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Rare Artifacts Uncovered Near Campus

Young excavator examines siftings in search for artifacts during summer dig on Musqueam Indian Reserve

Picture by Jim Banham

By JOHN ARNETT
UBC Reports Staff Writer

UBC archeologist Prof. Charles Borden has made so many significant discoveries over the years that he is seldom moved to superlatives when describing his latest finds.

But there is a quiver of excitement in his voice and a faint smile of triumph on his face when he describes the latest archeological discoveries on Vancouver's Musqueam Indian Reserve, three miles from the UBC campus, as being "really phenomenal" and "most extraordinary."

For he and his teams of UBC, Vancouver City College and young Indian diggers headed by archeologist David Archer have, during the summer months, come up with finds that rank with some of the most notable in B.C. archeological history. They have uncovered the rarest of the rare — perishable articles that are 2,500 to 3,000 years old.

Encased in slushy mud eight feet beneath the surface of an ancient Indian burial ground, the diggers uncovered precious wooden artifacts and matting and basketry that date back to a thriving Northwest Coast civilization that far predates the Christian era, the Roman Empire and the glories of ancient Greece.

MATTING FOUND

"Truly, truly remarkable," says the 68-year-old professor emeritus of archeology, as he fondles a rust-colored wooden wedge, fashioned from a yew or dogwood tree about the same time that the ancient Egyptian monarchs were planning the later pyramids.

He holds up a piece of cedar bark matting that 3,000 years ago could have formed part of a floor mat of an Indian house. "Finds such as this rank in importance, I believe, with finds on lake bottoms in Switzerland and southwest Germany," he says. "Certainly, to my knowledge, this is the first time that perishables of this age have been found in Canada."

Each artifact is in a state of almost perfect preservation because it has been preserved, over the centuries, in waterlogged sediment which has sealed off oxygen and thus prevented the bacterial action that would cause disintegration.

"What happens," says Prof. Borden, "is that the interior of the cells decays but the cell walls remain. Exposure to the air would result in evaporation of the water and complete disintegration of the artifact."

To prevent this from happening after discovery, the artifacts are shipped to Victoria where Mr. Philip Ward of the Conservation Laboratory, Provincial Museum, immerses them in a carbowax solution which replaces the water and preserves the cell walls. After about two months the artifacts can be safely exposed to the air.

In addition to the perishable artifacts, which also include "buckets and buckets" of wood chips, indicating that many artisans worked there, the searchers found cedar cordage and rope of different sizes, elk antler carvings and slate and stone artifacts.

A special prize is a bayonet-shaped spearhead which was probably used to kill sea mammals after they had been harpooned, and which Dr. Borden describes as one of the most extraordinary, and certainly the largest, projectile points ever found on the Northwest Coast.

The 15-inch-long projectile is hexagonal in cross-section and was precision-ground as finely as any comparable steel bayonet produced with the most modern grinding and measuring devices.

The latest discoveries come from what Prof. Borden describes as the Locarno Beach Phase of Indian cultural development. This phase, dating from 1000 B.C. to 200 to 300 B.C. is named after excavation work in Vancouver's Locarno Beach area in 1948.

The next phase is the Marpole Phase, which runs from 400 B.C. to 300-400 A.D., followed by the little-known Whalen Phase, between 400 A.D. and 1250 A.D. The last phase, known as the Stselax Phase, runs from 1250 A.D. to the arrival of Simon Fraser in 1808.

It was the search for more information on the Whalen Phase that led Prof. Borden and his team of diggers to the Musqueam site. "Because of the long history of Indian settlement in the area we thought that we would uncover some of the information that we were seeking; instead we were taken further back into history than ever before," he says.

Actually, the initial request to undertake archeological explorations at the present Musqueam site came from the Indians themselves, recalls Dr. Borden. "The whole area is about to become a housing subdivision and we were invited to do some excavation work before construction began."

GRANTS MADE

The area was of particular interest because it had been the site of mortuary houses and therefore had been untouched in any previous archeological work.

Work began in the spring of 1972 with grants from the National Museum of Canada and the First Citizens' Fund. The latter grant enabled young Indians to work on the site, lending, says Dr. Borden, "an added special charm and significance to the project."

The first summer of excavation yielded a great

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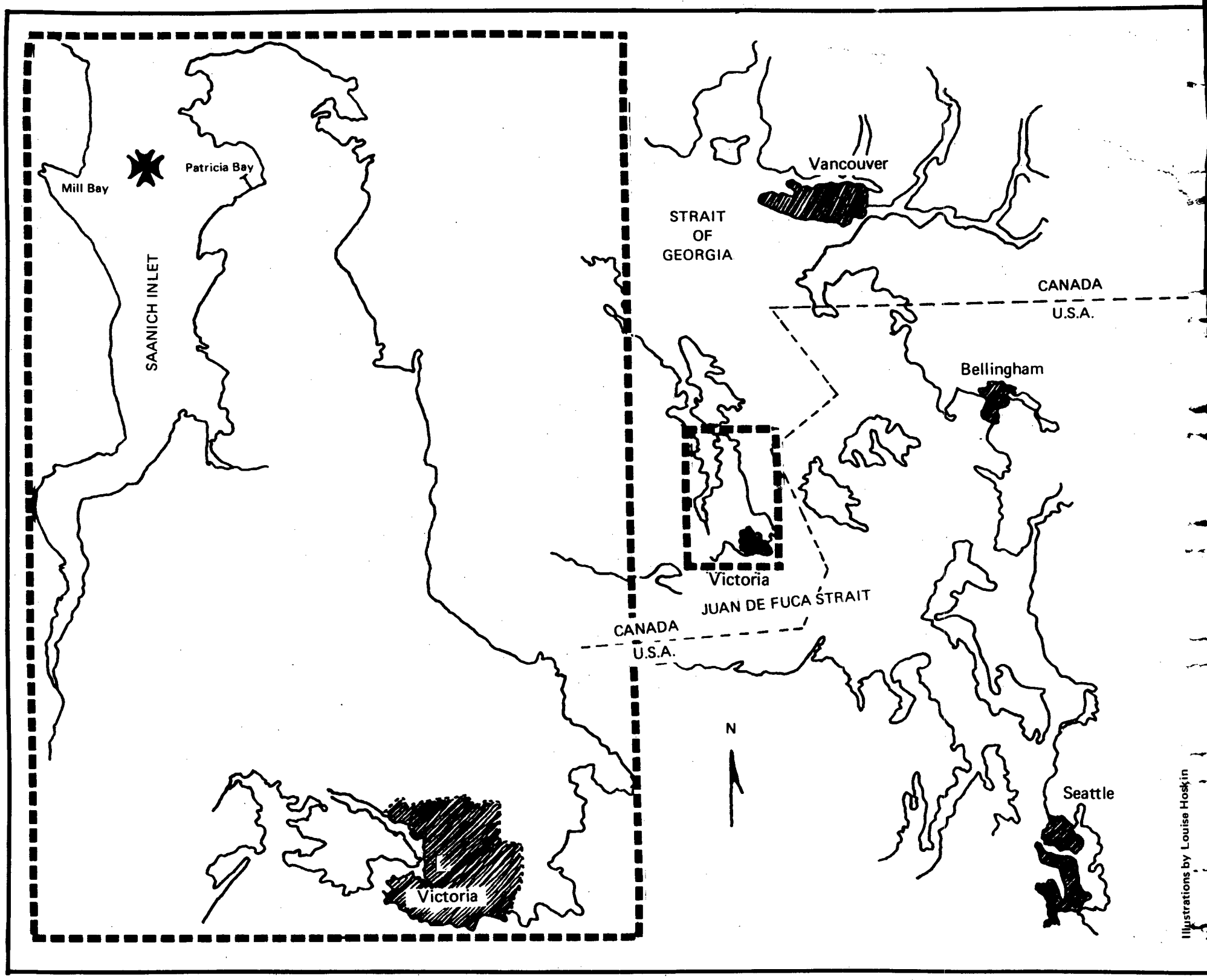


Illustrations by Louise Hoskin

SILOS IN THE SEA

By Peter Thompson
UBC Reports Staff Writer

A sign on the door says "This is not Sidney Taxi. Moved to Sidney Hotel" and another sign spells "CEPEX" in a mod, hand-lettered monogram shaped like a fish. A few feet inside the cramped, one-storey building, up against a wall, is a seat from a truck. The seat is the only comfortable place to sit even though it's so low that the knees of anyone sitting in it are higher than his head.

There's the usual jar of coffee and Coffee-mate and a kettle but instead of a street map on the wall there's a marine chart of the waters north of Victoria, including Saanich Inlet.

A humble office tucked around the corner from the main street of Sidney on Vancouver Island's Saanich Peninsula. Strange surroundings for the temporary headquarters of an international oceanographic research project that could extend up to 10 years and involve spending $10 million.

CEPEX, or "Controlled Ecosystem Pollution EXperiment," will soon move out of the former taxi depot into trailers a few miles away at the Victoria International Airport at Patricia Bay on Saanich Inlet. Preliminary work is already being done by CEPEX researchers in Pat Bay in preparation for full-scale activity next spring. Then a series of experiments will start to find out the long-term effects of pollutants on life in the oceans.

Major source of funds for the experiments will be the National Science Foundation of Washington, D.C.

Taking part in CEPEX are the Skidaway Oceanographic Institute, University of Georgia; the Marine Laboratory, Aberdeen, Scotland; the Woods Hole Oceanographic Institution of Massachusetts; the Scripps Institution of Oceanography in California; the University of Miami; and the University of B.C.'s Institute of Oceanography.

Other agencies such as Environment Canada, which is providing some facilities for the experiments, and the University of Victoria have been invited to participate in parts of the program.

Prof. T.R. Parsons of UBC's Institute of Oceanography is one of three members of a committee which will run the experiments. He says CEPEX grew out of the new emphasis on oceanographic research around the world which began with the International Decade of Ocean Exploration (IDOE) in 1970. A team of oceanographers put CEPEX together as a special IDOE project.

