women.

Mrs. Eileen Dailly has long been an advocate of page girls to join the dark-uniformed young boys who scurry back and forth across the floor of the Legislative Chamber carrying messages and glasses of water and otherwise attending to the immediate wants of the legislators.

On Feb. 5, 1969, she made an impassioned plea in the house for page girls stating, at that time, that "in this province and elsewhere in Canada women are not being given equal opportunities to men."

It took a change in government to do it, but on Oct. 12, 1972, Mrs. Dailly's request was granted as the then speaker-designate, Mr. Gordon Dowding, swore in seven page girls for duties during the special October session of the Legislature.

One gets the feeling, in conversation with Mrs. Dailly, that her interest in education is matched only by her concern for women's rights.

WOMEN'S RIGHTS

"When I talk about women's rights, I don't say give women equal opportunities or put them in high positions just because they are women. They have to prove themselves first, just the same as a man."

She leans forward in her chair and continues, earnestly: "But I do say that women should be given the same opportunities as men to advance to the highest positions in whatever field of endeavor they choose."

Warming to her subject, she singles out higher education as an area in which she believes there is distinct discrimination against women.

"I recall when we had the briefs presented to us on tenure (she was a member of the Legislature's Standing Committee on Social Welfare and Education, which was asked to review tenure at B.C.'s three public universities during the last session), one excellent brief came from a women's group at UBC.

"It pointed out how few women there are in positions of authority and responsibility at the University, positions such as heads of Faculties and so on. I would like to discuss this with University authorities.

"I don't intend to interfere with the autonomy of universities, but I would like to find out why there are so few women in these positions of authority and what, if anything, is being done about it.

"It's not only in universities where this occurs. Take government. How many women are deputy ministers? Overriding all of this is an attitude that must be broken down. In the search for a new head of a Faculty or a deputy minister there seems to be a tendency to look at the men first. We have to get this attitude changed and look at the women too."

Hon. Eileen Elizabeth Dailly, Minister of Education, Deputy President of the Executive Countil and Deputy Premier of British Columbia, knows whereof she speaks.

She has proven *herself* in the traditionally male world of politics and she sees no reason why other women can't do likewise.

"I think that I have probably earned the position," she says with an almost mischievous smile. The fact is that as a former school teacher, school trustee and Opposition education critic (and a parent to boot) she is without a doubt one of the best qualified persons ever to assume the post of Education Minister in this province.

Not the *first* woman, mind you. The late Mrs. Tilly Rolston achieved that milestone in the history of women in politics in British Columbia in August, 1952.

But veteran Victoria observers are quick to point out that, with the possible exception of the Attorney-General, Mr. Alex MacDonald, Mrs. Dailly has the best qualifications of any cabinet minister for her post.

Those qualifications enabled her to move quickly on future policy pronouncements that have teachers and trustees excited about the future for education in this province.

Item: B.C. School Trustees' Association President Jack Smedley (after meeting with new minister): "I'm very heartened. (This meeting) heralds a situation that hasn't been in evidence for quite a few years. It is possible to think a consensus will develop, with teachers, as to the direction of education in B.C."

WORK TOGETHER

Item: B.C. Teachers' Federation President Adam Robertson (after the same meeting): "I think we are on the threshold of an area of opportunity to provide a truly worthwhile school system for our children. I see no reason why teachers and trustees can't work in partnership with the Department of Education and its Minister."

Mrs. Dailly has also met with the Presidents of B.C.'s three public universities, but has delayed further pronouncements on higher education policies until after the special session of the Legislature.

First priority: release of the long-secret Perry Report on High Education, completed in 1969 by Dr. G. Neil Perry, then Deputy Minister of Education and a former Deputy President of UBC.

Mrs. Dailly had only been in office for three short

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See EDUCATION MINISTER

A HOT-LINE

CJOR's Jack Webster was hot after the facts during a recent radio interview with Mrs. Dailly. She kept her cool. Some of the questions to do with higher education sounded like this:

MR. JACK WEBSTER: What plans do you have for the Board of Governors at UBC?

MRS. EILEEN DAILLY: We have gone on record as saying that we should change the representation on the boards of governors because we don't feel the spectrum is right.

MR. WEBSTER: Listen, weren't there some orders-in-council slipped through putting people on the Board of Governors after the Social Credit was defeated?

MRS. DAILLY: That's correct Jack.

MR. WEBSTER: We should name some of them . . . no I won't name them because they might be perfectly good people whom you might choose to

EDUCATION MINISTER

Continued from Page One

weeks when she consented to sit down in her office in the Douglas building in Victoria for a short interview with *UBC Reports*.

Short because, at this stage of the game Mrs. Dailly has too many things on her mind to get into a detailed discussion of her educational philosophies.

There are more important things to be done than just sitting talking.

Her king-sized desk is covered with correspondence, files and reports. A dainty china rose-patterned teacup and saucer, half filled with cold tea, rests somewhat precariously on a sheaf of papers.

The late afternoon sun, more golden than usual on this autumn day, slants across the roof of the venerable Parliament Buildings across the street and illuminates a picture of the B.C. Institute of Technology. It is the only picture, other than a rather stern portrait of the Queen, that the former occupant of this somewhat austere office chose to leave behind.

The walls, in need of a paint job, are dotted with fade marks where pictures used to hang. "I have been just too busy to even think about redecorating," Mrs. Dailly says, half apologetically. "I just moved in, sat down and started work and I have hardly looked up since."

It's still too early, after only three weeks in office, to leave the visitor with the impression that it's *her* office. There are none of the feminine touches that will inevitably appear because the occupant, who will no doubt criticize the writer as a male chauvinist for saying so, is a very feminine person. Maybe the transition from so long in Opposition has been too fast to be really believed.

A FAR CRY

On the other end of that black desk telephone are deputy ministers, superintendents of education, fellow cabinet ministers and even the Premier himself. Instant contact at the whirl of a dial. A far cry from Opposition days and busy signals.

But if Mrs. Dailly appears to be uncertain about her new surroundings, there's nothing uncertain about her plans for the future.

She has, as Mr. A.C. Durkin, secretary-treasurer of the Burnaby School Board, where she served as a trustee for 10 years says, "been where it's at."

"She's battled away on behalf of the kids of this province for more than a quarter of a century — 10 years as an elementary teacher; 10 years as a trustee and six years as Opposition education critic. And now she's in the driver's seat."

From the driver's seat the immediate problems, after consultations with departmental officials and heads of the teachers' and trustees' organizations, sounded depressingly familiar.

More money was urgently needed to get some boards out of a serious financial hole and permit them to get on with the job of educating children.

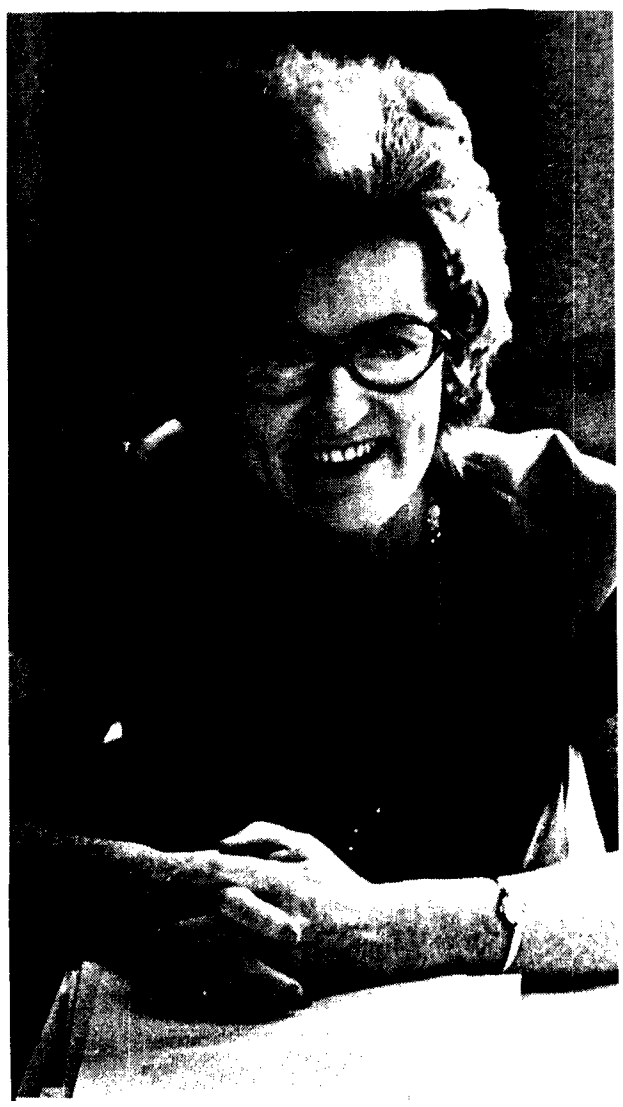
Step on the gas, get moving!

Announcement: $633,870 in emergency financial aid to 28 school districts to enable them to, among other things, hire 18 teachers, 74 teachers' aides, an unspecified number of substitute teachers and purchase some resource materials. That flow of emergency money will continue as more emergencies arise.

Mrs. Dailly is the first to admit that, because of her background in the public school system, she has a far better knowledge of elementary and secondary schools than higher education.

But she has had two years' exposure to post-secondary school education through Grade XIII at John Oliver high school and a year of teacher training at the old Provincial Normal School in Vancouver before it became the Faculty of Education at UBC in 1956.

She's kept in close touch with university problems as



Picture by Don Ryan

MRS. EILEEN DAILY: "The universities must have an opportunity to talk to this department about their needs . . . . there will be consultation with everyone involved — university presidents, faculty members and students."

a member of the Opposition and had no shortage of university contacts to keep her informed on problems faced by the universities.

She says examination of the records shows that the Social Credit government didn't seem to have any policies on higher education at all. The Perry Report was supposed to set up guidelines but was never released.

She shakes her head in wonderment. "It just doesn't make sense. If they thought there was a need to commission the report, why on earth didn't they release it?"

The new NDP government has, on the other hand, some very definite policies with regard to higher education, she adds.

Universities and regional colleges will be governed under a new "Higher Education Act." Under new financing arrangements colleges will probably be financed on the same basis as universities, transferring college costs from local ratepayers to provincial coffers.

There will be a broader community spectrum on the boards of governors of universities, with details yet to be spelled out.

A committee on post-secondary education is to be established to set guidelines and discuss policies. "Before we start making changes which I feel are badly needed, we have to know where we are going. That's why we need a committee," she says.

She's anxious to take a long, hard look at university financing. "There has to be some basis for the financing of universities. I don't know what present grants are based on. I couldn't find out in Opposition, maybe I can find out now."

The Ontario system of making grants to universities has impressed her. "I have talked about that system in the House. They have a weighted formula, so that at least the universities have guidelines in drawing up their budgets.

Mrs. Dailly has noted a levelling-off in university enrolments and speculates that community colleges could be the reason for this. "This could take financial pressures off the universities, I don't know. But I am sure that the universities will be able to make a case for more money."

TALKS PLANNED

Mrs. Dailly is looking forward to frequent communication with university officials. "The universities must have an opportunity to talk to this department about their needs. This was greatly lacking in the past.

"Before any changes are made in higher education legislation, there will be consultation with everyone involved — university presidents, faculty members and students.

"I'm not sure how this will be achieved but I am determined to get as much feedback as possible from the people who are most affected.

"I definitely think that students should be consulted. After all, they are the users of the product, the ones in the system. If we are going to bring in changes, certainly the students cannot be ignored."

She's a firm believer in the independence of universities, particularly in fiscal matters and, as a member of that select legislative committee on tenure she agrees wholeheartedly with one of the main conclusions which recommended, in effect, that universities work together to solve tenure problems.

As for the committee itself: "The final report was innocuous and, frankly, I don't know why the committee was called together in the first place."

On money matters, Mrs. Dailly believes that she will get a good hearing from a friendly Minister of Finance.

But she's going to have to make a case for more cash for education just as her fellow ministers will no doubt be in there pitching for increased budgets.

She's realistic enough to recognize that the provincial treasury is no bottomless well and that she can't give everybody everything that they ask for. But through careful assessment of the need, based on two-way communication, she believes that she can put up a pretty strong case for increases where they are needed.

"There is one thing about the New Democratic Party. We do have a philosophy and when it comes to education it is a consistent philosophy. No matter whether it be Premier, cabinet minister or MLA, we give education priority. Education of all of our citizens. I know that I speak for Premier Barrett and all other members of our party when I say that."

Future discussions of that philosophy will no doubt

CONVERSATION WITH WEBSTER

leave there. But Social Credit slipped these names in when they should have left them for you to approve. Didn't they?

MRS. DAILLY: Very unethical, right. There we were, with the people already appointed. However in the spring legislation I'm hoping to present amendments to the *Universities Act* which will restructure, to some degree, the whole setup of the Board of Governors, so that there is a broader representation. It has been weighted with a certain group from society.

MR. WEBSTER: You know perfectly well that it has been representative entirely of the establishment.

MRS. DAILLY: Exactly, and this is wrong.

MR. WEBSTER: You are going to have to get some good left-wing trade unionists on there, aren't you?