LITTLE KNOWN

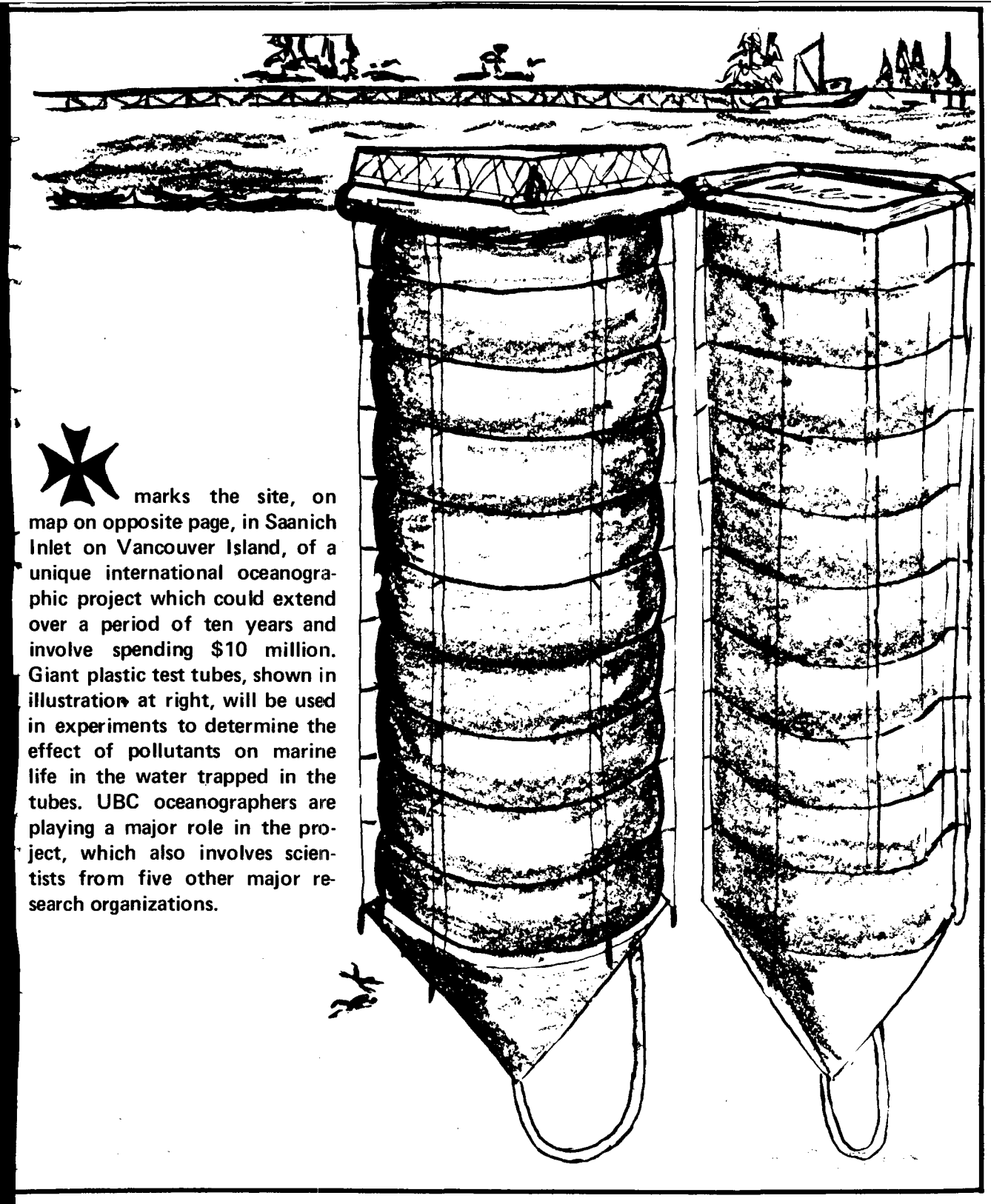
"Little is known about pollution, especially the type of long-term, low-level pollution which CEPEX will study," Prof. Parsons said.

"Among the easiest and cheapest pollution experiments are those that measure the acute toxicity level of a pollutant on organisms, the amount of a pollutant needed to kill a living thing.

"You can take a test tube of sea water, for example, and add a heavy metal such as mercury to it until the microscopic phytoplankton in the sea water dies. That tells you what concentration of mercury will kill phytoplankton, the first link in the food chain of the sea.

"But what about the long-term effects of lower, non-lethal amounts of mercury and other pollutants? An organism that feeds off phytoplankton will accumulate a larger amount of mercury and other pollutants in its body than was present in a single phytoplankton. What will the result be over a period of 20 years on animals at the end of the food chain, on the fish we eat, for example?"

CEPEX will use six huge "test tubes" of clear, flexible plastic in its experiments. Being designed by Case Existological Laboratories in Victoria, the test tubes will be suspended from the surface like up-ended silos. Officially called controlled experimental



marks the site, on map on opposite page, in Saanich Inlet on Vancouver Island, of a unique international oceanographic project which could extend over a period of ten years and involve spending $10 million. Giant plastic test tubes, shown in illustration at right, will be used in experiments to determine the effect of pollutants on marine life in the water trapped in the tubes. UBC oceanographers are playing a major role in the project, which also involves scientists from five other major research organizations.

ecosystems, each test tube will measure 30 feet across and will extend 90 feet beneath the surface. They will be linked in a honeycomb pattern and moored a few hundred yards from shore, away from sport fishing areas. One-quarter-scale models of the test tubes are now being tested in Pat Bay.

Controlled amounts of pollutants such as heavy metals and hydrocarbons will be added to the trapped water in the test tubes and their effect on the life in the water will be studied.

Prof. Parsons says that the levels of pollutants to be added will have no effect on the marine life of Saanich Inlet.

The concentration of substances which will be added to the test tubes will be too low to be harmful. When the test tubes are periodically emptied into the inlet, their contents will be rapidly diluted even further. Prof. Parsons said that water released from a test tube will be diluted by a factor of more than 1,000 within the first 500 feet of the project's site.

"We're trying to save the environment, not harm it," he said. "But the fact that we're adding pollutants to a few hundred cubic yards of sea water may seem strange, because there is a lot of confusion about what is and what isn't a pollutant.

"Pollution is a misleading word. We tend to think that all pollutants are bad or are man-made. That isn't so. The presence of some substances in the environment is necessary for life. But larger amounts of many of the same substances can be deadly.

"Water that is without nitrates and phosphates is sometimes misleadingly said to be pollution-free. But that water is as dead as water so choked with nitrates and phosphates that life is impossible.

"In the natural cycle of a river, for example, the level of nitrates, phosphates and other nutrients increases over thousands of years until the river becomes naturally polluted. By introducing nutrients in large amounts to the water, man can dramatically accelerate this natural process."

Prof. Parsons said that most of the mercury in the sea is from natural sources. It has come from gas escaping from the earth's crust, including volcanic activity. There's little doubt, he said, that if the earth went through another period of increased volcanic eruptions, mercury concentrations in our environment would increase.

Mercury is a heavy metal that is not necessary for life and at higher concentrations it is lethal. Copper, another heavy metal, is necessary for life though it is also deadly at concentrated levels.

Concentrations of heavy metals can be 10 times higher in sea water near land than in the open ocean. This is because of the runoff of heavy metals from the land. Some heavy metals are leached out of the earth naturally. Others are the result of industry and agriculture.

"The concentrations of heavy metals and hydrocarbons we will add are so low that it is hard to find water clean enough for us to do our experiments," Prof. Parsons said.

PROJECT CLEARED

"The hydrocarbons we will add in one year will be less than what is lost by a 50-horsepower outboard motor used for a summer of weekend sport fishing.

"The total amount of dissolved mercury from natural sources in the inlet is about 300 kilograms. The Goldstream River, the major source of fresh water into the inlet, adds about 1.2 kilograms per year. CEPEX will contribute a maximum of 0.016 kilograms a year."

The project has been cleared by the B.C. Pollution Control Branch and the federal Department of the Environment. Similar studies are being done in Loch Ewe, Scotland, Prof. Parsons said, as part of the international study.

PROF. R.D. JAMES

New UBC Medal Established

UBC has established a medal in recognition of "the meritorious and distinguished achievements" of **Prof. Ralph D. James** as head of UBC's Department of Mathematics from 1948 to 1973.

The Dr. Ralph D. James Medal will be awarded annually to the student in the graduating class whose record and promise in mathematics is considered by the department to be the most outstanding.

Prof. James resigned as head of the UBC Mathematics department in June of this year. He continues to carry on full-time teaching duties in the department.

Prof. James received the degrees of Bachelor and Master of Arts in mathematics at UBC before enrolling at the University of Chicago, where he was awarded his Ph.D. in 1932.

After a teaching career at the University of California and four years as head of the Mathematics department at the University of Saskatchewan, Prof. James joined the UBC faculty in 1943 as a full professor. He was named head of the Mathematics department five years later.

He was president of the Canadian Mathematical Congress from 1961 to 1963 and has served as editor of both the *American Mathematical Monthly* and the *Canadian Journal of Mathematics.* He is a fellow of the Royal Society of Canada and the American Association for the Advancement of Science.

Prof. James was invited to a number of universities in the United States and the West Indies as a visiting professor during his career and in 1962 was the only Canadian named to an eight-member committee at the University of Illinois to study the content and teaching of mathematics from Grades IX to XII in North America.

☆ ☆ ☆

Prof. G.H.N. Towers, of UBC's Department of Botany, has been awarded the 1973 gold medal of the Canadian Society of Plant Physiologists for his research in the field of plant biochemistry.

Prof. Towers joined the UBC faculty in 1964 as head of the Department of Botany. He resigned as department head in 1971 to return to full-time research and teaching duties.

This is the second time that the Society's gold

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See MEDAL

MEDAL

Continued from Page Three

medal has been awarded to a UBC faculty member. **Dean Michael Shaw,** head of the UBC Faculty of Agricultural Sciences, was the recipient of the medal in 1971.

☆ ☆ ☆

Prof. Vladimir Krajina, of the UBC Botany department, was the recipient of the honorary degree of Doctor of Laws (LL.D.) at the annual Spring Congregation of Notre Dame University in Nelson, B.C.

A member of the UBC faculty since 1949, Prof. Krajina has been the driving force in British Columbia behind the setting up of ecological reserves, tracts of land unique in their vegetation, climate and other characteristics. Some 28 reserves have been set aside by the provincial government and will remain undisturbed in perpetuity for scientific study.

In 1972 Prof. Krajina was awarded the Lawson Medal of the Canadian Botanical Association "for a lifetime contribution to botany in Canada by a Canadian."

☆ ☆ ☆

Dr. David Bates, Dean of the Faculty of Medicine at UBC, has received a three-year appointment to the Science Council of Canada, the advisory body to the federal government on scientific and related matters. Dr. Bates is the only medical doctor on the Council.

☆ ☆ ☆

Dr. Donald C.G. MacKay, associate professor emeritus of psychology, has been elected to the Council of Queen's University in Kingston, Ontario. Dr. MacKay is the first person from B.C. to be elected to the Council for a six-year term. He has also been elected chairman of the District 504 selection committee of Rotary International for the award of scholarships for study abroad.

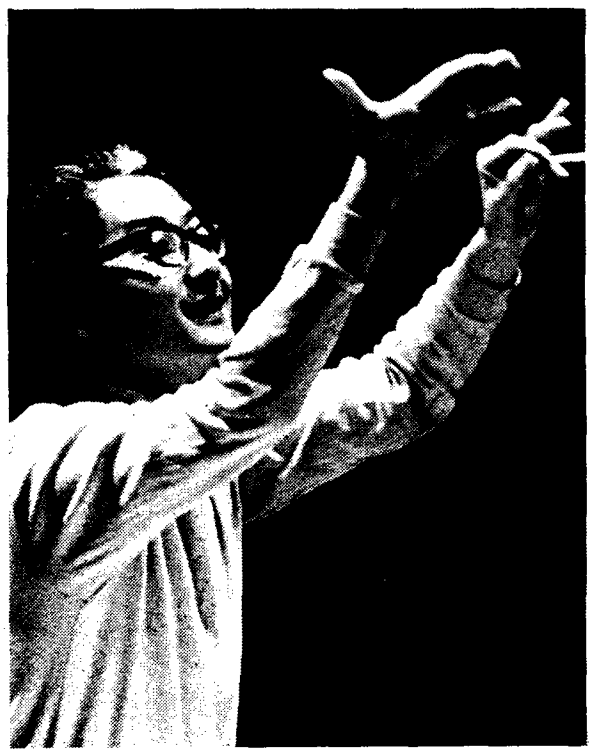
☆ ☆ ☆

Two members of UBC's Faculty of Agricultural Sciences were named fellows of the Agricultural Institute of Canada at meetings held in Victoria in late August.

The new fellows are:

Prof. Beryl E. March, of the Department of Poultry Science, who is a recognized authority on poultry nutrition; and

Prof. V.C. "Bert" Brink, professor of agronomy in the Department of Plant Science and one of five persons currently serving on the B.C. Land Commission, established earlier this year by the provincial government.



VANCOUVER Symphony Orchestra, under conductor Kazuyoshi Akiyama, returns to the UBC campus next week for a Thursday (Sept. 27) concert in the War Memorial Gymnasium at 12:45 p.m. Admission is free.

Picture by Jim Banham

UBC archeologist Leonard Ham meticulously flushes away dirt covering a large piece of preserved floor matting found eight feet below ground level during summer excavation on the Musqueam Indian Reserve three miles from the UBC campus.

DISCOVERIES

Continued from Page One

deal of information on mortuary houses, their pattern of construction and so on, and also provided a veneer of historic and late prehistoric material that related to the recent Indian culture.

The searchers also found more evidence of the Marpole Phase, an era in which the Indians developed an extraordinary culture. The abundance of maritime food resources was developed so efficiently that it permitted much leisure time which could be devoted to arts and crafts.

An exquisite carving from this era was found on the Musqueam site. It is a small elk antler carving of a man with a smiling face — the first carving with a smiling face ever found on the coast. "This is quite extraordinary because very few artists in Western cultures have dared to portray a smiling face and yet this is executed perfectly," says Prof. Borden. "You might call our Indian artist the Franz Hals of the Northwest Coast."

Because the finds of 1972 were so valuable and the expectation of even greater discoveries was so great, Prof. Borden sought, and received, permission to continue excavations this year, even though the excavators had to work in the midst of a constant stream of trucks dumping earth fill on land adjacent to the site.

PHASE IDENTIFIED

Additional funds were made available by the National Museum of Canada and the First Citizens' Fund, and the B.C. Department of Education also gave a grant to enable Vancouver City College and UBC students to take part.

Work had barely got under way this summer when the diggers entered layers that could be identified as the Locarno Beach Phase and started uncovering the waterlogged, perishable artifacts.

"These artifacts give us a picture of what life was like here 2,500 to 3,000 years ago," says Dr. Borden. It was a thriving community with the Indians engaged in hunting large game animals such as elk, deer and bear as well as porpoises and other sea mammals. The

Picture by Jim Banham

Unique discovery during summer excavation was a small elk antler carving showing a smiling face — the first such carving ever found on the Northwest Coast.

quantity of wood chips indicates that they were also heavily engaged in the manufacture of hunting equipment and perhaps in carving.

Prof. Borden's major concern now is preserving the site for further exploration work, though he knows that the construction timetable for the subdivision is such that further delays may be impossible.

He has bitter memories of the abrupt halt to excavation work on the original Locarno Beach site because the owner of the property decided to go ahead with the construction of a house.

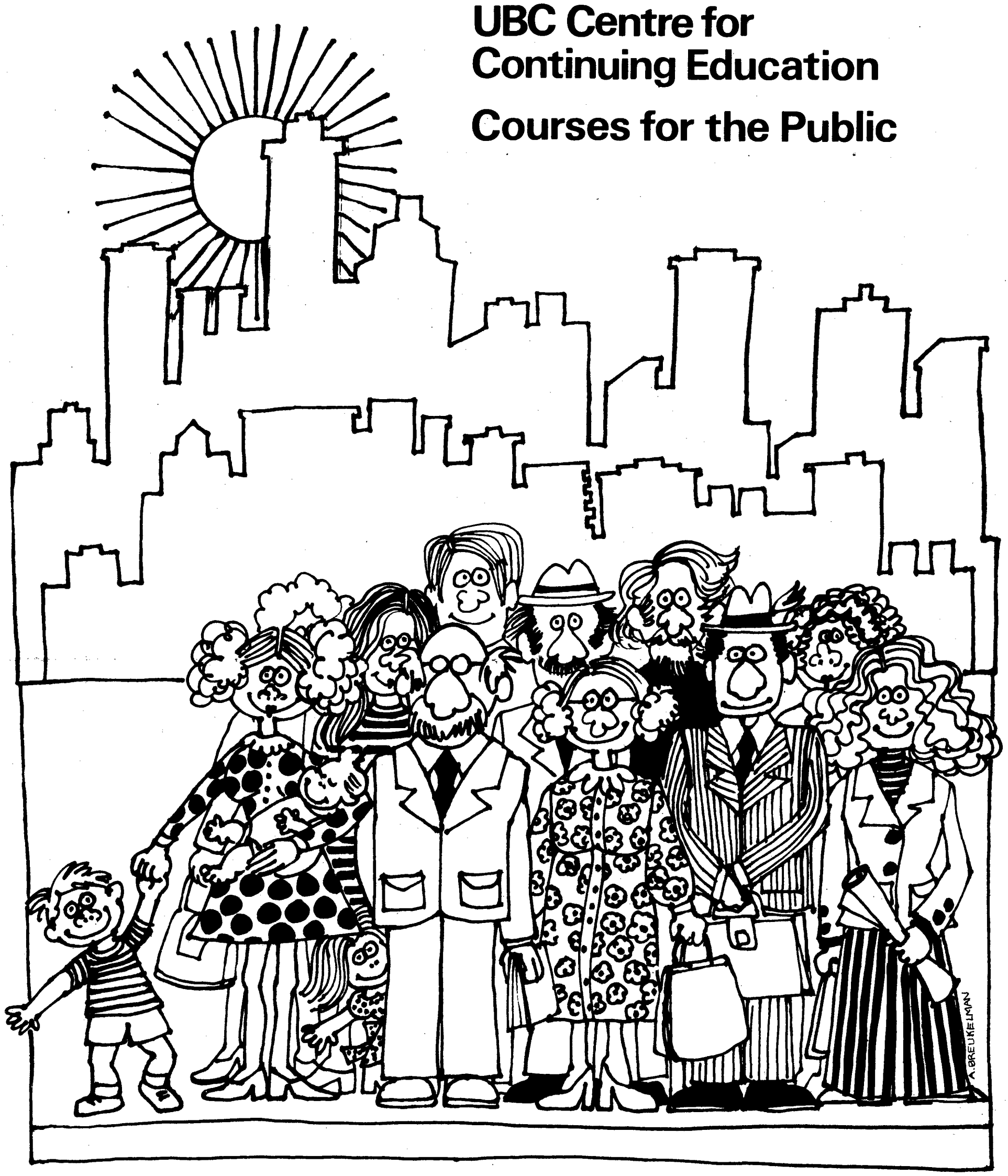
He believes that the Musqueam site has many more treasures lying preserved in the waterlogged substrata — perhaps a canoe, or wooden carvings and other valuable artifacts.

"The Indian band has been very co-operative to date. They recognize the value of the artifacts that are being recovered and they know that some day these artifacts will be returned for display in a proposed museum on the reserve," Dr. Borden says. "It is my hope that I can persuade them and the subdivision developer to give us one more year."

AUTUMN 1973

UBC Centre for Continuing Education

Courses for the Public



UBC's Centre for Continuing Education offers one of the most exciting and varied programs of courses, workshops and lectures available to adults anywhere in Canada.

A total of 161 non-credit evening and daytime courses cover topics as diverse as Explorations in Love and A New Look at the General Theory of Relativity.

Courses delve into current explorations and discoveries on the frontiers of research, such as Life Before Birth: The Womb as the First Stage to Human Success.

Others provide opportunities for developing interests and skills available nowhere else, including Local History: Archival Research for the Amateur Historian, or The Writer as Performer with David Watmough, Canada's only full-time monodramatist.

All of the courses have been planned to reflect the increasing range of interests that people have as the result of expanding leisure time.

For the apartment dweller, a course on gardens for the balcony; for the outdoor enthusiast, a survival experience on Vancouver Island; for the internationalist, lectures on topics ranging from Watergate to the West Indies.

Courses have been timed to suit everybody — mornings, afternoons, evenings and even Sundays for those who are too busy at other times of the week.

Distinguished visiting scholars are always a feature of the Centre's programs and this fall is no exception. William Irwin Thompson, noted cultural historian and author of *At the Edge of History*, is coming Oct. 19 to talk on Man on the Planetary Scale; George Leonard, author of the controversial *Education and Ecstasy*, will talk about changes in humankind on Oct. 26; and William J. Kaufman, astrophysicist and director of the Griffith Observatory, Los Angeles, will be special lecturer at a short course on Relativity and Cosmology on Oct. 15.

On the following three pages of this issue of *UBC Reports* is a listing of many of the programs and lectures being sponsored by the Centre. You can obtain a catalogue listing all Autumn, 1973, courses by completing and mailing the coupon on Page Eight. On Pages Six and Seven, six individuals describe their reasons for enrolling in courses offered by the Centre.

Continuing Education Courses 'St

Picture by Dave Roels

Mrs. Virginia Nail

I came to Vancouver in 1970, from Cambridge, Massachusetts, to be closer to my daughter and son-in-law, who are homesteading on a 400-acre ranch 32 miles west of McBride in north-central B.C.

My son-in-law is logging off part of the ranch and he is also very concerned with the ecology of the area. So I thought that I might be of some assistance to him if I took a course in forest ecology. I found that UBC's Centre for Continuing Education offered exactly the type of course that I was looking for.