MRS. DAILLY: We are going to have to get a spectrum of society.

MR. WEBSTER: You mean good left-wing trade unionists. And that applies to Simon Fraser too, doesn't it, Mrs. Dailly?

MRS. DAILLY: It applies to all of the Boards of Governors. There has been, as you say, a certain elitist group on the Board of Governors. We don't agree with that.

MR. WEBSTER: How do you feel about Canadianism. Are you anti-American?

MRS. DAILLY: No, I'm not anti-American.

MR. WEBSTER: Not even a wee bit?

MRS. DAILLY: Well, if you want to get me started on Viet Nam and their policies, yes, I would say I am against that, but anti-American, I don't know what you mean, I'm not against the Americans individually.

MR. WEBSTER: Well, hypothetically speaking, we will say that 40 per cent of the faculty at UBC and Simon Fraser are non-Canadian. Are you for that?

MRS. DAILLY: No, I frankly think that is something that has been wrong, and I think naturally what happened in the past, Jack. I guess you think I am being too national about it, but we didn't have enough post-graduate people to fill these posts. But now we do and now we had better start looking at it. Very quickly.

MR. WEBSTER: I think that you are going to have to chop off the old boy network which is still hiring Americans who up till now had this fantastic tax holiday.

MRS. DAILLY: That's right.

MR. WEBSTER: The scoundrels. I don't really mean scoundrels. But at least the feds have closed that door now.

revolve around some separation of the ministerial duties in the education field.

The time's not too far off, she believes, when there will be a separate Ministry of Higher Education in B.C. Ontario has made the separation and when time permits Mrs. Dailly plans to head east to see how it works.

And that philosophy will no doubt expound ways and means of making higher education available to more students, particularly those who have trouble finding the cash to go to university.

"There should be some form of aid to every student who has the ability to go to university, regardless of economic circumstances," she says.

She rules out free tuition as the solution, preferring, perhaps, some kind of expanded bursary program, based on need.

Mrs. Dailly is anxious to get around the province to see for herself what makes things tick. "I don't want to get bogged down behind this desk. I want to get out to the schools and the colleges and the universities to meet people."

Meeting people, making people feel at ease. Being a good listener.

Those who are closest to Eileen Dailly, daughter of an Irish sea captain father and a Scottish mother, say that she is a people person.

Not the outgoing hand-shaking politician type of person, but quiet and sincere. "She isn't what you would call a politician type at all," says brother Jack Gilmore, a Burnaby school principal and himself an innovator in education.

"In any group of half a dozen you would never pick her out as the politician. She would probably be the quietest of all.

"She's always been that way," adds Mr. Gilmore, whose interest in CCF politics in the late '30s and early '40s got her interested too.

"She was never self-asserting. She was always a nice kid. I don't recall her ever being mean or anything like that. She was pleasant and easy-going and has retained that temperament over the years."

FIRST EXPOSURE

Mr. Gilmore, a politician in his own right, as a municipal councillor in Coquitlam, says that events of the Depression had a great influence on both his and Eileen's political thinking.

Their father, Paddy Gilmore, one of the best-known captains of the Vancouver waterfront, lost his job as captain of a harbor narcotics patrol boat in the mid-30s, when the RCMP took over the patrol duties.

"That was our first exposure to the economic problems of the Depression. Dad used to walk all the way from our home in the Dunbar area to the waterfront each day looking for a job, but he couldn't get one. He was an experienced master mariner but he would have taken a job sweeping decks."

The Dailly family moved to a lower rent district in the East End of Vancouver. "Seeing dad having to go out every day looking for work, witnessing the tremendous blow to his pride, left a lasting impression on us," Mr. Gilmore recalls.

It was to be three years and a variety of temporary jobs before Paddy Gilmore was to stand again at the helm of his own vessel. "We realized, during these hard years that surely someone could do something to prevent a recurrence of the Depression," says his son.

For Eileen it was on to General Brock elementary and John Oliver high school and increasing involvement in CCF student politics.

As British Columbia's future Minister of Education was getting her first taste of the politics that would propel her towards a job at the top, she was also encountering some of the rigidity in the education system that she is so determined to get rid of now that she has the job.

("It seems that we are still bogged down in a system that really hasn't changed much since I went to school" she was to say, 30 years later.)

"In those days," recalls Mr. Gilmore, "the brightest students sat at the front of the class. The lower you ranked, the closer you were towards the back.

POOR EYESIGHT

"Eileen sat near the back for two or three years before anyone realized that her eyesight was poor. They weren't very strong on school medicals in those days. Once she got glasses she started moving toward the front again."

John Oliver's principal, J.T.E. Palmer, had a reputation as a stern disciplinarian who ran a tight, academically-oriented school.

Eileen, and her occasional date, young Ray Perrault, who was later to carve his own niche in politics as a Liberal, knuckled under to the system and did pretty well in all of their subjects except mathematics.

It wasn't that she couldn't do math (she was to write the government exam at the end of Grade XII and get an 85 per cent mark). It was the system that turned her off.

The theatre was another of Eileen Dailly's interests at high school. Along with Joy Coghill, who was later to become well-known in Vancouver theatrical circles, she performed in plays and radio programs. She took courses in drama from Bill Buckingham. A theatrical career beckoned. She had the looks, the personality, the stage bearing, the voice, and most of all, the talent.

But teaching seemed a more challenging vocation for a young woman with a lively interest in politics and a growing concern for people.

After a year at Vancouver Normal School, 1945, off to a school on Denman Island. Jobs were scarce in the Lower Mainland for young teachers those days and they had to go out into the country to find one.

Denman Island she remembers fondly. A one-room school, pot-bellied stove and Grades I to VIII, with time out of a hectic schedule to do Little Theatre at Courtenay. A year later, a move to Kitchener Elementary in Burnaby and an eight-year stay before moving to Inman Ave. Elementary, in 1954, for two years.

In 1951 she married James Dailly, a Vancouver fireman and former professional boxer who, like her mother, was born in Dundee. Husband Jim was later to enter politics as a Burnaby alderman, only to resign when his wife became Education Minister to move to Victoria. The Daillys have one son, Robert John, born in 1958.

Eileen Dailly ran for the Burnaby School Board in 1956 because she was frustrated with her experiences in the classroom and wanted to work for change.

"One of my Grade XII classes at Kitchener had 50 students. It was impossible for a teacher to work under those conditions. There were many other things that bothered me about the system too."

She worked so hard and well that she was re-elected for four successive terms and served as board chairman on three different occasions.

She gave up the job of school trustee to run for provincial office for much the same reasons as she had left teaching. "The school board was just another level of frustration. I discovered that the school board was in a straitjacket because of government education policies."

She was elected as NDP MLA in the newly-created Burnaby North riding in 1966 and has held the riding through two elections.

As NDP education critic through her years in the House she was the automatic choice as Education Minister. Her years in a decision-making role as a school trustee give her excellent background for the job.

"The diplomatic thing for me to say is that as a trustee she was as good as any and better than most, so I will say it," says Mr. A.C. Durkin, veteran secretary-treasurer of the Burnaby School Board.

"But she was much more than that. Over the years she fought consistently for improvements in the learning situation in the district and was particularly concerned with the needs of students and teachers."

In the 10 years that Mrs. Dailly was on the Burnaby board the budget jumped from $4.3 million to $11.7 million and the school population rose from 17,500 to 29,900 students.

"The board faced problems that at times seemed insurmountable. In those days we were a relatively poor district, with limited resources and a booming population.

"On top of that we had traditionally elected NDP MLAs to the legislature so we didn't have much pull in Victoria. The going was rough, but we made it, thanks to trustees such as Eileen," recalls Mr. Durkin.

Mrs. Dailly knows that she is going to have to draw heavily on her long experience as a school trustee in her work as Education Minister.

Aware of the difficulties that school boards have experienced in the past in trying to get their views across in Victoria she has already made things a lot easier. Words like communication and feedback and co-operation have reappeared around the Department of Education.

BUSY MINISTER

The shadows playing on her office wall get longer and the intercom buzzes impatiently to remind the Minister that her next appointments are building up in a holding pattern outside and there is some correspondence to be completed and phone calls to be answered.

Time for a firm handshake, a word of goodbye.

A parting comment: "Everyone, you know, is an expert on education. People are inundating me with ideas. The volume of mail, I am told, is greater than ever before. I want to hear from people.

"If you have any ideas yourself, let me know." A chuckle: "But write, don't call."

People, meeting people, making people feel at ease.

Mr. Durkin, of the Burnaby School Board summed it up: "She always made people feel at ease. She was always interested in people."

And her brother, Jack: "People warm up to her."

And you reflect, as you tread the polished corridors of the Douglas Building and step out into the crisp autumn air, that Eileen Dailly *is* a people person.

A Witty Book By a Witty Man

DANCE TO THE ANTHILL, by Geoffrey B. Riddehough.
114 pages. $5.95

When Prof. Geoffrey B. Riddehough retired two years ago from the UBC Department of Classics, his colleagues in the Buchanan Building lost one of their wittiest and most learned companions. Prof. Riddehough still visits the campus, of course, but the almost daily supply of anecdotes, puns, rhymes, and mordant observations that only he could supply has necessarily diminished.

As if to compensate for this deprivation, and to make his wit known to an even wider public, Discovery Press has now published a selection of Prof. Riddebough's verse, **DANCE TO THE ANTHILL**. The volume contains nearly 200 sharp and sometimes biting bits of verse, a generous sample of their author's unique view of life.

Epigrams may seem to be the easiest kind of verse to produce. But the ultimate standard of success is ruthless. If the verse does not delight immediately and stick to the mind long afterward, then it is a failed epigram, one of the most dismal objects in the literary universe. **DANCE TO THE ANTHILL** contains a high percentage of successful epigrams, although not all readers will necessarily point to the same successes.

A restricted number of targets have always attracted the shots of satirists. Academics, for example, are a veritable zoo of odd specimens. This is how Prof. Riddehough spears the dull lecturer:

After Listening to a Learned Paper

The part is numb
On which I sit.
The rest of me
Now envies it.

Physicians and clergymen, those who tend the body and the soul, have also been immemorial objects of satirists and Prof. Riddehough finds gold in these classic veins. Fads and fashions, the strange aberrations that occasionally stampede segments of society, always invite satiric darts.

The supreme subject, however, which the male satirist could never resist, at least as a subject of verse, is women. Prof. Riddehough has studied them sharply:

Goldilocks

Her hair, right to the present day,
Retains its golden hue.
It hasn't shown a trace of grey
Since 1962.

Prof. Riddehough's barbed verses on women might be called, in these days of Female Liberation, refreshingly retrograde. The ladies will perhaps find other phrases.

A selection of limericks, as might be anticipated, crowns the volume. This was once an underground form of verse, in the older sense of "underground". Most of the classics have now been collected and printed. Prof. Riddehough's examples hardly challenge the censor, but will nevertheless delight the collector. Such fine Canadian names as Bloor, Namu, and Lillooet have been dealt with authoritatively, perhaps decisively. It is surprising to see Cheyenne made to rhyme with "again" and "Ben." This would puzzle John Wayne. An unmistakable clue to the ordinary pronunciation can be found in the classic that begins

There once was a cowboy of Cheyenne
Who said to his girl, "Don't be shy, Anne."

Etc.

Prof. Riddehough published a small volume of poetry in 1927 and a number of his more formal poems have appeared from time to time in various periodicals. The present volume includes several of these, particularly a final sequence about communications with witches, a subject that will not surprise the poet's acquaintances. — *Harry Edinger, Associate Professor of Classics, UBC.*

The recently-established University of British Columbia Press is continuing to expand its active publishing program. Here are some brief descriptions of recently-issued and forthcoming books.

A REFERENCE GUIDE TO ENGLISH, AMERICAN AND CANADIAN LITERATURE, by I.F. Bell, Associate Librarian, UBC, and J.J. Gallup, Reference Librarian, UBC.
151 pages. Hard cover $7; paper cover $3.50.

This guide has been specifically planned and structured to inform the undergraduate student of research methods and materials useful to him. The book includes a "how to use" section not usually included in a publication of this type and notes within each section refer the student to other pertinent entries. A steady seller, this book is currently being reprinted, and will be featured in the Press's fall Canadian Literature campaign.

MALCOLM LOWRY: THE MAN AND HIS WORK edited by George Woodcock, Lecturer, UBC Department of English, and Editor, *Canadian Literature*.
184 pages. $4.50. First edition 1971.

A multi-faceted collection of essays presents Malcolm Lowry — the man, his works, and the sources in himself and his world from which he constructed what many critics regard as the finest writing to come out of Canada. The book gives considerable insight into the challenge Lowry set for himself as an artist.

Reprinted ten months after the first printing, this publication appears to have been well timed in view of the growing interest in Malcolm Lowry. It was accepted, along with **THE ROYAL NAVY AND THE NORTHWEST COAST OF NORTH AMERICA 1810 TO 1914** — the first UBC Press book — as an entry in the 1972 *Quill and Quire* Christmas catalogue, which contains books "carefully chosen for their broad and continuing appeal." In addition, the Malcolm Lowry book was recently adopted as a text by a college in New York State, and in the near future the Press hopes to extend significant sales of the title in the United States.