In the fall of 1971 I enrolled in a course covering the role of ecology in land-use decision making. One of the main purposes of the course was to identify how a knowledge of ecology is necessary in the attainment of objectives of multi-purpose, sustained-yield investment.

I must admit that I felt a little out of my depth in the course, because most of the others taking it worked in the forest industry and I was the only woman in the group. However I learned a lot and the following year I took a course in the ecological evaluation of clearcut logging. Now when I visit the ranch I have a much better understanding of what they are trying to do and, I hope, have been able to offer some helpful advice. At least I understand what they were talking about.

I believe that courses such as those offered by the Centre are essential for a person who wants to remain intellectually alert. They can also fill in many of the gaps in one's education.

In addition, I have taken a number of courses on gardening and this summer I took the Vancouver on the Rocks course, which is a study of the rocks and minerals in the Vancouver area. This fall I am considering a course on the art and culture of the Far East.

Picture by John Helcermanus

Bernard Rowe

The credit courses offered through the Centre for Continuing Education give businessmen like myself an opportunity to work towards a university degree even though, in my case, it will be many years before I actually complete a degree.

I became interested in the credit program after I had completed my Chartered Life Underwriter studies. In order to get through that program I had to impose upon myself a self-discipline of study which I knew that I would lose if I didn't continue in a credit program of some kind. I had also developed an interest in economics, so I decided to set myself the goal of a B.A. in economics.

My academic credits were sufficient to permit me to take second-year courses, so for the past three years I have been taking a course a year. I have taken courses in economics, Renaissance art and the social history of the Middle Ages. This year I am enrolled in an economics course again.

I find the courses most challenging and stimulating and, hopefully, I will one day be able to accelerate my program in order to get my degree earlier.

One thing that concerns me, however, is that I am now reaching the stage where the part-time courses will not be available to me and I will have to attend during the daytime if I am going to be able to take the courses that I want. I am looking forward to the day when the University offers a full degree program for evening students.

Picture by Jim Banham

Donna Hossack

I guess you could say that my participation in a variety of courses offered by UBC's Centre for Continuing Education has helped give me a complete new direction to my life.

My involvement with the Centre started in the fall of 1971 when I returned to Vancouver after an absence of 10 years. It was at a time in my life when my children were growing older and I was looking around for some meaningful activity in which to become involved.

The Centre provided exactly what I needed – a daytime program entitled Options for Women. It consisted of a series of six hour-long lectures over a period of six weeks on topics such as Choosing a Second Career, Volunteer Work, Developing Personal Potential and so on.

Many of the women in the course had been busy bringing up their families and had never really thought about what they might do to occupy their time once their families grew up; others were considering finding jobs but had never worked a day in their lives.

I followed up this course with a workshop course on the subject of developin personal potential. Because I had had some experience teaching night school courses I also took a course in adult education which culminated in my teaching a course in Karl Orff Music and Movement to elementary school teachers this summer as part of the Centre's summer program.

I plan to continue my studies in adult education with the goal of teaching, perhaps in a community college.

Partial Listing of Autumn, 1973, Co

SPECIAL PROGRAMS

Life Before Birth: The Womb as the First Stage to Human Success
8 Tuesdays, Oct. 2
8-9:30 p.m., Vancouver Public Library
$15, $24

Local History:
Archival Research for the Amateur Historian
8 Thursdays, Oct. 11
8-9:30 p.m., Vancouver City Archives
$25

Life, Death and Rebirth:
The Transformations of Man and Mankind
7 sessions over 7 consecutive weeks; 5 Thursdays and 2 Fridays, beginning Oct. 11
8-9:30 p.m., Vancouver Public Library
$15, $24

William Irwin Thompson
Man on the Planetary Scale
Friday, Oct. 19
8:30-10 p.m., UBC
$2, students $1

George Leonard
New Ways of Being: A Guide to the Inevitable Changes in Humankind
Friday, Oct. 26
8:30-10 p.m., UBC
$2, students $1

Human Sexual Behavior
9 Thursdays, Oct. 11
8-10 p.m., Vancouver Public Library
$20

Explorations in Love
Daytime
7 Wednesdays, Sept. 26
1:30-3 p.m., Vancouver Public Library
$16
Evening
7 Fridays, Sept. 28
8-9:30 p.m., Vancouver Public Library
$16
Seven specialists, ranging from an anthropologist to a biologist, explore the concept of love from their individual perspectives.

With Their Backs to the Mountains: An Introduction to West Coast Art and Literature
10 Tuesdays, Oct. 9
8-10 p.m., UBC
$25, $40

Original Graphics
10 Thursdays, Oct. 4
8-10 p.m., Mido Gallery
$35

Sunday Sampler
6 Sundays, Oct. 14
2-3:30 p.m., Vancouver Public Library
$12, additional family members $8 each
Six lectures on facets of art and culture ranging from the public art of Vancouver to the art and design of postage stamps.

Ocean Life of British Columbia
6 Wednesdays, Oct. 3
8–9:30 p.m., Vancouver Public Aquarium
$14, $24

Thieves, Graves and Scholars: The Rape of Our Past
8 Wednesdays, Oct. 17
7:30-9 p.m., Vancouver Public Library
$18, $30

Inner World of Man: A Workshop On the Psychology of C.G. Jung
Friday-Saturday, Oct. 19, 20
$15

PEOPLES AND CULTURES

Peoples of the Pacific Rim: Art, Archeology and Myth
9 Thursdays, Oct. 4
8-9:30 p.m., UBC
$20, $35

Plants in Northwest Coast Indian Cultures
6 Tuesdays, Oct. 2
7:30-9 p.m., Kitsilano Library
and a Saturday field trip
Lectures only, $15, $25
Lectures and field trip, $30, $50

tretched My Mind'

Picture by IMC Photo Department

Mrs. Stuart Keate

I really became aware of the Centre's activities in three ways: first, when my husband was a member of the Board of Governors of UBC and brought home a bundle of literature on the Centre; secondly, by newspaper advertising of the schedules of classes; and third, by brochures received from the University at home.

I have, over the past five years, taken mainly English courses taught by Mrs. Irene Howard, Mrs. Jean Mallinson, Miss Phyllis Webb and Dr. Katherine Carolan. Most of these were concerned with women in literature, the "feminine mystique" in the contemporary novel, and so on.

I have also taken courses in landscape gardening and architecture and horticulture, which have been very helpful to me in planning my own garden. One term I took a course in music, in which we studied the sounds of the different instruments, thus adding greatly to my enjoyment of the Vancouver Symphony. One summer I took a drawing course. On the practical side I have taken two courses in finance and one on international affairs, conducted by Mrs. Sperrin Chant.

Each of the courses that I have taken enlarged my awareness and interest in the subjects taught. They "stretched my mind" a bit. I was especially intrigued by studying with people of all ages — not only with those of my own age bracket, where, I'm afraid, we tend to a sameness of view. In short, it was refreshing to come up against young ideas.

Picture by IMC Photo Department

Sgt. Stanley Nowicki

I decided to take the Centre's criminology program after I was transferred to the University Detachment of the RCMP. I found the program of particular interest because it covered many areas that I had not had an opportunity to study before.

The program covered six areas — three compulsory and three optional. The compulsory courses were: Political Science, Contemporary Issues in Law and Society, and Criminal and Deviant Behavior. As options I took Interpersonal Relationships, The Criminal Justice System, and Theory and Methods of Correction.

One of the main things that I got out of the program was an appreciation and understanding of the points of view of others not connected with the RCMP. Those taking the program came from a variety of occupations, such as probation officers, corrections officers and social workers, and we had a number of university students to present the young person's point of view.

I would like to see more citizens take courses such as this in the hope that there would be a greater understanding of the police officer's role in today's society. The days are long gone when the sole responsibility of the police officer was to enforce the law; he must have an understanding of why people behave as they do and understand more about human emotions and behavior in his daily dealings with people.

Picture by IMC Photo Department

Rev. J.N. Allen

My wife and I are both very interested in the organ, not only as an instrument, but also in its historical development and the impact that it has had on composers and the composition of music.

Mrs. Allen is the organist and I am the listener, so we were delighted when we discovered, in the spring of 1971, that UBC's Centre for Continuing Education was offering a course on the organ. This particular course was a study of the Baroque organ, using the tracker organ in the recital hall in UBC's Music Building. It was an excellent course, given by Mr. Hugh McLean, and covered such things as the mechanics of organ sound production and the development of the organ as an instrument in different European countries.

We were so impressed with the first course that in the spring of 1973 we took another course on 20th century organ, visiting five representative organs in different churches in Vancouver. Mrs. Allen has also taken a course in tapestry offered by the Centre.

I have been very impressed not only with the Centre's course offerings but also with the calibre of the people who have given the courses. I would like to see more courses in the area of music appreciation, perhaps offered in conjunction with the Vancouver Opera Association, because another of my great interests is opera. My wife would like to see more courses in weaving and spinning.

urses

Kekchi Indians of British Honduras
6 Mondays, Oct. 1
8-9:30 p.m., UBC
$14, $23

British Columbia's Other Indians
7 Wednesdays, Oct. 10
8-9:30 p.m., UBC
$16, $26

LITERATURE AND POETRY

Utopian Literature and Behavioral Psychology: Utopia As a Behaviorist Sees It
8 Thursdays, Oct. 4
8-9:30 p.m., UBC
$15, $24

Hermann Hesse: The Achievement and the Cult
8 Wednesdays, Oct. 3
8-10 p.m., Vancouver Public Library
$20, $32

HUMANITIES

How to Make Up Your Mind On Moral Issues
6 Wednesdays, Oct. 10
8-9:30 p.m., UBC
$13, $21
Also offered daytime.

Science and Mysticism
6 Tuesdays, Oct. 9
8-10 p.m., UBC
$15, $24

SCIENCE

A New Look at the General Theory of Relativity
Monday, Oct. 15
8-10 p.m., H.R. MacMillan Planetarium
Centennial Museum Complex
$3, students $2
Special lecture by Dr. William J. Kaufmann, astrophysicist and Director, Griffith Observatory, Los Angeles, Calif.

Relativity and Cosmology
4 Mondays, Oct. 15
8-10 p.m., H.R. MacMillan Planetarium
Centennial Museum Complex
$10, $16

Birds of the Lower Mainland
6 Saturdays, September 22
10 a.m.-noon, UBC and outdoor locations
$20, additional family members $12 each

MATHEMATICS/COMPUTER COURSES

Demystifying the Computer: On Becoming a Sorcerer's Apprentice
10 Wednesdays, Oct. 3
8-10 p.m., UBC
$30, $48
A course for laymen on how computers work, what they do and how one may be affected by them.