TRANSPORT COMPETITION AND PUBLIC POLICY IN CANADA, by H.L. Purdy, Lecturer, Faculty of Commerce and Business Administration.
344 pages. $10.50.

This is the first book to examine contemporary forces of inter-modal competition as they relate to the Canadian inter-city transport picture. It includes an incisive discussion of how the *National Transportation Act* of 1967 has opened the door to the achievement of the optimum balance between statutory regulation and regulation by competition. The thorough survey includes tables and charts.

NATIONAL ECONOMIC ISSUES: THE VIEW FROM THE WEST COAST, edited by Anthony D. Scott, Professor of Economics, UBC.
148 pages. $4.

This special publication by the journal, *B.C. Studies*, reproduces 14 papers by economists at the University of British Columbia, in which current economic trends and pressures are examined. Federal and provincial government policies are treated in terms of their general effect on the national economic health and particularly on that of British Columbia. This publication has attracted considerable attention from persons interested in such issues as foreign ownership.

PEASANT SOCIETY IN KOṄKU: A Study of Right and Left Subcastes in South India, by Brenda E.F. Beck.
354 pages. $16.50.

This book is the result of highly original investigation into the variety of internal social organization among the subcastes of Koṅku Nāṭu, one of five traditional regions in Tamilnadu (formerly Madras State) — an area where the caste structure has not yet broken down. Complete with numerous tables, diagrams and photographs, the book is seen as an outstanding presentation of detailed data within a clear general outline — a work that contributes greatly to the ethnographic knowledge of India.

IMPERIALISM AND FREE TRADE: LANCASHIRE AND INDIA IN THE MID-NINETEENTH CENTURY, by Peter Harnetty, Professor of History, UBC.
147 pages. $7.

This scholarly reappraisal of mid-Victorian attitudes to Empire, as typified by the Lancashire cotton manufacturers and their influence on British policy in India, is a succinct historical study which should be of value to those interested in Indian economic history and British imperial history.

DRAMATISTS IN CANADA: Selected Essays, edited by William H. New, Associate Professor of English, UBC.
200 pages approx. $5.50. Available: November, 1972.

The fourth volume of the Canadian Literature Series, this collection of selected essays on plays and playwrights surveys the development of Canadian drama from its beginnings to the present day. A number of the essays were written especially for the publication; the remainder have appeared over the past decade in *Canadian Literature*, and thus form an evolving commentary on Canadian drama.

A CHECKLIST OF PRINTED MATERIALS RELATING TO FRENCH-CANADIAN LITERATURE / LISTE DE RÉFÉRENCE D'IMPRIMÉS RELATIFS À LA LITTÉRATURE CANADIENNE-FRANCAISE by Gérard Tougas, Professor of French, UBC.
250 pages approx. $9.50. Available: December, 1972.

This second, enlarged edition of the checklist is essentially a primary bibliography of French-Canadian literature from the early 19th century to 1968. The more than 2,800 titles listed represent the holdings of the University of British Columbia Library, being a substantial portion of the total body of work published in this field. In this bibliography, the term "literature" has been interpreted to include separately-published novels, poetry, drama and short stories.

Following are brief descriptions of books written by members of the UBC teaching staff and published elsewhere.

Dr. Michael Goldberg, an associate professor of English at the University of B.C. is the author of **CARLYLE AND DICKENS** — an examination of the influence of Thomas Carlyle on Charles Dickens.

The book, published by the University of Georgia Press, traces the intellectual relationship of the Victorian era's most influential teacher and its most popular and successful novelist. Dr. Goldberg suggests that the changes which dramatically transformed Dicken's view of art and society in the 1840s are directly attributable to his response to Carlyle.

Dr. Goldberg, a native of South Africa and a member of the UBC faculty since 1966, has written a number of articles on Dickens.

A revised edition of Dr. K.J. Holsti's **INTERNATIONAL POLITICS: A FRAMEWORK FOR ANALYSIS** has been published by Prentice-Hall Inc., of New Jersey.

Dr. Holsti, who is Professor of Political Science at UBC, is acknowledged as a leading authority in the field of international relations.

The revised edition assesses the progress that has taken place, since the first edition was published in 1967, in such areas of research as political science, international relations and social psychology.

WATER AND THE CANADIAN PSYCHE

Water.

Almost three-quarters of the globe is covered by it. About two-thirds of your body is made of it. Its presence is one of the critical factors making life possible on this planet. Without water, life as we know it can't exist anywhere in the universe.

Water is part of the fundamental mythology of man. Rivers nurtured the first civilizations; the Mesopotamian on the Tigris and Euphrates in what is today Iraq, and the Egyptian on the Nile. Many of the utopias man has dreamed of throughout history have been located in idyllic valleys and each valley has been nourished by a river.

CENTRAL ROLE

Water for man has a spiritual, sexual and a religious symbolism. Water is cleansing, purifying. Rain is a divine fertility. Rivers, fountains, springs and wells are symbolic archetypes that are common to many cultures around the world. The river of life is a common theme to some Eastern religions. Juan Ponce de León, who reached the New World with Columbus in 1493 and discovered Florida in 1513, was motivated by a search for the legendary Fountain of Youth. Water is used in baptismal and religious rites of religions the world over.

Granted the central role of water in man's life, the attitude of Canadians toward water is nevertheless mysterious. Canada willingly pumps into the United States some 600,000 barrels of oil each day and about 700,000 million cubic feet of natural gas a year. These are non-renewable resources. Once depleted they are gone forever. Water is renewable. But any suggestion that we sell a drop of water brings vehement opposition.

Strange.

More intriguing, considering the changing social profile of Canada, is that opposition seems to be increasing. Canadians are becoming more urbanized and less rural every year. Canadians continue to leave farm districts to gather in cities. Urbanites would be expected to have less of a proprietory attitude toward water than a farming population, whose existence is more fundamentally touched by the coming of rain. But as Canada becomes more urbanized, Canadians seem to be becoming, paradoxically, more possessive of their water.

If Canadian urbanites are losing touch with wilderness and rural areas, what accounts for our emotional reaction, our irrational attitude, to the idea of selling water?

Is it because, while Canadians are migrating from the rural and wilderness areas to the cities, an opposite shift in attitudes is taking place, a return to what Canadians dimly consider to be the spiritual home of Canada?

A few decades ago, the "heart" of developing countries was identified as the new cities that had arisen on the frontier. Railroad junctions, ports, the confluence of rivers spawned towns that grew into cities where a few generations before there had been only wilderness. Today these new cities are more than ever before the economic centres of their nations. But perhaps fewer people in them now think of them as the heart or soul of their nations.

Perhaps the same is true of Canadians. How many of us today believe that the spiritual centre of Canada is the corner of Georgia and Granville, or Portage and Main, or Peel and St. Catherine's?

PRODUCT OF RIVERS

Canadians are haunted by a mythology of the wilderness. Almost every Canadian carries with him in his subconscious the outlines of a solitary northern lake, coastal forest or conifers painted by Emily Carr or one of the Group of Seven. More reproductions of more forestscapes hang in Canadian living rooms, bars, courthouses, post offices, recreation room, libraries and banks than perhaps anywhere else in the world.

Historically, Canada is the product of her rivers. For at least two centuries the canoe was the economic pipeline of Canada linking fur trappers in almost every region of the nation with trading centres. In its crudest terms, the history of Canada is the history of the Fraser River on the west coast and of the St. Lawrence and Great Lakes in central and eastern Canada. If the horse and covered wagon are central to the mythology of the United States, the canoe is the vehicle of Canadian history.

The first white man to travel overland to the Pacific was Alexander Mackenzie who reached salt water in 1793. Mackenzie travelled by canoe. Mackenzie's canoe was more than 25 feet long, carried two Indian guides, six French-Canadian voyageurs and a Scots fur-trader, besides Mackenzie himself, as well as three thousand pounds of supplies and equipment, yet was so light that it could be carried by two men.

The canoe is a far more appropriate symbol of Canada than the beaver or the maple leaf. A product of Indian ingenuity, the canoe is consumately beautiful. Rather than a symbol of nature itself, the canoe is a work of art, an ideal accommodation of man to his environment. Its lines are clean and lithe, light and animated. And perhaps most evocative of all, the motion it suggests is silent.

As urban Canadians lose touch with wilderness and rural Canada some of them idealize their heritage. The impression of wilderness and rural Canada that many of us share is a mixture of Disney films, magazine photos, cigarette commercials and an endless assortment of picture calendars.

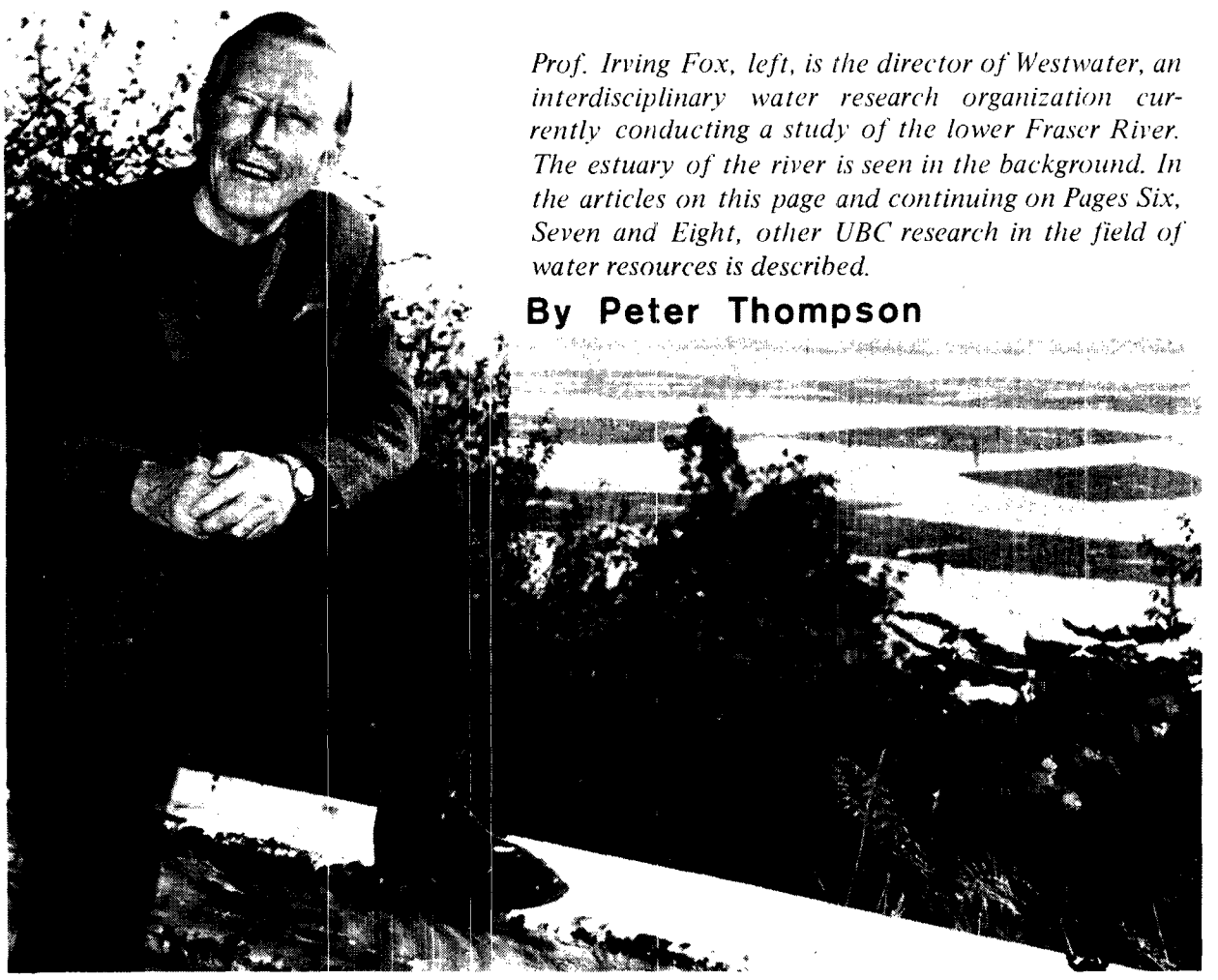
INTENSELY VISIBLE

We tend to romanticize our heritage and one of the most powerful components of it is water, intensely visible almost everywhere in Canada and which united Canada long before Confederation. Some of us think of Canadian water in a mood of pantheistic nationalism. Water flows constantly, pristine and virginal, through the turbid depths of the Canadian psyche. Many Canadians cherish a common nostalgia, dormant and unarticulated, smoldering, of gliding across fresh water, silent, graceful and lonely.

Water is part of our national self-image and in our imagination our lakes and rivers have until recently, until the interference of man, been pristine. Perhaps not now, but once, our waters were pure. And perhaps not now, but once, our waters abounded with fish.

It comes as something of an annoyance to some of us to learn that pure water doesn't produce fish. The fish that we remember as once having existed grow not only in our imagination but on a diet derived from "natural" pollution.

Two years ago, while many waterways across North America were being blighted with nitrates and phosphates from industrial and domestic polluters, Prof. Timothy Parson, then with the federal Fisheries Research Board before coming to the University of B.C., began a program of dumping about 100 tons of nitrates and phosphates a year into Great Central Lake on Vancouver Island. The water of the lake was among the purest in the world. About four million sockeye salmon leave the lake annually for the sea. But they didn't thrive in the pure lake water. In the first year of dumping, the fish increased their size by one-third.



Picture by UBC Photo Department

Prof. Irving Fox, left, is the director of Westwater, an interdisciplinary water research organization currently conducting a study of the lower Fraser River. The estuary of the river is seen in the background. In the articles on this page and continuing on Pages Six, Seven and Eight, other UBC research in the field of water resources is described.

By Peter Thompson

UBC PROJECTS DESCRIBED

Pollution is more complex than the industrial chemicals, sewage, poisonous heavy metals such as lead and mercury, old cars, herbicides and pesticides and garbage that we consecrate our national waters with. The first link in the chain of all aquatic life is plants – algae, moss, weeds and phytoplankton, small plant organisms. Essential to plant growth are nutrients such as carbon, sulphur, sodium, chlorine and calcium. But the most essential, because they are usually in short supply, are nitrogen and phosphorus.

All other aquatic life depends on this primary plant production through photosynthesis. Small fish and other animals living in rivers and lakes eat the plants and are in turn eaten by larger animals.

Under natural conditions, nutrients are added to water from decaying vegetation and animal matter washed into the rivers and lakes from the surrounding land. But man can add substantially to the supply of nutrients, especially nitrates and phosphates, which can drain into a water system from fertilized fields or lawns, cattle feed lots where large amounts of manure piles up, grazing land, garbage dumps or septic tanks. Nutrients can also be added directly to the water by municipal sewage systems.

Large quantities of nutrients that can be used immediately for plant production often cause "blooms" of algae, which float on the top of the water during the summer, or heavy weed growth along the shallow shoreline. In advanced cases the water can look like a primordial soup.

Most nutrients entering a lake or river aren't in a chemical form that can be used immediately for plant life production and simply sink to the bottom. In summer these nutrients decay by combining with oxygen dissolved in the water. The more nutrients involved, the larger the amount of oxygen consumed. When winter ice prevents oxygen in the air from dissolving into the water, the fish population may be "asphyxiated" in the oxygen-depleted water.

Water that is rich in nutrients and that produces large

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WATER

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quantities of plant life is said to be eutrophic. Osoyoos and Wood Lakes in the Okanagan basin are eutrophic. Kalamalka and Okanagan Lakes in the basin are oligotrophic; they have a low nutrient level. Vaseux and Skaha Lakes are closer to moderate nutrient levels and are mesotrophic.

The natural life cycle of a lake is to pass from the oligotrophic to the eutrophic stage over a period of tens of thousands of years. Eventually the lake fills up with sediments, gradually changing into a marsh and eventually dry land. Man's massive addition of nutrients to some lakes and rivers has greatly speeded up this natural process.

Of the many water research projects now underway at the University of B.C., two are massive and concerned with some of the most important water areas of Canada. One deals with the water quality of the Lower Fraser River and is being done by UBC's Westwater Research Centre. The other is work done under a $234,000 contract by members of the Faculty of Applied Science headed by Dean W.D. Liam Finn. The contract was let by the federal-provincial Okanagan Basin Study. Purpose of the study is to suggest alternative policies for managing the water resources of the basin from now until 2020.

"The University and particularly the Faculty of Applied Science has a real responsibility to respond to the needs of the public," said Dean Finn. "The public has made a large investment in the University and the University in turn has an obligation to the community.

"The result is that our faculty and students – and many students are involved in the Okanagan work – have benefited and the public has had the opportunity to call on the facilities and skills of a concentrated research group.

"The public has also benefited because the University is as neutral as possible, an important consideration since some water research can be in controversial areas, for example, if it involves the transfer of water from one area to another or bestows privileges on one group over another."

Dean Finn said the University should always be involved in basic research, which may only result in benefits in the distant future, but it should also apply its capabilities to mission-oriented research to solve pressing social and economic problems.

PRIME EXAMPLE

"The Okanagan Basin Study is a prime example of this," he said, "It involves research done by government departments and universities. And a conscious attempt has been made to involve the people of the Okanagan in the project.

"The Science Council of Canada has pointed to the Okanagan project as the example to be followed for other studies needed on waterways across Canada."

He said the research laboratories for water resources and sanitary engineering work built in the Faculty of Applied Science were made possible through direct grants to faculty members for non-mission-oriented research and through research contracts for specific projects from the B.C. Department of Lands, Forests and Water Resources.

"The result of the Faculty's long association with the provincial department is a strong base which the public can use to receive some return especially in matters of the environment, for the heavy investment it has made in the University."

The Okanagan basin's setting and climate have made one of the most attractive areas of Canada. It has a low level of industrialization and urban development and an economy based on tourism and fruit production. But it is now under pressures which may change it utterly.

According to the B.C. Department of Trade and Commerce, the population of the Okanagan-Shuswap region could treble from 132,000 to 444,000 in 50 years. The average daily traffic over the pontoon bridge over Okanagan Lake at Kelowna during July and August will increase from about 13,000 to more than 96,000 vehicles by 2020.

If development of the Okanagan basin is allowed to take place without planning, the results could remove many of its attractions. Polluted, fishless waters could replace features that now induce tourists to spend between $25 and $30 million a year in the basin. A survey done under the Okanagan Basin Study shows that 85 per cent of tourists visiting the Okanagan had been there before. If the Okanagan lost its natural charm, how many would return in future summers?

In charge of water pollution research under the agreement in UBC's Faculty of Applied of Applied Science is Dr. William K. Oldham of the Department of Civil Engineering. Three of his projects involve trying to find methods of getting rid of nutrients in municipal sewage. A fourth is to determine the amount of nutrients draining off into basin lakes from septic tanks, fertilized fields and other sources.

Part of the largest study involves participating in a five-year pilot project to get rid of effluent from Vernon's waste treatment plant. Besides getting rid of the nutrients in the effluent, the project is making money because nutrients are a valuable resource and should be recycled.

"We're spray-irrigating effluent from the Vernon plant on 120 acres about 200 feet above Okanagan Lake southwest of Vernon," Dr. Oldham said. "Seventy acres are in alfalfa and the remainder is native grass.

"The soil is only four to eight feet deep. Beneath the soil is an underlay of impervious till so that excess effluent not taken up by the soil and root system would flow across the face of the till and down toward the valley.

LOSS NEGLIGIBLE

"We installed 13 monitoring wells around the 120 acres to see if any water was running off, and if so, what level of nutrients were escaping with the water. Only four wells showed any water and a minor amount at that. The nutrient loss was negligible.

"The alfalfa has been analysed in the provincial government's agricultural lab in Kelowna and the results show that its components are completely normal. The alfalfa's beautiful. We got four crops off the 70 acres this year. We can spray-irrigate the entire effluent output of the Vernon plant during the non-tourist season. But the project isn't large enough to handle the output in the summer when tourists arrive."

Meanwhile, Dr. Oldham said, Vernon has hired consultants to look into the feasibility of installing a full-scale spray irrigation system.

"One of the problems is, what do you do with the effluent in winter? Do you store it in some natural depression in the hills for summer irrigation? Or do you dump it in the middle of the lake?"

A study in Penticton is allied to the Vernon project. Thirty concrete soil columns three feet in diameter have been filled with three different types of soil ranging from a sandy loam to a tight silty clay common to the Okanagan basin. One of the three types of soil is identical to soil found on the 120 acres that are being spray irrigated at Vernon.

This summer alfalfa was grown in 15 of the soil columns and reed canary grass, also used as a livestock feed, in the remaining 15. Fifteen of the columns were spray-irrigated with sewage effluent at a rate recommended by agriculturalists. The other 15 were spray-irrigated with about 2½ times the recommended amount.

"We've added 2½ times the recommended dose because we want to see if we can get rid of as much effluent as possible. And we've used the same kind of soil as at Vernon in one-third of the columns in the hope that the results we get will be the same as at Vernon. If they are," Dr. Oldham said, "we'll be in a better position to estimate how much effluent we can spray-irrigate on the other two types of Okanagan basin soils on a large scale."

We're running the same kind of analysis as at Vernon. We've tested the soil before and after application of the effluent, what's in the water that percolates out of the soil at the bottom of the column, and the chemical composition of the crops."

A study at Kelowna aims at getting rid of the nutrients in municipal waste by another method.

"We've built a pilot plant to parallel the operation of the municipal pollution control plant at Kelowna," Dr. Oldham said. "We're adding lime to the raw sewage so that the phosphorus will settle out in the settling tank along with the sewage solids. The resulting sludge is burned in the plant's incinerator when enough has accumulated. The residue is buried.

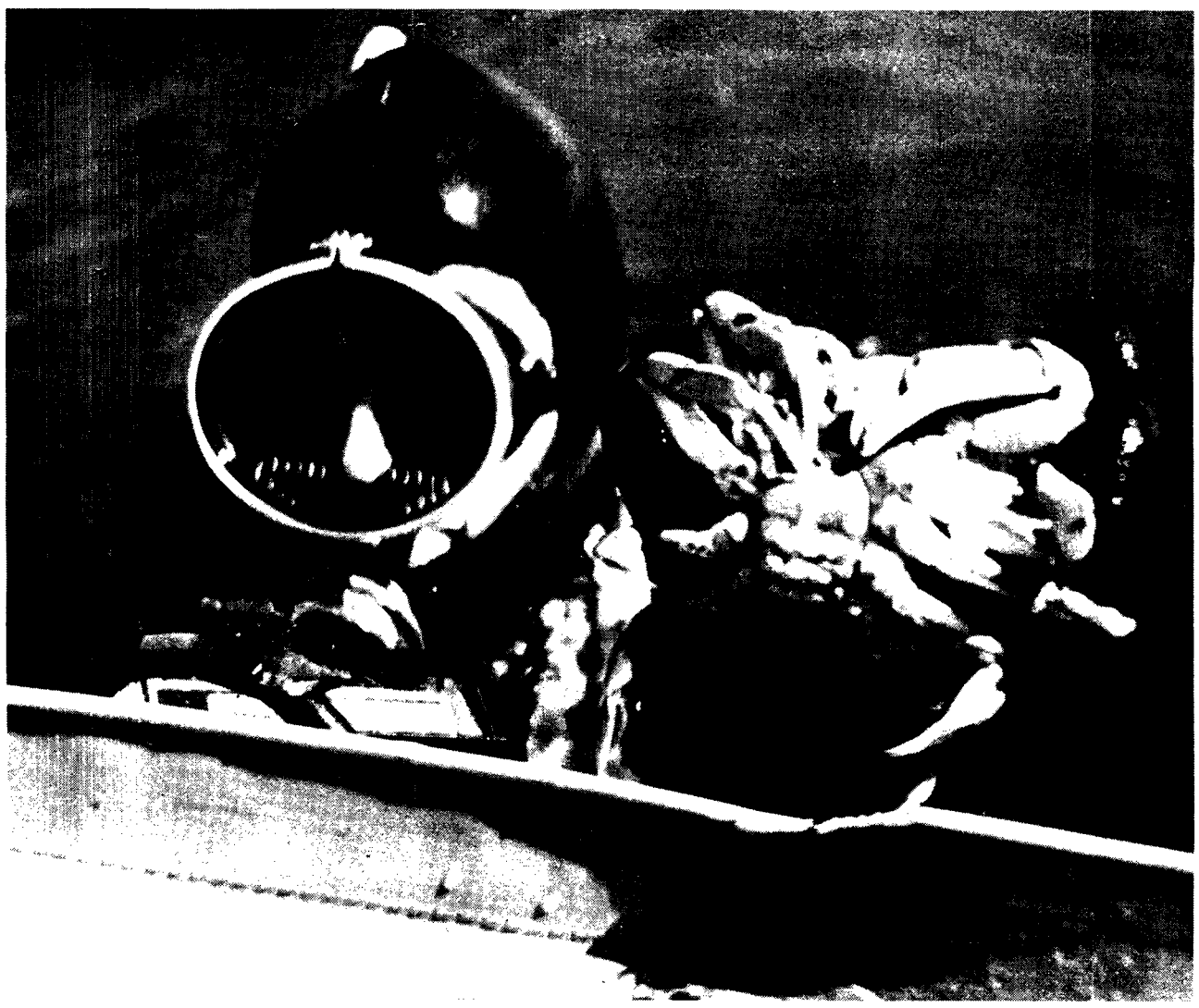
"Though it's known from work done elsewhere that adding lime will remove phosphorus, we don't know what concentration of lime is needed in the Kelowna situation, whether the resulting sludge will interfere with the operation of the incinerator.

"If a lot of lime is needed to remove the phosphorus, it may be worthwhile to alter the incinerator operation so that the sludge can be burned at a high enough temperature. This would allow us to reclaim most of the lime for re-use in the process."

Pollution is a problem in the Okanagan basin, but the basin faces an even larger problem, the scarcity of water itself. Mr. Denis Russell, assistant professor in UBC's Department of Civil Engineering, is directing research on methods of controlling the volume of water that drains into the basin.