What is Mathematics? Principles of Mathematical Reasoning
8 Wednesdays, Oct. 10
8-10 p.m., UBC
$20

ART LECTURE PROGRAMS

Art and Antiques
8 Wednesdays, Oct. 10
8-10 p.m., Maritime Museum
$24

Introduction to Interior Design
8 Mondays, Sept. 24
8-10 p.m., UBC
$20

Far Eastern Art and Culture
10 Mondays, Sept. 24
7:30-9 p.m., Vancouver Public Library
$22
An introductory survey course of particular interest to persons planning to travel in Asian countries.

Printmaking Workshop
8 Tuesdays, Oct. 9
7:30-10 p.m., UBC
$45

Listing of courses continued on Page Eight

Continued from Page Seven

Mounting and Framing Workshop
4 Mondays, Oct. 15
8-10 p.m., in the Dunbar area
$16

Studio Workshop: Drawing and Painting for Expressive Awareness
10 Thursdays, Sept. 27
7-9:30 p.m., Gastown
$45

PERFORMING ARTS

The Writer As Performer
2 weekend workshops
Oct. 5, 6 and 12, 13
$30

Adult Acting: Introductory
8 Wednesdays, Oct. 3
7:30-9:30 p.m., UBC
$35

THE CREATIVE ARTS/MUSIC

The 20th-Century Music Series
4 Mondays, Oct. 1
8-9:30 p.m., UBC
$10, additional family members $6 each

CREATIVE WRITING

Introductory Creative Writing Workshop in Fiction and Non-Fiction Prose
10 Tuesdays, Oct. 2
8-10 p.m., UBC
$30

HUMAN BEHAVIOR

Extrasensory Perception
8 Wednesdays, Oct. 3
8-9:30 p.m., UBC
$19, $32

Current Topics in Psychology
8 Mondays, Oct. 1
8-9:30 p.m., UBC
$19, $32

HUMAN DEVELOPMENT

Biofeedback and Mind-Body Self-Regulation: Healing and Creativity
7 Mondays, Oct. 1
8-9:30 p.m., Vancouver Public Library
$15, $24

A Workshop in Yoga, Biokinetics and Body Awareness: Toward More Integral Human Function
8 Sundays, Sept. 30
9:30 a.m.-12:30 p.m., UBC
$30, $50, students $20

Identity Workshop
1 Sat. and 6 Sundays, Sept. 29
9 a.m.-noon, UBC
$40, students $25

PUBLIC AFFAIRS

The International Scene — UBC
8 Thursdays, Oct. 4
8-9:30 p.m., UBC
$17, $26
Also offered in North Vancouver and Richmond

THE CITY

The City and Its Architecture — A Collective Experience
6 Thursdays, Oct. 4
7:30-9:30 p.m., Gastown
$14, $22

WILDERNESS PROGRAMS

Ecology of the Pacific Northwest — A Survival Experience
Dec. 27-31 at Stratchona Park Outdoor Education Centre, Vancouver Island
$80

CONSUMER INTERESTS

Food — Fads and Formulation
6 Thursdays, Oct. 4
8-9:30 p.m., Vancouver Public Library
$14, $20

HORTICULTURE

Gardening for Apartment Dwellers
4 Tuesdays, Oct. 2
8-9:30 p.m., Vancouver Public Library
$10, $15

Gardening Through the Seasons Series I (Autumn)
5 Thursdays, Oct. 4
7:30-9 p.m. and Sat. Oct. 6
10-11:30 a.m., UBC
$15, $25

Gardening Through the Seasons Series II (Autumn)
5 Wednesdays, Oct. 10
7:30-9 p.m. and Sat. Oct. 13
10-11:30 a.m., UBC
$15, $25

Gardening Through the Seasons Series III (Autumn)
6 Tuesdays, Oct. 9
7:30-9 p.m., UBC
$15, $25

Beef Cattle Production for the Hobby Farmer
5 Thursdays, Oct. 4
8-9:30 p.m., UBC
$15

Efficiency of Dairy Cattle Production Under Different Management Conditions
4 Wednesdays, Oct. 3
8-9:30 p.m., Cloverdale Community School
$10

LANGUAGE

Chinese — Beginning Mandarin
Mondays and Thursdays, Oct. 1
7-9 p.m.
40 sessions, $140

Workshop in Oral English for International Students
7 Mondays and 8 Thursdays, Oct. 1
7-9 p.m., UBC
$70

Workshop in Written English for International Students
5 Wednesdays and 5 Fridays
Oct. 17
6-9 p.m., UBC
$60

READING AND STUDY SKILLS CENTRE

Reading Improvement
Classes in reading improvement begin the week of Oct. 1 and meet once or twice a week for a total of 20 hours.
$60 non-student; $35 student
For a schedule of classes and further information telephone the Reading and Study Skills Centre, 228-2181, local 220.

Writing Improvement
Writing Improvement is an 18-hour non-credit course designed to improve composition skills. It is open to university and college students, to those who plan to resume studies, and to others who want to improve their writing for personal or professional reasons. Classes meet one evening per week, 7-10 p.m., for six weeks.
$60 non-student; $35 student
For further information telephone 228-2181, local 220.

THE DAYTIME PROGRAM

Tuesdays

Facts of Life: Women and Their Bodies
8 Tuesdays, Oct. 9
1:30-3 p.m., Kitsilano Library
$15

Interviewing
6 Tuesdays, Sept. 25
10 a.m.-noon, Vancouver Public Library
$25

Images of Eve
7 Tuesdays, Sept. 25
1:30-3 p.m., Hycroft
$15

Painting: Basic Techniques
6 Tuesdays, Sept. 25
9:30-11:30 a.m., University Hill United Church
$20

Wednesdays

Food and Culture: Asia
8 Wednesdays, consisting of 3 introductory lectures, Oct. 3,
10-11:30 a.m., Vancouver Public Library, and 5 lecture/luncheons at selected restaurants, 11 a.m.-1 p.m.
$15, cost of lunch additional
The first of a series of lecture/luncheon programs.

Introduction to the Courts
8 Wednesdays, Sept. 26
10 a.m., Vancouver Public Library and visits to various law courts
$20

Silkscreen Printing Workshop: Instruction in Silkscreen Printing On Paper and Fabric
8 Wednesdays, Sept. 26
10 a.m.-2 p.m., Rockwoods, West Vancouver
$35

Thursdays

Journey to China
6 Thursdays, Oct. 4
Noon-1 p.m., Vancouver Public Library
$10

History for Travellers: Cities of the Mediterranean
8 Thursdays, Sept. 27
1:30-3 p.m., Vancouver Public Library
$16

Individual Differences and Children's Thinking
6 Thursdays, Oct. 4
10-11:30 a.m., Kitsilano Library
$14

WOMEN'S RESOURCES CENTRE

Basic services and programs for women who want to continue their self-development.
Co-ordinator: 228-2181, local 246.

Developing Personal Potential I
6 Tuesdays, Sept. 25
9:30-11:30 a.m., UBC
$25

Speak Up: A Speech Workshop
10 Wednesdays, Oct. 3
9:30-11:30 a.m., UBC
$25

Educational Television "UBC Public Affairs"

A regular series of interviews and discussions with faculty and others on topics of local, national, or international interest. Every second Tuesday evening beginning Sept. 18, 9:30-10 p.m., on Cablevision's Channel 10.

Program topics will be announced in the local newspapers, in *T.V. Guide* and *This Week at UBC.*

The series is presented by the Centre with the co-operation of the UBC Alumni Association.

Humanities UBC

Lecturers of the UBC Faculty of Arts talk about aspects of their special interests in classical and medieval art, architecture and archeology.
Weekly, Thursdays, 9:30-10 p.m., beginning Sept. 20, on Cablevision's Channel 10.

Professional and Technical Programs

The Centre offers continuing education programs in engineering, law, education, social work, forestry, criminology, architecture, community and regional planning, aging, and agriculture.
For professional and technical course calendars and announcements, call 228-2181.

Programs for Teachers

A partial listing of courses this autumn.

English Teachers Workshop on Composition
1 Saturday, Oct. 13
9 a.m.-4 p.m., UBC
$12

Attitude Learning in the Schools
1 Saturday, Nov. 3
9 a.m.-4:30 p.m., UBC
$12

Starting Points in the Primary Classrooms: The Practical Application of New Methods
6 Wednesdays, Oct. 17
7-9 p.m., UBC
$26

Cameras in the Classroom
3 Saturdays, Oct. 13
9 a.m.-3 p.m., UBC
$26

Individualizing Instruction
7 Wednesdays, Oct. 24
7-9 p.m., UBC
$26

Free Bulletin of courses For the public

PLEASE SEND ME A COPY OF YOUR AUTUMN, 1973, BULLETIN OF COURSES

Centre for Continuing Education,
The University of B.C.,
Vancouver 8, B.C.

Name . . . . . .

Address . . . . . .

City . . . . . .

. . . . . .

Extension Credit Courses

Sixty-three evening credit courses for persons who want to work toward a University degree but cannot attend the University on a full-time basis are being offered through the Centre for Continuing Education this year. Correspondence courses and lectures at off-campus locations around the province are also available.

On-campus evening courses are being offered in Arts, Science, Nursing and Education, while off-campus Education courses are being given in 22 locations in the province. The correspondence courses are in Arts and Education.

Last year more than 3,000 part-time students enrolled in credit courses administered by the Centre — an increase of 8.2 per cent over the previous year. Enrolment figures for this year's program have not yet been completed, but advance registrations and attendance at two orientation evenings for part-time students suggest that enrolment will increase once again this year.

The coming year promises to be one of increasing opportunities for part-time students in degree programs. Several Faculties have already indicated support for the principle of expanding opportunities for part-time study towards degrees.

A new President's Committee on Extra-sessional Courses is now studying means of expanding course offerings for part-time students. Among the terms of reference of this Committee is a proposal to schedule course offerings over a three-to-five-year period.

An enlarged program of sequential course offerings should enable students to obtain a degree on a part-time basis in programs amenable to part-time study.

New UBC Animal Facility Planned

The University of B.C. will soon have new housing for experimental animals. Ronald Howard has been appointed architect for the $800,000 development by UBC's Board of Governors and has been asked to prepare preliminary drawings.

The facility will cover some 20,800 square feet on the south campus, beside the Department of Animal Science area where the new dairy cattle research and teaching unit is now nearing completion.

The project is the first stage of a new complex providing improved accommodation for animals. The first stage will have four separate areas: a unit for holding and studying large wild animals, a unit for holding and breeding dogs, a unit for holding and breeding cats, and a small administrative unit which may be expanded in the future when additional animal units are built.

The administrative area will house the office of Dr. John Gregg, appointed co-ordinator of animal care at UBC in 1972. Dr. Gregg will have overall responsibility for the welfare and general management of animals in the new units.