The basin is a series of interconnected lakes draining south into the Columbia River system in the United

LOWER FRASER PROJECT



Picture by Carol Gordon

Diver brings up crab from bottom of Fraser River for tissue analysis.

States. Vernon Creek drains Ellison, Wood and Kalamalka Lakes at the north end of the basin into Okanagan Lake, the largest and deepest of the seven lakes in the basin. Okanagan drains into Skaha Lake and Skaha into small Vaseux Lake. The Okanagan River drains Vaseux into Osoyoos Lake, which flows into the United States.

The water volume in the basin is controlled by four dams: one at the entrance to Okanagan Lake, and one each at the exits of Okanagan, Skaha and Vaseux Lakes.

"The snow pack and rains falling on the watershed drained by the basin average a total of only 22 inches of water a year," said Mr. Russell. "Yet of this only three inches actually reaches the lakes of the basin. The rest is lost through evaporation and transpiration through the leaves of vegetation into the atmosphere."

Each year the basin receives its allotment of water in one payment during the spring runoff. The runoff mustn't be allowed to flood the basin. But enough water must be kept in the basin to meet the needs of users — whose demands often conflict — during the parched summer months and into the next winter.

By law dams can only regulate the level of the top four feet of Okanagan Lake, the major reservoir of the basin. This is about the average amount of water that is added to the basin lakes each year.

While maintaining the four-foot limit in Okanagan Lake, at least 300 cubic feet of water per second must be allowed to drain into Osoyoos Lake during the dry summer months so that water intakes south of Okanagan Lake can still function and so that sockeye salmon, migrating up the Columbia River system, have enough water to travel up the Okanagan River to their spawning grounds south of Vaseux Lake.

SPRING RUNOFF

More water must be released in winter to ensure that salmon eggs remain covered and that the water level in the basin is low enough to accommodate the next spring runoff.

"The system already sounds impossible to regulate but it is even more complicated," Mr. Russell said. "First of all, the amount of snow on the mountains must be accurately estimated to get some idea of how much water will be added to the basin in the spring.

"Complicating the calculations is the speed at which the runoff takes place. If the weather is abnormally warm the snow melts quickly and during a period of, say, one day an abnormally large volume of water begins to drain toward the lakes. But this also means that a smaller percentage of that volume of water will be lost to the atmosphere. On the other hand, if the melting is abnormally slow there is more time for evaporation and transpiration of the water to take place as it runs off the land.

"We must try to anticipate as many of these factors as possible because it's impossible to pull the plug on Okanagan Lake and drain a lot of water out at once. For one thing, it would cause flooding in the southern part of the basin. And the Similkameen River, which joins the Columbia River just south of the Canada-U.S. border, introduces another variable. When the Similkameen is in flood, it can slow down and even reverse the flow of water from the basin into the Columbia, backing up the water in Osoyoos Lake."

Mr. Russell is building a computer model of the Okanagan basin water system. Fifty years of records are being fed into the model. The extent of the snow pack, the rate of spring run off, how much water was in the basin to begin with, how much was allowed to run out of the basin and when, and what the resulting water supply was during the critical summer months is just some of the information being computerized.

"What we want to do is learn how to hedge our bets," Mr. Russell said. "The model will tell us which alternative is best within the limits of the manoeuvres we have."

Dr. T.G. Northcote, associate professor in UBC's Institute of Animal Resource Ecology, Faculty of Forestry and Westwater Research Centre, used the fish of the Okanagan basin as a measure of lake pollution. The work was done by Dr. Northcote and his associates in 1971 and 1972.

Fish species such as salmonids — members of the trout and salmon family — prefer clean, well-oxygenated, cool water. Other "coarse" fish species such as carp, suckers, squawfish, bass and bullheads thrive in warm, nutrient-rich water. And within the limits of their preferences, fish are fatter in water that has more nutrients. Dr. Northcote and his staff gillnetted fish on the main lakes of the basin to estimate relative populations of different species in each lake as well as differences in their size and growth rates. He also had chemical analyses made on the flesh of the fish as another indicator of the relative pollution of the basin's waters.

Dr. Northcote, former director of the Fisheries Research Section of the B.c. Fish and Wildlife Branch, found that some fish were contaminated with DDT and heavy metal residues. The flesh of more than 600 individual fish, mostly species likely to be eaten by humans, was pooled into more than 100 samples and analysed.

Rainbow trout, kokanee, lake trout and mountain whitefish taken from Kalamalka Lake had DDT residue levels above standards set by the federal Food and Drug Directorate. So did some rainbow trout in Okanagan Lake and lake whitefish in Skaha Lake. In Okanagan Lake some rainbow trout and squafish also had mercury levels exceeding Food and Drug limits. DDT and mercury residues were generally higher in large, older fish. In Okanagan Lake, mercury limits weren't exceeded among rainbow trout weighing less than 11 pounds or DDT limits in rainbows less than seven pounds in weight.

BREEDING GROUNDS

"What is probably of most concern to the existence of the salmonids in the basin," Dr. Northcote said, "is destruction of their breeding grounds. Kokanee, and especially rainbow trout, spawn in streams feeding the lakes as well as in the Okanagan River. The area along the tributaries has been logged in some places, water has been diverted for irrigation, dams have been built, and some of the water is polluted. Spawning area in the tributaries probably has been cut down by between 70 and 80 per cent."

Dr. Northcote is doing similar work on the Lower Fraser River project for UBC's Westwater Research Centre. "A lot of work has already been done on the salmon species in the lower Fraser that we don't intend to duplicate. But almost nothing is known of the non-migratory species, the fish that spend all of their lives in the river and estuary and don't leave for the sea as salmon do.

"The migratory species include sockeye, spring or chinook, coho, pink and chum or dog salmon; the migratory forms of steelhead, which is a sort of seagoing rainbow trout; smelts or oolichan, which spawn as far up the lower Fraser as Chilliwack; and sturgeon, whose movements we know little of.

"But as far as the non-migratory species are concerned — the resident trout, carp, squawfish, redside shiners, chub, bullheads, suckers, catfish and others — we know almost nothing. And we should, because unlike the migratory fish, the resident species have to sit there and take whatever the river has to offer. They may be good indicators of the extent of pollution in the river."

Apart from the fish species, Dr. Northcote will be sampling small invertebrate animals such as worms and other organisms living in the silt at the bottom of the river, as well as the plants and animals drifting downstream in the river's current.

EXAMINES QUALITY OF RIVER'S WATER

The Fraser is the most important body of water west of the Great Lakes. It has the world's largest salmon fishery, accounting for half the B.C. catch. According to the Fraser River Harbor Development Study completed six months ago by community and regional planner Norman Pearson, the lower Fraser is critical to the fishery because salmon spend about three months in the estuary before moving out to sea. Their existence in the estuary could be affected by thermal pollution from the cooling operation of thermal power plants, log boom storage in intertidal areas of the river, or dredging or filling of tidal flats.

Mr. Pearson says raw sewage dumped into the river is not yet a threat to the fishery but may become so. Industrial pollution is the least critical danger facing salmon now but may become more important as industrialization continues.

He says in the report, prepared for the Fraser River Harbor Commission, that development will continue around the deep-sea port at Roberts Bank.

Land near the Fraser River will support the major share of the Lower Mainland's population increase between now and the turn of the century. The number of people living closest to the Fraser River will increase 3½ times more than the population increase of those living closest to Burrard Inlet, says the report. And recreation demands on the lower Fraser will continue to increase.

Dr. Northcote's lower Fraser project is part of the first major study undertaken by Westwater, set up at UBC two years ago under federal grants to investigate local, regional and national water problems. Westwater is examining factors affecting water quality from Hope to the Gulf of Georgia. Hydrologists, hydraulic and sanitary engineers, biochemists, soil scientists, oceanographers, zoologists, geographers, lawyers, economists, and other social scientists are included in the project.

"Westwater is measuring existing water quality conditions in the lower Fraser, what they are likely to be in the future, and what the effects of both existing and prospective water quality conditions are upon the fishing and other resources of the river," said Westwater director Prof. Irving Fox. "It is also trying to gauge what standard of water quality the public wants and what it will cost to achieve desired conditions.

"These physical, biological, and social science studies will provide the basis for Westwater to assess the results of existing legislation and the policies of public agencies responsible for sewage disposal, pollution control, and the use of the Fraser River for various purposes.

BEST INFORMATION

"If these studies indicate that changes are desirable, Westwater research staff will evaluate alternative modifications in existing laws and agency authority and responsibility. Since the choice of alternatives is up to the general public and its governmental representatives, the objective of Westwater is to provide the best information it can for the public to use in deciding how to solve its water pollution problems."

Westwater is involving people outside UBC in the direction of Westwater and consults with representatives of all interests concerned with water quality in the Lower Fraser as work on the project proceeds.

New members recently appointed to the Westwater Council, which directs all aspects of Westwater's work, include CBC television producer Dick Bocking; well-known conservationist Roderick Haig-Brown, Chancellor of the University of Victoria and a provincial court magistrate; and Mr. Jack K. Sexton, senior vice-president of Montreal Engineering Co. and engineering advisor to the B.C. Energy Board on the recent provincial energy study.

"The Westwater Council has also set up a consultative panel on the lower Fraser River project," said Prof. Fox. "Among the 22 members on the panel are representatives of environmental groups, small boat operators, harbor commissions, fish and game clubs, federal and provincial departments and agencies, the Greater Vancouver Regional District, the International Pacific Salmon Fisheries Commission, B.C. Research, native Indians, farming, the United Fishermen and Allied Workers' Union, the timber industry, the Fisheries Association and industrial waste dischargers.

"The panel will make it possible for the Westwater research staff to be exposed to the views of groups knowledgeable about water quality in the lower Fraser," Prof. Fox said, "and panel members will be able to follow development of the project's conclusions. And as work on the study proceeds, Westwater will report periodically on progress being made at meetings to which the general public will be invited."

The panel of consultants has already held its first meeting. Westwater has begun a series of more than a dozen public lectures and a two-day public seminar was held last week.

"Dr. Northcote is doing part of the biological study of the lower Fraser," Prof. Fox said. "Others are doing physical and social science projects to gather more information on the river."

Also doing biological work on the river for Westwater

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LOWER FRASER

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is Prof. Timothy R. Parsons of UBC's Institute of Oceanography.

Divers worked throughout the summer gathering animals from the bottom of the Gulf. Crabs, clams, mussels, shrimps as well as smaller invertebrates were collected at predetermined spots in a line across the mouth of the Fraser from Sturgeon Bank to Roberts Bank. The same kind of tests are being done on their tissues as on the resident fish populations in the river itself. And the populations and size of the species are also being recorded so that if changes occur in the future, data will be available for comparative purposes.

Prof. Parsons is also gathering information on the vitally important "plume" at the mouth of the river where it merges with the Gulf of Georgia, to find out what factors make the area so productive to aquatic life and how they interrelate.

"Fresh water is lighter than salt water so when the river runs into the Gulf, the fresh water flows across the top of the salt water, causing a drag which brings up the salt water from underneath. The salt water beneath the surface levels, which are penetrated by sunlight, is naturally eutrophic. It is rich in nitrates and phosphates. But because sunlight doesn't normally reach it, growth can't take place through photosynthesis," Prof. Parsons said.

"But the effect of the drag of the fresh water is to bring up the eutrophic salt water so photosynthesis can take place. Phytoplankton are produced which are eaten by zooplankton, small animal organisms, which are in turn eaten by fish.

"Within the plume about one billion young salmon live and thrive. Half of these salmon come from the Fraser and half from surrounding rivers. Apart from salmon, other species such as herring also benefit from the high production of the area."

Prof. Parsons is building a computer model of the life chain in the plume. He is measuring how much light gets into the water, how much nitrate and phosphate is available, how much food zooplankton need to grow, and what affects phytoplankton production.

BUILD MODEL

"Once the model is built, we should be able to know, for example, what would happen to production in the plume if less sunlight penetrates the water. Suppose a layer of coal dust falls on the surface. We should be able to estimate the end result on the amount of food available to commercial fish species. Or we could knock off half the zooplankton population on the computer, simulating another natural or unnatural disaster, and estimate how huge the bloom of phytoplankton that results would be, since there would be half the amount of zooplankton to feed off the phytoplankton."

Two physical studies of the lower Fraser are being done in UBC's Department of Civil Engineering. Dr. Michael C. Quick, an associate professor, and two graduate students, Mr. Donald Hodgins and Mr. Christopher Joy, are building a computer model of water flow in the river. Once the complicated pattern of ebb and flow can be simulated on a model, then it should be possible to estimate what will happen to a pollutant dropped into the river at a certain point, how it will disperse and where it will go.

"There's an enormous fluctuation in the flow of fresh water throughout the year," said Dr. Quick. "During the winter the Fraser flow goes down to about 30,000 cubic feet of water per second. During the freshet, flows can go up to an average of 300,000 cubic feet per second and last spring they were up as high as about 460,000.

"In the winter, salt water intrudes into the lower reaches of the river, perhaps up to Annacis Island. The mixing of fresh and salt water is important to the biology of the estuary and also affects where silt is deposited. During the freshet there is no intrusion at all. On the contrary, a huge plume of fresh water spreads across to the Gulf Islands."

Dr. Quick said Pitt Lake is a particularly interesting feature of the system because it undergoes tidal variations of as much as four feet. This means that water flows up and down Pitt River. These flows can be as large as in the mainstream of the Fraser. The large floodtide flows in Pitt Lake have built a reverse delta which extends several miles into the southern end of the lake.

Dr. Arthur H. Benedict, assistant professor in UBC's Department of Civil Engineering, is working on ways of predicting the level of various pollutants in the river. Some of the methods he is using involve models. But before model-building begins, he is gathering information from research done on the river in the past as well as data collected from three months of water sampling this summer.

Dr. Benedict needs the information to find out what the pollution picture of the river looks like now, and which pollutant levels should be predicted in the future.

His work complements Dr. Quick's. Their combined research will show what pollutants are in the river, what their concentrations are, where they are, what some of the concentrations are likely to be in the future, and where they end up as a result of water movement.

Dr. Olav Slaymaker, of UBC's Department of Geography, and Dr. Leslie M. Lavkulich, of the Department of Soil Science, are putting together a land-use map of the lower Fraser showing the source of pollutants entering the river. The two associate professors are using aerial photos of the river and its tributaries. Information from the photos is being added to the map in five-year time periods beginning in 1944. The map will also include information on the quality of the water in the river, and from readings taken from monitoring devices placed at the mouths of 11 tributaries emptying into the lower Fraser.

The map will show nine major groups of pollution sources: residential land; food, beverage and animal-feed processing areas; chemical industries; light industry; heavy industry; wood and wood-processing areas; agricultural and forest lands; transportation and energy corridors; and recreational land.

Dr. Timothy O'Riordan of the Department of Geography at Simon Fraser University and Mr. Ken Peterson, a research assistant with Westwater, surveyed the attitude of the public towards the river and some of those who use it for recreation.

About 750 households from Hope to Vancouver were contacted this summer, as well as about 200 fishermen on the sandbars of the Fraser and more than 300 visitors to the Reifel Waterfowl Refuge at the mouth of the Fraser.

"Our preliminary indications show that most householders don't think of the Fraser in terms of recreation. It's a polluted, muddy river to them, with no recreation potential," said Mr. Peterson.

"The responses we got from the Reifel Refuge indicate that there's a tremendous latent demand for that kind of intensively-managed waterfowl reserve. They receive some 60,000 visitors a year. And many of the people who visit it don't think of themselves as birdwatchers. They've heard about the refuge through word of mouth.

"Some of the people using the sandbars of the river for fishing do it because they can't afford or don't have the facilities to fish in the Interior or do salt water fishing. Some are old-age pensioners. What alternative outdoor recreation they would have if the sandbar fishery were closed to them, we don't know."

Mr. Harry Campbell, an assistant professor in UBC's Department of Economics, and Mr. Ken Peterson have just begun work on analysis of the cost of pollution control on the river. Using information gathered by other Westwater researchers, they will estimate how much different control techniques would cost.

Mr. Robert T. Franson, assistant professor in UBC's Faculty of Law, is studying the laws governing water quality in the Fraser and the organizations and agencies that are responsible for applying them.

"First we're looking at the various pollution boards, federal and provincial environment protection agencies, harbor boards and other decision-making groups that determine what the water quality of the river is going to be," Mr. Franson said.

"We want to survey the policies these groups have adopted to carry out the legislation. Perhaps the legislation is badly written or is incomplete and leads to administrative difficulties. We also want to examine the informal policies of the regulating agencies that might not necessarily be reflected in law but nevertheless control what happens to the river."

WATER QUALITY

"In the end we will be able to put forth the advantages and disadvantages of different laws that might be enacted and the different government organizations that might be chosen to administer the river's water quality and iron out the conflicts between the river's many users," Mr. Franson said.

Mr. Anthony Dorcey, assistant to the director of Westwater, is interested in examining alternative policy and financial arrangements that could be used in the management of water quality in the Fraser.

He would like to examine who is paying for pollution control now. For example, it's now possible for municipalities and industries to get what in effect are grants from the federal government for installing waste treatment facilities. So the Canadian public in general pays part of the cost of treatment plants that mainly benefit local or regional areas.

Mr. Dorcey would also like to be involved in framing alternative policies that could be used to manage water quality. How well, for example, would an "effluent charge" work? Under this policy, polluters would pay a fee in proportion to the amount of effluent they pour into the river. The fees or licences would be scaled so that it would be cheaper in the long run for a polluter to install anti-pollution devices than pay for the privilege of polluting the river.

This research would be part of the final work on the lower Fraser project which is only just beginning. It would include, if research results indicate they are necessary, the evaluation of a number of alternative laws governing water quality, possible modifications in the authority of agencies managing water quality and new fiscal arrangements between municipal, regional, provincial and federal governments to finance the maintenance of water quality.

"We will release interim reports as they are completed," Prof. Fox said, "and by early 1975 we should be able to present our final report to the public."

Decisions for the Future

Every second that you read this, 2.5 million cubic feet of water flows across the face of Canada, more than 6 per cent of the flowing fresh water of the globe. Each of us can claim some 65,000 gallons of flowing fresh water each day, about 10 times the average for all the other people of the world.

But perhaps this gives a false impression of the availability of Canadian water. Though 90 per cent of the population is huddled in cities within a few miles of the Canada-U.S. border, 60 per cent of the flowing water of Canada drains north. And much of our water flows only during the summer. In winter it is accumulating as snow across the frozen Canadian landscape.

This geographic mismatch of water and population has led to major diversions of Canadian water by both Canada and the U.S. At least five major river diversions have been completed in Canada, as well as at least 14 minor diversions, and no less than one dozen major diversions have been proposed, according to a 1967 publication by Mr. R.H. Clark, chief of the planning division of Environment Canada's Inland Waters Branch.

Resistance to the manipulation of Canadian waterways is changing. Two decades ago Canadians looked upon development of our waterways as a mark of national and economic progress. Or they thought development unfortunate but necessary or inevitable.

Since then opposition has sprung up, usually on the grounds that some of the unanticipated effects of water development have turned out to be bad. The advantages, it's argued, aren't worth the disadvantages.

But recently a new theme of resistance has been added. Some now feel that any large-scale development of Canadian water is a desecration of Nature. Their arguments combine two of the most powerful issues in Canada today: nationalism and the environment.

Many of the traditional spiritual values of Western society have eroded, and with them the basically religious idea of unity, of oneness, that has permeated the Western tradition, the idea of the universe as the creation of one Supreme Being.

In the face of this some of us, consciously or unconsciously, have rediscovered in ecology the unitism that is central to the Judaeo-Christian tradition. Every form of life is somehow linked to every other form of life. A blink of an eyelid sets up a motion which, however faint, is part of the total energy of the universe and so affects the farthest star. Unity is restored and we are no longer alone. Any emotional feeling towards the physical unity of Canadian water from the Atlantic to the Pacific has part of its source in the unitism of the Western heritage. Whatever the future of Canadian water, whether decisions will be wise or foolish, the consequences have the potential of affecting us profoundly, both materially and spiritually. As a result of water research such as that being done at UBC, future decisions are more likely to be beneficial.

UBC NEWS IN BRIEF

Two former presidents of the Alma Mater Society and the current president of the UBC Alumni Association have been elected to the UBC Board of Governors by the University Senate.

Elected to three-year terms were:

Mrs. Beverly Field, a Vancouver housewife and president of the Alumni Association.

Mr. Charles Connaghan, president of Construction Labor Relations and AMS president in 1958-59.

Mr. Benjamin B. Trevino, a Vancouver lawyer and AMS president in 1957-58.

Two Board members elected by Senate for the 1969-72 term, Mrs. John MacD. Lecky and Mr. Paul Plant, have been given three-year appointments to the Board by the Lieutenant-Governor in Council.

Eight candidates ran for the three Senate seats on the Board. The other five nominated were Mr. Aaro E. Aho, Mr. Frank C. Walden, Mr. David R. Williams, Mr. Svend J. Robinson and Mr. Stanley J. Persky. The last two candidates are students.

Other members of the Board are: Mr. Justice Nathan T. Nemetz, Chancellor; Dr. Allan M. McGavin, Chairman; Mr. Thomas Dohm, Mr. Richard Bibbs, His Honor Judge Leslie A. Bewley and UBC President Dr. Walter H. Gage.

* * *

UBC students are a good risk when it comes to borrowing money.

Figures compiled by the University's Finance Department show that of a total of $1,657,874 in loans made directly by the University to students over the past five years only $5,520, or .33 per cent, had to be written off.

Default rate on Canada Student Loans made through the Campus branch of the Bank of Montreal is only 2.4 per cent, says loans officer Edward Hoskinson.

A national survey a year ago showed a default rate of 4 per cent, or $5.4 million on a total of $135 million in student loans due to be repaid at that time.

* * *

UBC plans to hire a consultant to carry out a survey of all wastes and other by-products generated on the campus. The object of the survey will be to develop appropriate methods for recycling or disposing of wastes of every kind, said Mr. Arthur Slipper, assistant to the director-planning in UBC's Department of Physical Plant.

The initial objective of the survey, which will cost an estimated $25,000, will be to determine the magnitude of the campus waste problem, Mr. Slipper said.

He cited waste paper, chemical, biological and radioactive wastes from laboratories, manure disposal and fertilizers as areas to be included in the survey.

UBC, Mr. Slipper said, should be a leader in the field of ecology and in the development of appropriate disposal methods.

The consultant, he said, will be asked to correlate all information on wastes and make recommendations for dealing with them. Mr. Slipper said it might be possible to recycle paper for use again on the campus or convert it for sale as a kind of fireplace log or as wallboard.

It might also prove to be possible to convert manure from campus animal barns into a marketable form of fertilizer, he said.

He also pointed out that UBC now has under construction at the extreme south end of the campus a new unit for disposing of solid and chemical wastes.

* * *

The new Director of International House on campus has set out to change the image of the institution.

Mr. Colin Smith, a former teacher in B.C. schools who has had seven years' experience as an educational advisor to government ministries in Southeast Asia, Africa and the West Indies, believes he can bring some new insights to the job, which he assumed Sept. 1.

"I would like to see UBC departments that are concerned with international affairs make more use of International House for seminars and classes," he says.

"I believe that International House should become more firmly established as part of the community of scholars on campus."

Increased academic involvement in International House would, he feels, offset the misconception on the part of many students that the House is for foreign students only and that Canadians shouldn't intrude.

"Nothing, of course, could be further from the truth," he says.

A native of Taber, Alberta, Mr. Smith has an M.A. from Dalhousie University, a B.Ed. and an M.A. (adult education) from UBC.

Interspersed with his years as a teacher and counsellor in B.C. secondary schools, Mr. Smith served as principal of two government secondary schools in Sarawak, as an adult education advisor in Mid-Western Nigeria and as co-ordinator of a teaching program for the Jamaican Ministry of Education.

* * *

Svend J. Robinson, 20, a third-year Arts student and one of 12 student members of the Senate of the University of B.C., has been named the 1972-73 winner of the Sherwood Lett Memorial scholarship.

The $1,500 scholarship is awarded annually to a student who reflects the high standards of scholastic achievement, sportsmanship and the ability to serve and lead others which characterized the late Chief Justice Lett, who was Chancellor of the University from 1951 to 1957.

Mr. Robinson, who now lives at 706 – 2725 Melfa Road in Vancouver, is a graduate of Burnaby North Senior Secondary School, where he edited the school newspaper and yearbook, took part in the school's athletic program and received several awards for scholastic achievement.

In his high school graduating year, 1969, he received the highest marks in B.C. in the French and biology examinations and was awarded a B.C. Government Scholarship and a Chris Spencer Foundation Entrance Scholarship to UBC.

At UBC he has been a member of the executive of the Pre-Medical Society and has served on Students' Council as a representative of the Science Undergraduate Society.

He has also been active in a number of community service organizations as a fund raiser and in 1970 established an emergency home placement program for transient youth visiting the Vancouver area.

In 1970 Mr. Robinson withdrew from his studies at UBC to become a laborer-teacher in northern Ontario for Frontier College, an organization which places students in isolated mining and logging communities, where they work and teach basic academic subjects.

He returned to UBC for the 1971-72 academic year and in February, 1972, was elected by students to serve on the Senate. He hopes to enter the Faculty of Medicine in September, 1972.

The late Chief Justice Sherwood Lett, after whom the award is named, was the first president of the Alma Mater Society in 1915 and was awarded the Rhodes Scholarship in 1919.

He was named Chief Justice of the Supreme Court of B.C. in 1955 and in 1963, a year prior to his death, became Chief Justice of the Court of Appeal, with the title of Chief Justice of B.C.

The selection committee which awards the Scholarship includes representatives of the UBC Alumni Association, the Alma Mater Society and Graduate Students' Association.

* * *

The Vancouver Institute's 1972-73 lecture series got under way in October with addresses by Dean David Bates, of the Faculty of Medicine, Oct. 21 and Mr. Justice Patrick Hartt, a judge of the Supreme Court of Ontario and chairman of the Law Reform Commission of Canada, Oct. 28.