TRAINING PROVIDED

He says there are four main groups on campus using animals for research:

The agricultural sciences use a variety of animals — sheep, dairy and beef cattle, poultry, pigs and others — in nutrition, husbandry, breeding and other research projects.

Wild animals used in research on campus come under the biological sciences. They include birds, reptiles, and large mammals such as deer and elk, used mostly in experiments to get basic biological information.

Rats, mice, dogs, cats, guinea pigs and other species usually thought of as experimental animals are used by the health sciences. The vast majority of this work is done by the Faculty of Medicine.

The last group is the Department of Psychology, in the Faculty of Arts, which uses rats and mice in behavioral experiments.

Dr. Gregg is responsible for carrying out the University's policy on animal care. He inspects all UBC animal facilities to make sure that they are up to standard, advises on all subjects involving animal care, must approve the design of all new animal facilities and the renovation of others, and provides basic training for animal attendants.

He supervises the general welfare of all laboratory animals at UBC and carries out University policy in all matters concerning animal use as laid down by the UBC President's Committee on University Policy on Animal Care. Committee members include Dr. Gregg and representatives of the four groups using animals at UBC.

The standards and principles adopted by the committee are those of the Canadian Council on Animal Care as set out in the Council's publication *Care of Experimental Animals — A Guide for Canada.* The Council is supported by the federal government and acts as a watchdog over the use of experimental animals in university, government, pharmaceutical and other commercial labs.

Dr. Gregg's signature is needed on all application grants for research projects involving the use of animals. Where facilities or standards of care are unsatisfactory, he can recommend that the facilities be closed. Appeals to his recommendations can be made to the policy committee.

He maintains that people at UBC caring for and using experimental animals should regard it as a privilege. If this attitude prevails, public fears that research animals may be abused will decrease, he said.

"Construction of the new facilities and the University's policy on animal care will demonstrate that these fears are unfounded. It is part of my job to see that they continue to be unfounded," he said.

"An unhealthy or ill-treated animal, or one under unnecessary stress, is of little value for research purposes. Such an animal would be unacceptable, not only from the humane point of view, but from the experimental one too.

"There are pressures apart from compassion influencing the number of animals used. Maintaining animals is expensive, demanding and time-consuming. If he had a choice, a researcher would prefer to use biochemical methods rather than animals. If animals must be used, he would want to use the smallest number to get a statistically valid result.

"Good animal facilities and proper care are essential for uniform and reliable results. Limitations of money, space, and time are sufficiently pressing to put a brake on the number of animals used."

He has considerable respect for people who believe that animals shouldn't be used for any experimental work, as long as their belief is consistent and sincere.

Virtually all the benefits of medical science have directly or indirectly resulted from research involving experimental animals. A person totally opposed to the use of experimental animals might be considered hypocritical if he availed himself of the benefits of medical treatment.

Dr. Gregg has little time for people who discriminate in favor of one species, usually dogs, but who couldn't care less about the treatment of others. When Russia put a dog into space in the early 1960s, a minority of people around the world were outraged. Many of them would have been indifferent if the experimental animal had been a guinea pig, rabbit or rat.

NEED ACCEPTED

"A rat is as susceptible to pain as a dog," Dr. Gregg said. "All species are worthy of humane consideration."

The vast majority of people accept the need for animal experimentation, provided it is carried out in a responsible and humane manner, he said. During UBC's Open House, when the University is thrown open to the public, a number of animal quarters are included among exhibits. Cats and other animals which have received surgery as part of an experiment have been seen by the public and occasionally a visitor has debated with faculty members whether the animals should have been used, and most have been satisifed with the answers they received.

"The University isn't a closed community. Scientists aren't the only people here," he said. "There are faculty members who are as unfamiliar with science as most of the public is and they wouldn't countenance animal abuse any more than scientists, myself, or the President's Committee on University Policy on Animal Care.

"Laboratory animals are used for teaching undergraduate students and for both teaching and research by post-graduate students. Students are traditionally quick to champion a cause and would rally behind any evidence of animal abus . They've never done so."

NRC Grants Aid UBC Ecology Studies

Large grants announced recently by Canada's National Research Council will enable UBC ecologists to mount an extensive research program and provide for expansion of a marine biology station on Vancouver Island.

The grants have been made to:

UBC's Institute of Animal Resource Ecology, which will receive a maximum of $364,000 over the next three years to support six related projects on the behavior of disturbed ecological systems; and

The Western Canadian Universities Marine Biological Society, which will receive $255,500 over a five-year period to upgrade facilities at its marine biology station at Bamfield on the west coast of Vancouver Island and pay for the services of support personnel such as technicians and graduate students.

WCUMBS is a co-operative venture involving scientists and students from UBC, the Universities of Alberta, Calgary and Victoria and Simon Fraser University.

The grant to WCUMBS, in addition to providing funds to support personnel, will be used to expand a seawater system at the station and to purchase transformers, emergency generators and other equipment.

This is the second grant made by the NRC to WCUMBS. Two years ago WCUMBS received $500,000 to install a freshwater and seawater system and other scientific equipment in its Vancouver Island station.

Construction has begun on housing for about 80 undergraduate and graduate students at the station with a $500,000 mortgage from Central Mortgage and Housing Corp. The new facilities are expected to be completed by the end of this year.

The grant to UBC's Institute of Animal Resource Ecology will support six projects, five of which will involve extensive field studies in the areas of aquatic ecology and animal and insect populations.

The sixth project included in the program is a synthesis of the data obtained in the five field projects. The synthesis project will attempt to discover patterns common to all of the field projects and enable the investigators to make a series of statements about disturbed ecological systems.

Dr. Charles Krebs, of the UBC Institute of Animal Resource Ecology and administrator of the NRC grant, said the science of ecology is only just beginning to develop a data base related to ecological systems and how they respond to disturbance.

The NRC-supported program, he said, is designed to evaluate the behavior of five disturbed systems, to make accurate, scientific measurements of the response of the systems to disturbance and determine the general principles that apply to the behavior of the disturbed systems.

Two of the five studies will involve lakes in the University of B.C.'s Research Forest in the Fraser Valley near Haney, B.C.

Dr. J.D. McPhail, professor of zoology at UBC, will be the principal investigator in a study to be carried out at Marion Lake in the Forest. Dr. McPhail's project involves disturbance of the ecological system in the lake by introducing into it populations of stickleback fish, which are not now present in the lake system.

Careful measurements will be made of the way in which the lake system responds and adapts to the introduction of the stickleback populations.

Dr. T.G. Northcote, associate professor of Forestry, and Dr. Carl Walters, of the Zoology department, will study the behavior of plankton, the microscopic plant and animal organisms that fish feed on, in Marion Lake and two other lakes in the UBC Forest.

The researchers will introduce trout into two lakes that now contain no fish in order to study the response of the plankton populations which inhabit the lakes.

Dr. Krebs will carry out research on rodent populations at sites on the Lower Mainland of B.C. and in the Yukon. He will study populations of voles, small rodents of the same scientific family as rats and mice, at an abandoned air base at Ladner, B.C., and at an environmental study area operated by Douglas College on the Serpentine River in Surrey.

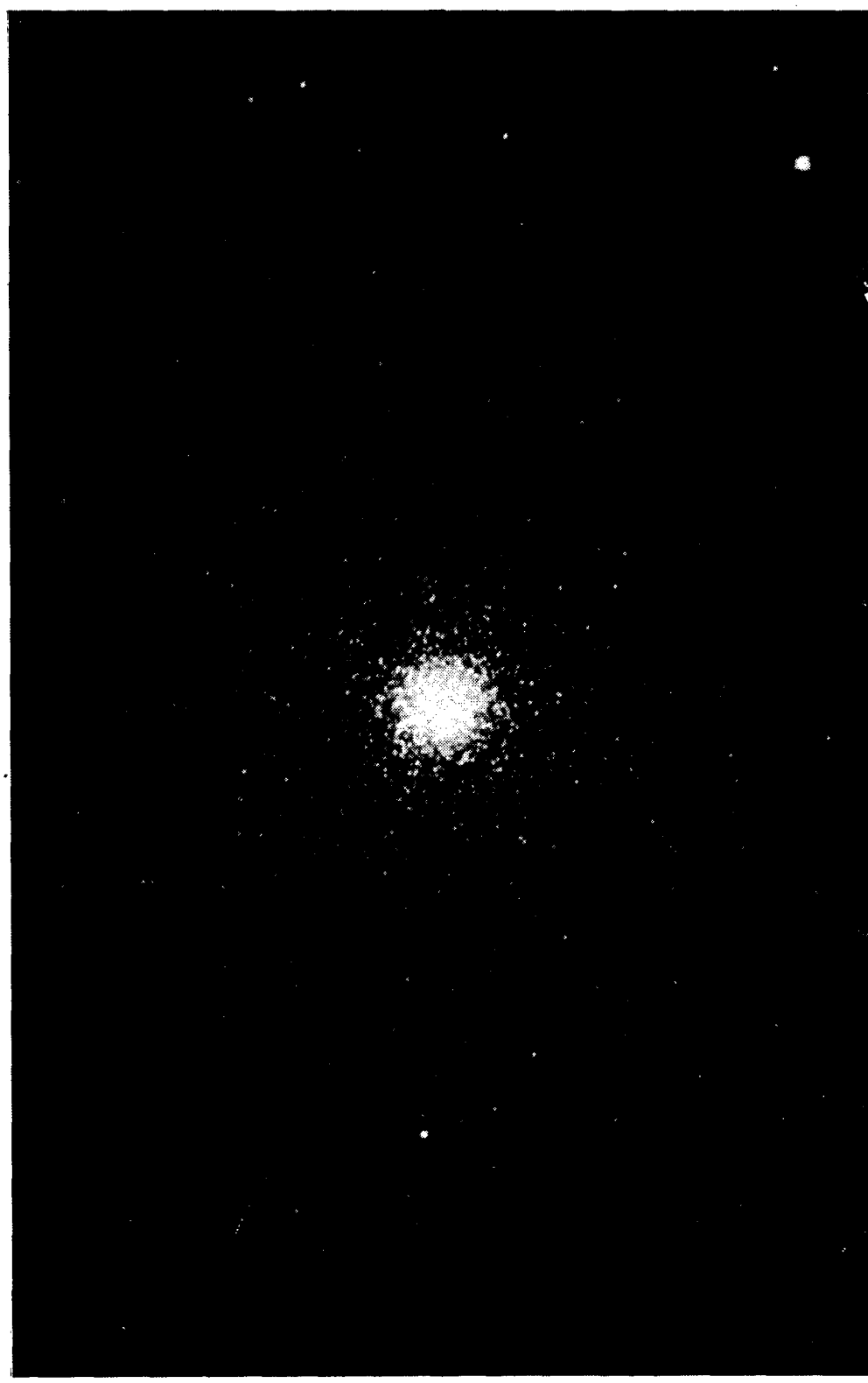
He will contrast the resilience and stability of vole populations at these sites with similar populations near Kluane National Park in the Yukon.

Two projects on insect populations will complete the field studies to be carried out under the NRC grant.

Mr. B.D. Frazer, of the Canada Department of Agriculture Station on the UBC campus, and Mr. Neil Gilbert, a research associate in the Institute of Animal Resource Ecology, will study aphid populations, while Prof. W.G. Wellington and Dr. J.H Myers, of the Department of Plant Science in the Faculty of Agricultural Sciences, will study populations of moths, earwigs and craneflies.

Prof. C.S. Holling, director of UBC's Institute of Animal Resource Ecology, will be the principal investigator in the synthesis project, which will make a detailed analysis with computer modelling of the five field projects.

CANADA'S NEW WINDOW ON THE UNIVERSE



By Peter Thompson
UBC Reports Staff Writer

Canada is about to rejoin the major league of optical astronomy.

Once the proud owner of the world's largest optical telescope, Canada has fallen behind as other nations have built more powerful and more modern instruments for their astronomers.

Now, with two partners, Canada will soon share the ownership and use of a big new telescope. The telescope will be available to UBC astronomers and astrophysicists, and UBC's Deputy President William Armstrong is playing a major role in bringing it into being.

The telescope is the result of a tripartite agreement signed earlier this year between France, Canada and the University of Hawaii. It will be built atop Mount Mauna Kea, 14,000 feet above the Pacific on the island of Hawaii, and should be in operation in late 1977 or early 1978.

Its designers say that because of its instrumentation and the atmospheric conditions on Mauna Kea, it will be the world's best telescope for observing astronomical sources of infrared radiation – electromagnetic radiation with a slightly longer wavelength than visible light.

Canadian astronomers haven't had access to a major telescope owned by Canada for many years. The 72-inch telescope at the Dominion Astrophysical Observatory in Victoria was the biggest in the world when it was built in 1918 but advancing telescope technology has long since made it obsolete compared with others in the world. Now not only the U.S. and Russia but Britain, South Africa, Australia, France, Czechoslovakia, Argentina, West and East Germany, and Japan have larger optical telescopes than Canada. The Victoria instrument now ranks 35th in size.

The Hawaii telescope will mean that astronomers at the University of B.C. and in the rest of Canada will be able to expand their research. The National Research Council in 1970 awarded a negotiated development grant of $538,600 spread over three years to UBC to stimulate rapid development of research in astronomy and astrophysics. This type of NRC grant is usually aimed at expanding a nucleus of scientific talent working in a number of related scientific areas.

UBC's astronomers and astrophysicists are concentrated in the University's Institute of Astronomy and Space Science. Dr. Gordon Walker, director of the Institute, is also secretary of the NRC's associate committee on astronomy.

Prof. Armstrong is chairman of the interim board of directors for the Hawaii project.

MIRROR EXAMINED

A technical team of French and Canadian scientists examined both a 144-inch-diameter mirror bought by France last year and the 157-inch mirror Canada bought for a telescope to be built on Mount Kobau in the Okanagan. Ottawa abandoned the Mount Kobau project in 1968 in an anti-inflation move and two years later turned over the assets of the project to WESTAR, a consortium of Canada universities which now numbers eight members.

The technical team chose the French mirror, Prof. Armstrong says, partly because the French had completed most of their telescope design. Redesigning the telescope to accommodate the WESTAR mirror would have delayed the project by at least one year. The telescope and its drive components will be pre-assembled in France.

The French mirror, of low-expansion glass called Cer-Vit, arrived in Vancouver Aug. 22 on route to the NRC's Dominion Astrophysical Observatory in Victoria where it will be ground. The meticulous grinding will take from two to two-and-one-half years to complete and will have to be within a precision of one-millionth of an inch so the curved mirror, mounted at the base of the telescope, can accurately gather and concentrate light from faint galaxies and stars in the universe and direct it to powerful, light-analysing instruments.

The NRC expanded the optical shop at the observatory last year and WESTAR lent the machine built to polish the 157-inch Canadian mirror. The new grinding facilities, says Prof. Armstrong, are the best in North America. After grinding the 144-inch mirror the Victoria grinding shop will be capable of taking on contracts to grind any other mirror now in the planning stage. Italy is planning a large telescope and France is thinking of putting another atop Mauna Kea.

When the mirror is ground, it will continue its voyage to its destination nearly three miles above the sea. The last part of the journey may be the most difficult. The route to the top of Mauna Kea is now up a gravel road. Only four-wheel-drive vehicles can make it unassisted to the top. Fuel trucks now making the ascent must travel in their lowest gear, pushed by a bulldozer and pulled by a road grader with chains on its wheels. The University of Hawaii will flatten out the steepness of the road to the top and pave it up to the 9,000-foot level.

Before construction can begin, the tri-national group must file a formal environmental impact statement. The group wanted to build a low power line to the site so that the line wouldn't be visible above the tree-line. But pressure has been put on the group to bury the line underground. Burying the line would be enormously expensive, Prof. Armstrong says, because the mountain is an extinct volcano of solid lava.

Though he's willing to go as far as possible to meet environmental objectives, one criticism of the project simply can't be satisfied.

"Some people in the area don't want the telescope building painted white because it would be visible from

below — about the size of a pinhead on a pumpkin as seen from the beach. I'll have to explain," he said, "that the building must be either white or aluminum to reflect the sun's rays, otherwise thermal patterns would develop inside the building and the mirror's image would be distorted."

He said that the Hawaii project has effectively killed any hope WESTAR may have had of building the 157-inch telescope at Mount Kobau. Prof. Armstrong, a member of WESTAR's board of directors, hopes WESTAR will be able to sell the Canadian mirror next year, raise money in a fund drive, get the federal government to match public contributions, and build a smaller telescope on Kobau.

SHARE COST

"We'll need something on Kobau once the Hawaii telescope is in operation," he said. "It'll be too expensive to train our graduate students at the Hawaii site and it would be better to work out the instrumentation problems of new research projects on a smaller and less expensive facility at Kobau before taking them to Hawaii."

Total cost of the Hawaii project is estimated at $18 million. In addition, the University of Hawaii is providing the land and access road as well as dormitories for about 30 scientists.

France and Canada are sharing the cost of construction of the telescope and the telescope building. The telescope and its facilities will bring major opportunities to Canada in sophisticated engineering and construction.

Prof. Armstrong, a member of the Science Council of Canada, said that Canadian industry will be slow if it doesn't manage to pick up a healthy share of the cost of erecting the telescope and its building in Hawaii. Since the building will be pre-fabricated in Canada, Canadian firms should have a natural edge in the bidding.

"It will be a sophisticated building and Canadian industry will have to come up with some very fine tolerances. The building will have to be designed to cut down vibrations and the flutter effect of the wind. There are winds at the top of 100 miles per hour. And there must be less than one degree temperature difference across the main mirror of the telescope, otherwise star images will blur.

"The opening of the dome must move in complete precision with the telescope, which will rest on a pier that is independent of the building because of the possibility of earthquakes in the area. Hawaii had its worst earthquake in 10 years in April this year. Construction can only be done in summer and early fall so everything will have to fit easily and perfectly. At 14,000 feet you can't fool around."

Meetings of the interim board of directors for the Hawaii project have been held in Paris and Ottawa. The board, made up of four Frenchmen, four Canadians and two Hawaiians, will function for at least two years. Prof. Armstrong's deputy chairman is French. The first project officer for the project is French and his associate, Dr. Graham Odgers of the Victoria observatory, Canadian. The positions will alternate between France and Canada.

PROJECT OFFICE

Once grinding begins, a board meeting will be held in Victoria. A project office has been set up in Paris because details of the telescope must be worked out there. As activity shifts away from Paris, a project office will be established in western Canada, probably Victoria.

Prof. Armstrong said a scientific advisory council has been set up to advise on design and construction of the telescope and will work out details for sharing of viewing time. The University of Hawaii will get 15 per cent of the available time and France and Canada will share the rest equally.

Apart from bearing the major responsibility for building the tri-national telescope, Prof. Armstrong has taken on something which to many English-Canadians seems at least as difficult — learning French.

"I want to start a crash program this winter. I don't expect to be able to use it well but I'll be happy if I can understand it," he said. "So far we've used simultaneous translation. The only consolation I have is that the French are as unilingual as I am."

UBC Officials Welcome Shaughnessy Decision

By Peter Thompson
UBC Reports Staff Writer

Perhaps the most important single decision affecting the training of health professionals in B.C. was the announcement this summer of a new teaching, research and tertiary referral hospital complex to be built in Vancouver.

In announcing what he referred to as "a tremendous undertaking," provincial Health Minister Dennis Cocke gave the University of B.C. the means to train health science students during their "clinical" or practical period of direct contact with patients.

UBC is the major centre for training health professionals in B.C. At present, the students receive their clinical training in hospitals such as St. Paul's or the Vancouver General, structures built to provide hospital service to the public and not designed as teaching facilities.

The only exception to this is the 60-bed psychiatric hospital on the UBC campus, opened in 1969 and designed as a teaching and research hospital, as well as a service facility.

The Minister said construction of teaching and referral hospital facilities could cost a total of $130 million over the next five to eight years. He said as many as 1,400 beds might be required, at Shaughnessy Hospital and elsewhere, to meet health education needs.

MAJOROPPORTUNITY

The provincial government is acquiring the Shaughnessy Veterans' Affairs hospital and its 43-acre site at the corner of Oak and 30th in Vancouver. Hospital facilities were first opened at Shaughnessy in 1940 and now total 950 beds.

Mr. Cocke's announcement has been welcomed unanimously by leaders in the health field. Both the Co-ordinator of Health Sciences at UBC, Dr. John F. McCreary, and the dean of UBC's Faculty of Medicine, Dr. David Bates, view the Shaughnessy decision as a major opportunity for the University.

UBC long had wanted to build a teaching and research hospital on campus as the last major structure in its Health Sciences Centre. The Centre has evolved as a place where health science students are trained together so that they can function more easily and more efficiently as a team in professional practice. Students in pharmacy, medicine, nursing, rehabilitation medicine and dentistry receive an integrated training in the basic medical sciences at the Centre before entering into the clinical phase of their training.

Dr. McCreary, who has struggled to have clinical teaching facilities built for UBC for more than a decade, said that though he was disappointed that the new hospital complex won't be built on campus, he welcomed with complete sincerity the Minister's announcement.

"Everyone in the health area in B.C. has been waiting a long time for this day," Dr. McCreary said.

Dr. Bates, who succeeded Dr. McCreary as dean of Medicine last year, said the Shaughnessy facilities will be a tremendous challenge and opportunity to health educators.