The series continues through Dec. 2 with speakers on the topics of political science, geological prospecting, labor, and psychology.

The Institute's lectures are held at 8:15 p.m. Saturdays in Room 106 of the Buchanan Building on the UBC campus. There is no admission charge. A brochure listing the lectures is available from the UBC Department of Information Services, 228–3131.

Lecture Series Planned

Two Canadians pre-eminent in the fields of political science and geophysics will visit the University of British Columbia in November as Cecil H. and Ida Green Visiting Professors.

The visiting professors, who will give a total of eight lectures for students, faculty members and the general public, are:

Prof. C.B. Macpherson, probably Canada's best-known political scientist and a teacher at the University of Toronto; and

Dr. H.O. Seigel, an internationally-famous Canadian geophysicist and president of Scintrex Ltd., a wholly Canadian-owned company which, among other things, manufactures geophysical instruments and environmental monitoring devices.

Prof. Macpherson will give a series of four noon-hour lectures on the general topic "The Life and Times of Liberal-Democracy" during the period Nov. 2-9, and will also address the Vancouver Institute on Nov. 4 at 8:15 p.m. in Room 106 of UBC's Buchanan Building on the topic "Can Property Survive Democracy?"

Prof. Macpherson's daytime talks will be given in Room 104 of the Buchanan Building at 12:30 p.m. on the following dates:

Nov. 2: "The Sounding Model: Protective Democracy."

Nov. 6: "The Moral Model: Developmental Democracy."

Nov. 8: "The Mid-20th Century Model: Equilibrium Democracy."

Nov. 9: "The Emergent Model: Participatory Democracy."

Prof. Macpherson, who has taught at the University of Toronto and is a former president of the Canadian Association of University Teachers, is internationally known for his writings in the field of political science.

Two of his books, *The Political Theory of Possessive Individualism* and *The Real World of Democracy*, have been translated into seven languages and reprinted in their English editions ten times. A third volume entitled *Political Theory* will be published by the Oxford University Press in 1973.

Prof. Macpherson is also the author of dozens of chapters in other books and encyclopedias and articles in popular and learned journals.

Prof. Seigel, who will visit the campus Nov. 12-25, will give two daytime lectures on the campus and will also speak to the Vancouver Institute on Nov. 18 at 8:15 p.m. on the topic "Playing the Odds in Scientific Prospecting."

He will speak on "Canadian Geophysics as an Exportable Commodity" at 1:30 p.m. on Nov. 16 in Room 106 of the Buchanan Building. On Nov. 22 he will speak in Room 2000 of the Biological Sciences Building on "Some Frontiers of Geophysical Exploration" at 3:30 p.m.

The Scintrex Company was formed by Dr. Seigel in 1967 as the result of the merger of two companies – Seigel Associates and Sharpe Instruments of Canada.

In addition to instrument manufacturing, the company, which is based in Concord, Ontario, supplies geophysical and consulting services on a world-wide basis and is concerned with the development of mineral and water resources.

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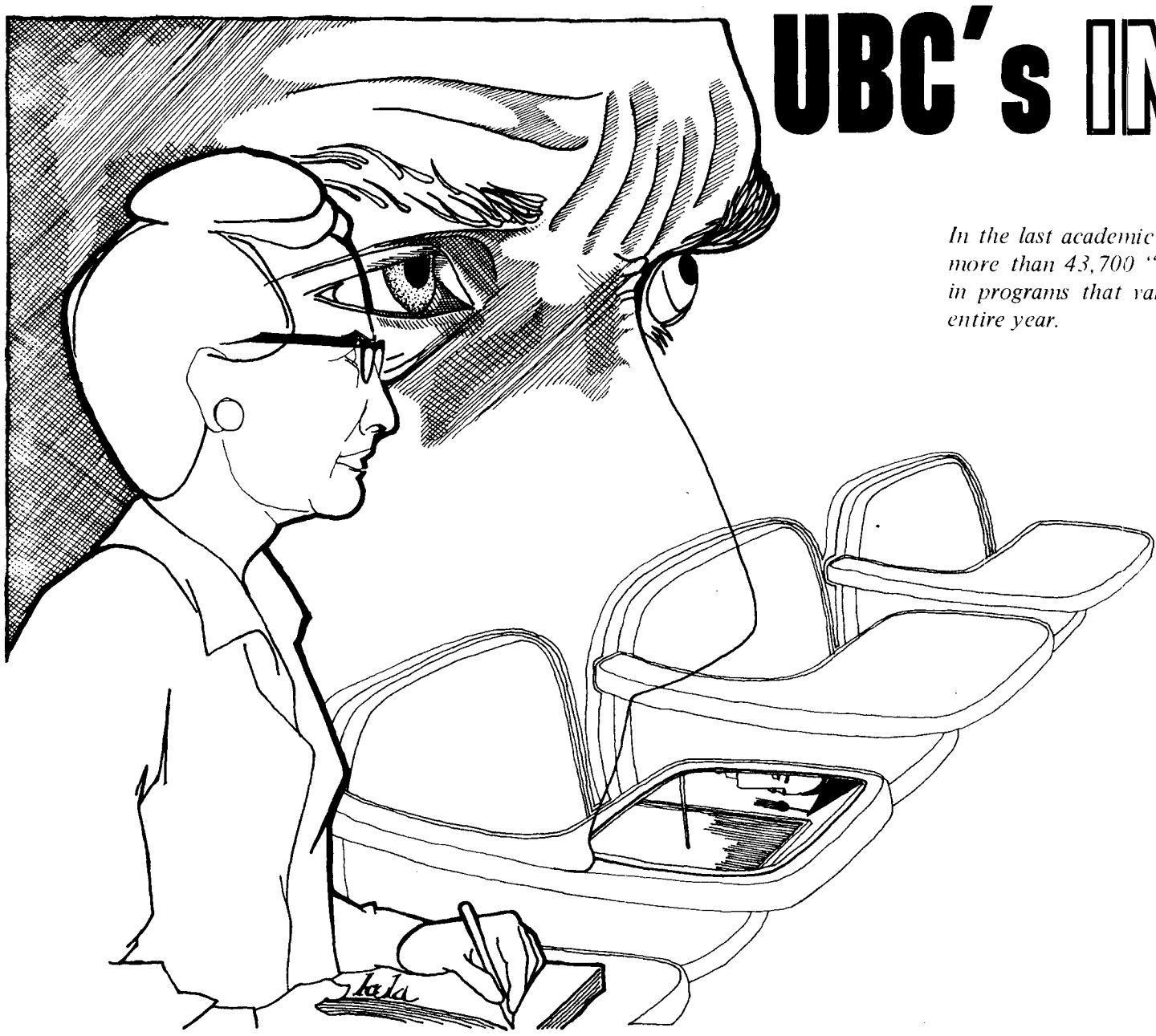
UBC's INVISIBLE



In the last academic year UBC had a learning contact with more than 43,700 "invisible" students, who were involved in programs that varied in length from a single day to an entire year.

Most people are accustomed to thinking of UBC's enrolment in terms of the 19,000-odd students who register for the regular Winter Session from September through April the following year.

The fact is that more than double that number – a total of 43,712 – last year enrolled at the University, many of them on a 12-month basis, for a wide variety of credit and non-credit programs in the fields of general and professional education.

UBC's "invisible students" are doctors, lawyers, engineers, businessmen, housewives, school teachers, policemen, dentists . . . the list is almost endless. Their motives in taking UBC continuing education programs vary but they all have in common a learning contact with UBC during the course of the academic year.

The length of contact that each invisible student has with the University varies enormously. Enrolment in a continuing education program may mean attendance at a one-day seminar on a high-specialized topic or a weekly visit to the campus for a credit certificate program.

UBC's invisible students are by no means all located in Vancouver. In 1971-72 the Centre for Continuing Education staged 68 courses for 2,143 persons outside the Lower Mainland.

The Division of Continuing Education in the Health Sciences is by far the leader in reaching out to other parts of the province. Something close to 100 programs in the Health Sciences are given in centres throughout B.C. by teams of doctors, nurses and allied professionals with the aim of up-dating the skills of health practitioners.

UBC Reports talked to a number of invisible students about their courses and programs of study. Most of them derived a good deal from the course content, but further probing revealed another benefit.

Many mentioned the companionship that resulted from meeting together regularly, while others emphasized the value of the informal discussions they had with people who were facing similar problems.

The table on the page opposite shows in capsule form the programs given by various continuing education divisions within the University and the number of participants in the 1971-72 academic year.

What follows are brief descriptions of some of UBC's invisible students and their reactions to their programs of study.

Sergeant E.W. "Ted" Lister, of the Vancouver Police Department, has no regrets that he enrolled three years ago in the Criminology Certificate Program offered through the Centre for Continuing Education. This despite the fact that the program really doesn't help him "decide whether to throw someone in the bucket." When they're dealing with the day-to-day problems of law enforcement, he says, policemen haven't enough time to put the law breaker on the couch and analyse him.

Sgt. Lister has something of a vested interest in completing the six-course program, which he hopes to do next year. When it was first suggested three years ago, he was a corporal in the Police Training Academy and was involved in originating the program. Today, he's a member of the planning and research section of the Vancouver force and is involved in the national computerized police information system, which is centred in the RCMP headquarters in Ottawa.

Why did he take the UBC program? A lot of police officers "are looking for more sophisticated means of dealing with the problems of law enforcement," he says. "The course is interesting and gives us a lot to think about, but how applicable the course concepts will be to day-to-day police work is something that remains to be seen." He admits that, on the whole, police work tends to make officers too narrow in their outlook.

In addition to attending classes one night a week at UBC, participants in the certificate program are required to do a lot of home reading and carry out various projects and write research papers. "Sometimes," says Sgt. Lister, "the course work gets a bit heavy when you've already had a full day of police duty."

Gerry Vernon, a UBC graduate (B.A.Sc. '57), was a member of the first group of 12 practising engineers who graduated this year in the diploma course in Administration for Engineers, offered by the Centre for Continuing Education in conjuction with the Faculty of Applied Science.

A 15-year employee of the B.C. Telephone Company, Mr. Vernon learned about the course through publicity material issued by the Association of Professional Engineers of B.C.

His motive, he says, in undertaking the four-year diploma program, which involves night and weekend lectures at UBC and home study, was "self-improvement." He found the course work involved was occasionally "burdensome," but he feels the program helped him in his position as the toll and transmission engineer in B.C. Tel's coastal division.

His employer paid 75 per cent of his fees and the cost of text books when he had successfully completed the diploma program.

Mr. Vernon also has a deeper involvement with Continuing Education programs at UBC. He's a member of the Council on Continuing Education for Engineers, which meets regularly to advise UBC's Centre for Continuing Education on new programs and seminars. One of the areas that the Council is having a close look at is organizing courses in centres outside Vancouver for practising engineers in all parts of B.C.

Mrs. Jean Martin, a North Vancouver housewife whose two children are in school most of the day, learned about the Daytime Program of the Centre for Continuing Education by reading the annual calendar of Centre-sponsored courses which had been sent by mail to her husband, who has also taken UBC programs in his spare time.

She chose to enrol in a non-credit program, one of 191 offered in the fall of 1971 by the Centre, entitled Options for Women. The course was designed to explore "opportunities for personal growth, development and involvement."

"The course gave all the participants a great deal of food for thought," Mrs. Martin says, "and the companionship factor was important too. Some of the participants have embarked on volunteer work and others have decided to take up a specific course of study."

Mrs. Martin herself is planning to go back to school at Capilano College in West Vancouver to take academic subjects. She feels the University should work more closely with regional colleges to offer university-level courses for citizens in outlying areas of the province.

Mr. John McOrmond saw an advertisement in a Vancouver newspaper for the three-day retail location residential seminar sponsored by the Continuing Education Division of the Faculty of Commerce and Business Administration. He found the seminar, held in the Totem Park Conference Centre May 24-26, "inspiring" and says the course gave him "exactly what he wanted to know."

Mr. McOrmond works as a project development officer for Canada Permanent Trust, carrying out feasibility studies and financial analyses for clients who are thinking of establishing everything from shopping centres to hotels. If the project looks interesting he'll recommend it to his company, which may arrange part or all of the financing for it.

Mr. McOrmond says that one of the real benefits of the program, quite apart from the course content, was the opportunity to meet other businessmen in the same

Students

field and to exchange views and discuss common problems. Informal discussion, he says, "gives you a new outlook on your own work."

Miss Trudie J. Cole, an elementary school teacher in the Delta School District, began her association with UBC last January when she enrolled for a Psychology 100 correspondence course offered by the Centre for Continuing Education.

She was one of the 3,737 students who attended UBC's 1972 Summer Session and this fall she has enrolled for another psychology course by correspondence and is also taking English 200 by coming to the campus one night a week for a credit lecture program.

Her goal is to obtain a Bachelor of Education degree, and she estimates that she can achieve her objective in two or three years by attending Summer Sessions and by taking correspondence programs.

She chose to take Psychology 100 by correspondence because she wanted to start her studies in January of this year, instead of beginning at the commencement of the academic year, in September, 1971. Her only contact with a faculty member while taking the Psychology 100 course was a telephone conversation with Prof. Edro Signori, a long-time member of the department.