"Some people may still be unaware of the magnitude of the opportunity we now have," Dean Bates said. "We can now move forward as we never could before. The new facilities should be the best in Canada and we will have to be equal to them."

Also delighted with the Minister's decision is Dr. Sydney Israels, head of the Department of Pediatrics in UBC's Faculty of Medicine.

A first priority in construction at Shaughnessy will be a children's, obstetrics and gynecological hospital. Dr. Israels and other pediatricians have been campaigning for new facilities to supplement the crowded Health Centre for Children and the Children's Hospital in Vancouver.

The Minister wants increased enrolment in the Faculties of Dentistry and Medicine and the Schools of Nursing and Rehabilitation Medicine. Both Nursing and Rehabilitation Medicine now use Second World War army huts as classrooms.

An increase in the number of health professionals to be trained by UBC will necessitate a major expansion of basic medical science facilities on campus.

Mr. Cocke said a number of factors went into his decision to create a major teaching and tertiary referral complex at Shaughnessy. Apart from the need for a teaching hospital, emergency departments in Vancouver hospitals are overloaded, especially for providing acute psychiatric care. The tertiary or highly-specialized facilities at VGH are inadequate, he said, and children's hospital facilities in the Vancouver area are unsatisfactory.

The Minister has created a provincial teaching and referral hospital board to plan and supervise construction of the new complex. Under the chairmanship of Mr. J.V. Christensen, who resigned as chairman of VGH's board of trustees to take on his new job, the board will be instructed to provide first-class student facilities, Mr. Cocke said.

UBC representatives to the new board are Dean Bates and Mr. R.M. Bibbs, a member of UBC's Board of Governors. The hospital board's first meeting was held on Sept. 10.

Dr. McCreary has been appointed chairman of the education committee for the project and has been asked to suggest the committee's terms of reference and its membership.

UBC would like to extend to its clinical training at Shaughnessy the integrated approach which takes place in basic medical science teaching at its Health Sciences Centre on campus.

To ensure this, representatives of the UBC Faculties and Schools training students at Shaughnessy will have to have a major role in the design of the teaching and research facilities of the new complex. UBC also wants each health professional appointed to Shaughnessy to be a member of a health professional Faculty or School.

SAME ACCESS

UBC's Health Sciences Centre will also suggest a new form of hospital administration to the provincial teaching and referral hospital board, once the board is formed.

In most hospitals physicians and dentists work as independent professionals and have access to the hospital's board of trustees — the hospital's senior governing body — through a medical advisory board. But other health professionals are usually considered employees of the hospital. Their route to the board of trustees is through the hospital administrator.

In the interest of co-operation and smooth functioning of health professionals working as a team, UBC suggests that all health professionals have the same access to the board of trustees.

One method of ensuring this might be to create a professional rather than medical advisory board. This type of administrative organization is already in operation in UBC's psychiatric hospital on campus.

Former Dean Honored

Mrs. Helen McCrae, who retired as Dean of Women at UBC in June, has been named honorary president of the Canadian Association of Women Deans and Advisors, an organization she helped to found.

Dean McCrae was a member of the UBC faculty from 1950 until her retirement. She was named Dean of Women at UBC in 1959 and taught in UBC's School of Social Work prior to that appointment.

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'LET'S HAIL OUR OWN ABILITY'

By JIM BANHAM
Editor, UBC Reports

Every graduating class believes, in its heart of hearts, that it is somehow unique.

In fact, jokes are made on the subject at class reunions.

The most famous is the one that goes, "The place has been on the slippery slope to hell ever since we graduated."

One class which can claim the opposite — that things actually got better after they graduated — and which can also claim to have played a major role in ensuring that things got better is the Class of 1923, which held its golden anniversary reunion on Sept. 6, 7 and 8.

The reason, of course, is that it was the class of 1923 that was largely responsible for the planning and execution of the now-legendary Great Trek, the student campaign of 1922-23 which resulted in the provincial government of the day appropriating funds to complete the UBC campus on its present site on the tip of Point Grey.

No one person, apparently, can be said to have thought up the idea of the Great Trek, but the man who seems to have been the driving force behind the Student Publicity Campaign — as the event was prosaically called in 1922 — was Dr. A.E. "Ab" Richards, president of the Alma Mater Society in 1922-23 and who also chaired the ten-member student committee that oversaw the organization of the Trek.

The campaign, largely carried out in the fall of 1922, was a model of organization. A news service and house-to-house canvass to obtain signatures for a petition which the students planned to present to the Legislature was organized. One student obtained his quota of signatures by setting up a soap box in a downtown pool hall and yet another rode the old Fairview loop streetcar all day to get his.

The affair came to a climax late in October, 1922, with a Saturday-morning parade through downtown Vancouver that dramatized the overcrowded conditions which existed at that time in the University's temporary quarters, a group of buildings in the shadow of the Vancouver General Hospital which have become known to history as the "Fairview Shacks."

PARADE'S END

When the parade ended the students rode streetcars to Tenth Ave. and Sasamat St. and then walked over a horse trail to the almost-bare campus. The only major landmark on the campus was the skeleton of the Science — now the Chemistry — Building, which had weathered in the wind and rain of Point Grey since 1914, when construction was halted as a result of the outbreak of the First World War.

In protest against government "inaction," each of the students who took part in the march to the campus picked up a stone and hurled it into a pile in front of the Science Building. Later the stones were fashioned into the Cairn which stands in front of the Chemistry Building to this day, although it is largely invisible as the result of a heavy covering of Virginia creeper and a surrounding bed of spreading evergreens.

(Some members of the Class of '23, incidentally, are unhappy about the present state of the Cairn. They feel it should be stripped of its covering of vines and surrounded by a plaza of flagstones to make it more obvious. They good-naturedly extracted a promise from a University official during a reunion tour of the campus on Sept. 8 that the matter would be taken up with the "appropriate University authorities.")

Within two weeks of the end of the student campaign the government had taken action to complete the University at Point Grey. Six page boys were required to present the 56,000-signature petition to the Legislature and it adjourned its business to hear "a stirring and convincing speech" by Ab Richards. On Nov. 9, 1922, the then Premier, John Oliver, announced a grant of $1,500,000, which was enough in those days to complete the Science Building and to construct the central, stone-faced section of the Main Library as well as five "temporary" buildings, which are still very much a part of today's campus under the names of the Main Mall North Administration Building, the Old Auditorium, the Mathematics Building, the Mathematics Annex and the Geography Building.

UNIVERSITY MOVES

The University moved to its present site in 1925 — two years after the Great Trek — and it comes as something of a shock to realize that the Class of '23 never enjoyed the fruits of its labor. By the time the University was ready for students at Point Grey most of the Class of '23 were well launched on their respective careers.

Still, the memory of that event and other incidents lingers on with the graduates of 1923 and a goodly number of them showed up on campus for three days of reunion events earlier this month. They had responded well to the organizational abilities of the Hon. J.V. "Jack" Clyne, class reunion chairman and one of the original members of the Trek organizational committee, and Mrs. Annie M. (Anderson) Angus, wife of Dean Emeritus Henry Angus, after whom the campus building occupied by the Faculty of Commerce and Business Administration is named.

Mr. and Mrs. Clyne kicked off the reunion on Sept. 6 with a reception at their Angus Drive home. The following day more than 120 members of the Class of '23 and their spouses attended a dinner in the UBC Faculty Club, which was preceded by a reception hosted by Professor Emeritus of English F.G.C. "Freddy" Wood, a UBC professor at the time of the Great Trek, and his wife, Beatrice, who was a member of the Class of '23.

The Sept. 7 dinner was highlighted by toasts to UBC, the Arts, Science and Agriculture classes of '23 and, finally, to the Memory of the Great Trek, the latter proposed by Dean Emeritus Angus and replied to by Dr. Richards.

Finally, on Saturday, Sept. 8, the Class of '23 returned to the University they never experienced as students for a Saturday morning coffee party in the Faculty Club hosted by Dean Emeritus and Mrs. Angus. For those who were curious about the present state of the campus there was a guided bus tour.

SPIRIT ALIVE

The spirit that animated the Class of '23 when it embarked on the Great Trek seemed very much alive during the reunion celebrations. It is perhaps best summed up in the cockiness, the "by-God-we-did-it" attitude embodied in the last verse of a poem read at the Sept. 7 dinner by Mrs. John (Sally Murphy) Creighton (Arts'23), a former UBC teacher and member of the UBC Senate and Board of Governors, and the wife of a retired UBC professor emeritus of English.

"But with a real tranquillity
Let's hail our own ability.
We kept our versatility!
God bless us — everyone."

Alumni Concerts

A new series of quality music performances is planned by students and faculty of the UBC Department of Music.

The programs are varied, with vocal and instrumental performances by selected students. One evening is devoted to a special faculty recital.

The recitals will be held on Thursdays at 8 p.m. in the recital hall of the Music Building at UBC.

Oct. 8, 25
Nov. 1, 8
(Faculty performance date to be announced)

Subscription series tickets at $8* for all five concerts assure you a reserved seat. Call or write the Alumni Office, 6251 N.W. Marine Drive, Vancouver 8, B.C. (228-3313) for your tickets.

*Revenue from subscription series tickets will be used to benefit the UBC Alumni music student honorarium program.

Hawaii Beckons

Are you troubled in winter by the sniffles, aching joints, chilblains or depression brought on by over-exposure to rain? Here is your chance to escape these irritating ailments this winter by joining the UBC travel program to Hawaii and Maui. The program features frequent departures of 747 jets by regular airlines, good hotels and reductions for children. For information contact: UBC Alumni Association, 6251 N.W. Marine Drive, Vancouver 8, B.C. (228-3313).

Writing Contest

The *UBC Alumni Chronicle* has established a creative writing competition for UBC students. The three winning entries will be awarded cash prizes and will be published in the *Chronicle.*

Students may submit any piece of previously unpublished creative writing to a maximum of 3,500 words in length. More than one item (poetry, for example) may be combined in a single entry. A committee of local writers and critics will judge the submissions.

Cash prizes will be: first — $175; second — $ 125; and third — $75. The prize money has been donated by the UBC Alumni Fund.

Deadline for entries, which must be typewritten, is Jan. 31, 1974. They should be sent to Chronicle Creative Writing Competition, 6251 N.W. Marine Drive, Vancouver 8, B.C. For information, phone 228-3313.

Dental Hygiene

Dental hygiene alumni and friends will hold a social evening and dance on Tuesday, Oct. 30, in Cecil Green Park. This is the first program of this newly-formed alumni division and dental hygiene graduates are invited to come out and join in the fun. Tickets at $6 each, which include the cost of light refreshments, are available by contacting the Alumni Association, 228-3313.