"I thoroughly enjoyed talking to Dr. Signori," she said, "even if it was by telephone. He has the kind of attitude that makes you want to work."

Miss Cole, who was born in Australia, finds her studies in the current year more onerous, largely because she's taking two courses instead of one. As she puts it: "It's a matter of making time to do all the reading and study that the courses demand."

Allen C. Sewell, a 1962 Faculty of Commerce and Business Administration graduate, is employed by the real estate division of Canada Permanent Trust in Vancouver. Through the Commerce Alumni Association he received a brochure outlining a series of seminars offered by the executive development section of the Commerce Faculty's Continuing Education division.

He was particularly interested in a one-day seminar, held on Nov. 19, 1971, at the Hotel Vancouver on the impact of the federal government's proposed Competition Act on business, because some sections of the Act were related to the real estate industry.

The keynote speaker at the seminar was the Hon. Ron Basford, Minister of Consumer and Corporate Affairs, under whose ministry the Act would be administered.

"It was a very useful seminar," Mr. Sewell said, "not just because it gave me an opportunity to meet the minister but because it enabled those participating to let Mr. Basford know the feelings of the business community about the Act," which has now been withdrawn for redrafting. He feels that the informal discussions that are often an outgrowth of such seminars are more valuable than the formal seminar sessions.

Mr. Sewell, who has also attended other continuing education programs sponsored by the Faculty, feels that the conference organizers should make an effort to provide some sort of a summary of the proceedings of seminars for the participants. "We usually get advance material on seminars and courses," he said, "but never a summary, which would be useful."

Philip Steel, the owner of the Cookie Jar Ltd., a bakery enterprise with seven outlets in the Lower Mainland, decided to take part in a three-day seminar on retail location offered by the Continuing Education Division of the Faculty of Commerce and Business Administration because he thought it might give him a formula for determining the best locations for outlets for his products.

He says he found the course "very interesting, but not very useful" for his purposes. The course did deal with a method of determining good retail locations, he says, but it involved extensive market research studies which he feels are too expensive for the small businessman.

The real value of the course for him, he says, was the opportunity to talk to other businessmen who face problems similar to his and to learn how other small companies are dealing with them. He's taken other courses through the Commerce Faculty's Continuing Education Division, which he says were "very useful and enjoyable."

Participation in Summer Session and Continuing Education Programs at UBC 1971-72

	NO. OF PARTICIPANTS	
SUMMER SESSION 1972		
Students attending UBC's 1972 Summer Session had 258 courses to choose from. They were taught by 250 instructors. Faculty enrolments were as follows: Arts – 684; Commerce – 138; Education – 2,594; Science – 321. Total		3,737
CENTRE FOR CONTINUING EDUCATION		
CREDIT COURSES, including 46 evening credit courses given during the 1971-72 Winter Session, 33 courses given during the 13-week 1972 Intersession from May to July and courses given in the field, either in B.C. or abroad	2,632	
CREDIT COURSES (21) given by correspondence	574	
CREDIT COURSES given for certificate and other purposes	119	
NON-CREDIT courses given by correspondence	71	
CONTINUING PROFESSIONAL EDUCATION COURSES offered in association with various UBC Faculties.		
Adult Education – 11 courses for participants from a variety of agencies and institutions, and a diploma program in adult education	339	
Resource Industries – Comprising 20 courses in Agriculture; seven in Forestry, including a symposium to mark the 50th anniversary of the Faculty of Forestry; and seven courses and two evening lectures in Fisheries, including a conference in Nanaimo on environmental issues, research and fisheries management	1,811	
Community and Regional Planning – Seven courses for professionals, including two offered by cassette tapes and printed materials for planners in centres outside the Lower Mainland, and a seminar for Canadian planning students organized by the UBC School of Community and Regional Planning	226	
Education Extension – 44 program events and advanced courses leading to the Continuing Education Certificate in Early Childhood Education	3,549	
Continuing Education for Engineers, including a Diploma in Administration for Engineers, roughly equivalent to a full year's post-graduate work, and 56 courses and seminars held in Vancouver and six B.C. centres	1,733	
Continuing Legal Education – 22 courses and activities for practising lawyers and a Criminology certificate program for police, probation officers and corrections personnel	1,556	
Social Work, Aging and Inter-Cultural Relations – Three courses for professional social workers, courses on aging and collaboration with the Vancouver Sikh community	771	
NON-CREDIT GENERAL EDUCATION COURSES		
Creative Arts and Science – 46 courses covering such areas as photography, literature, film, art and music	1,430	
Daytime Program – 50 courses and activities, the majority held in off-campus centres	2,484	
Humanities and Life Sciences – 24 courses, workshops and other activities in such fields as current affairs, creative writing and psychology	1,633	
Languages – Four intensive residential language programs – two in English and two in French – and an English language program for foreign students	336	
Public Affairs – 25 courses on a wide variety of topics, including B.C. history, international affairs and Canada-U.S. relations	1,096	
Social Sciences – 33 courses, some offered in conjunction with the UBC Departments of Economics and Geography. Courses in archaeology and native Indian culture were also included	1,596	
Study-Travel – Two programs involving travel in Europe and Mexico	49	
Urban Affairs – Educational workshops and other events for elected local government officials, urban affairs specialists and citizens	353	
GRAND TOTAL FOR CENTRE FOR CONTINUING EDUCATION PROGRAMS		22,358
INDIAN EDUCATION AND RESOURCE CENTRE		
In the past two years the IERC has been developing resource materials, including reports, articles, journals, lesson aids and tapes on Indian culture for use in B.C. schools. Two-thirds of this material is out on loan to schools in any one week. In 1971-72 the IERC organized 35 teacher workshops designed to prepare teachers for Indian education		2,000
FACULTY OF COMMERCE AND BUSINESS ADMINISTRATION		
Diploma Division, Accounting Management – Division operates programs in professional fields. Diplomas are awarded in the following areas after an average of three to four years of study: Certified General Accountant, Chartered Accountant, Registered Industrial Accountant, Junior Chamber of Commerce Diploma, Sales and Marketing Diploma, Institute of Canadian Bankers Diploma. There is also a management studies program for insurance personnel. Courses consist of evening lecture programs and one correspondence course for the Chartered Accountant program	4,638	
Real Estate Program – Offered are a four-year diploma course involving four options, pre-licensing programs for real estate salesmen and agents and a real estate short course. Total registration in all programs	4,066	
Executive Development – A series of seminars and workshops designed to enable businessmen to keep abreast of new developments in the fields of financial management, organizational behavior and systems analysis	488	
GRAND TOTAL FOR FACULTY OF COMMERCE PROGRAMS		9,192
CONTINUING EDUCATION IN THE HEALTH SCIENCES		
Dentistry – 25 courses were given in the last academic year on the UBC campus for practising dentists and dental hygienists	537	
Human Nutrition and Dietetics – Three courses and one special lecture given in conjunction with the UBC School of Home Economics	467	
Nursing – 1971-72 program consisted of eight on-campus courses, ranging in length from two to four days, and two off-campus courses. One of the off-campus courses – Coronary and Intensive Care Nursing – was given in two parts for nurses specializing in emergency and intensive care for patients with heart disease. The course was given in more than 15 B.C. centres by travelling instructors. Total participation in Nursing courses	3,089	
Pharmaceutical Sciences – Four on-campus courses and five off-campus courses given in four B.C. communities	276	
Medicine – A total of 101 Continuing Medical Education courses for physicians and other health professionals were staged in 1971-72. Almost half the courses – 48 – were community hospital courses held in centres throughout B.C. Total participation	2,056	
TOTAL PARTICIPATION IN CONTINUING MEDICAL EDUCATION COURSES		6,425
GRAND TOTAL FOR ALL UBC SUMMER SESSION, INTERSESSION AND CONTINUING EDUCATION PROGRAMS IN 1971-72		**43,712**

UBC ALUMNI
Contact

Picture courtesy Vancouver Sun

Point Grey cliffs show signs of recent sloughing as waves continue eating away cliff-base at high tide. Cliff-face at top of this section is now only 60 feet from Cecil Green Park. Continued erosion poses threat to $3 million worth of University buildings.

ALUMNI REQUEST MEETING

Action Sought On Cliff Erosion

The UBC Alumni Association plans to make official representation to the provincial government for action to stop the erosion of the Point Grey cliffs.

Members of the Association's cliff erosion committee will seek a meeting with provincial Lands Minister Bob Williams to discuss a proposed erosion solution which the Association favors. The proposed solution is outlined in a 16-page brochure which the Association has recently produced, detailing the nature and extent of the cliff erosion problem.

The Alumni Association has thrown its support behind the proposal for construction of a sand-gravel protective fill along about 3,700 feet of the most seriously threatened section of the cliffs. This proposal was developed for the Vancouver Parks Board by Swan Wooster Engineering Co. Ltd. and the Parks Board has accepted it. There is to be no road built along the protective fill; it is to remain a recreational beach.

Bob Dundas, chairman of the Alumni cliff erosion committee, pointed out that in recent years the cliffs have been eroding away at a rate of 0.3 to 1.6 feet per year and now several University buildings are threatened with disaster if nothing is done to stop the erosion. The most seriously threatened is Cecil Green Park, an imposing former residence which serves as offices for the Alumni Association and a conference and social centre for campus and community groups. At the nearest point, the cliff-face is now only 60 feet from this building. But the building is only about 20 feet from the predicted line of a future slide.

Continued erosion also poses a threat to the School of Social Work in the old Graham residence, the UBC President's residence, and the former women's residences. The total value of the buildings in question is about $3 million.

"The steady eating away of these cliffs should be alarming enough to any responsible person," says Bob Dundas. "But what is more alarming is the fact that there is a danger of a large slide – somewhat like the one that struck the Quebec village of Saint-Jean Vianney some time ago – being triggered on these cliffs by prolonged heavy rain or earth-shock. If nothing is done, we may be faced with a similar disaster."

Erosion is hitting the Tower Beach section of the 200-foot cliffs the hardest. The main cause of the erosion is the wave action of the ocean at high tide, with the greatest erosion occurring during stormy winter months. Wave action undermines the sand cliffs which then slough onto the beach, to be swept away by waves. The undermining effect of surface and subsurface drainage water also contributes to the creation of slide conditions.

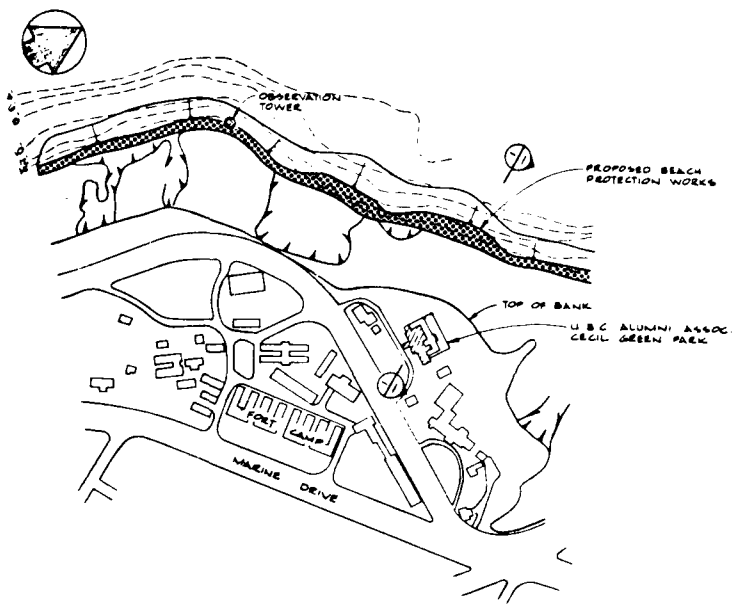
The Alumni Association favors construction of a sand-gravel protective fill as the most economical and best available solution to the problem. The estimated cost of the project is $250,000.

Essentially the proposed solution calls for creation of a new beach above highwater elevation to protect the base of the cliffs from further sea erosion. Sand dredged from nearby offshore areas would be used for fill and would be covered with a three-foot protective layer of coarse pit-run gravel. The fill would be of sufficient width to permit the accumulation of slide materials at the base of the cliff above the wave zone.

The minimum width of the protective strip would be 30 feet, extending to a maximum of 85 feet at the most critical point. By protecting the cliffs from further wave erosion and allowing slide materials to accumulate on the new beach, the protective fill would enable the cliffs to stabilize. Once this stability is achieved, it is expected, on the basis of similar Point Grey slopes, that the slopes would eventually be covered with vegetation.

Once the erosion control project is completed, the action of the waves should gradually "landscape" the area, carrying sand and driftwood up onto the beach, making it a pleasant, natural beach for recreation.

Some copies of the Association's Point Grey cliff erosion brochure are available to interested groups on request. For information contact: UBC Alumni Association, Cecil Green Park, 6251 N.W. Marine Drive, Vancouver 8, B.C. (228–3313).



Proposed Protective Beach Works

Alumni Association favors construction of protective sand-gravel fill along 3,700 feet of most seriously threatened cliffs. Proposal would prevent further erosion and preserve Tower Beach for recreation. It would not include a road. Outlined section in illustration indicates protective fill; shaded portion illustrates area that would be visible at high tide.