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DIGGING UP THE PAST IN TURKEY



Archaeologists from the UBC Department of Classics are currently excavating parts of the ancient city of Anemurium, which flourished in the third century A D on the south coast of Turkey. One of the expedition's most spectacular finds in the summer of 1971 was this bronze, lead-filled weight in the form of the goddess Athena. For details of the expedition, turn to Pages Two and Three. Photo by Dr. Hector Williams.

In the third century A D, the city of Anemurium was a flourishing metropolis on the south coast of Turkey. By the middle of the fourth century, however, the city was abandoned and by 650 A D it had been destroyed, probably as a result of Islamic expansion. In the article below, Dr. Hector Williams, assistant professor of Classics, describes the excavations being carried out at the ruined city by a team of UBC archaeologists headed by Dr. James Russell.

ANCIENT ANEMURIUM GIVES UP ITS SECRETS

By Dr. Hector Williams

Assistant Professor of Classics, UBC

Scattered along Turkey's southern coast lie the crumbling remains of many once-flourishing cities; now only sheep and goats graze in the decaying ruins and each year sees another wall collapse before winter wind and rain. Adding to this process of destruction have been the constant depredations of man; the ancient buildings serve as a convenient quarry for local villagers and ancient sites a treasure trove to be plundered for the ever-growing market in illicit antiquities. By and large passed over unnoticed by the historians of their day, the story of these cities lies buried in the earth that covers them. It is to recover the tale of one such city that a joint archaeological excavation has been conducted for the past two years by UBC and the University of Toronto under the direction of Dr. James Russell, associate professor of classics at UBC.

SITE SURVEYED

Our site, ancient Anemurium, sprawls along nearly a mile of coastline on Turkey's most southern point, Capa Anamur, which along with the nearby modern town takes its name from the ancient city. The name derives from the Greek word for wind and once one has experienced a summer gale there one has little doubt about its suitability. Relatively inaccessible until construction of a highway in recent years, the site was hardly known although its vast necropolis, well-preserved theatres and baths, and extensive remains marked it out as a place worth investigating.

After several short seasons of survey work conducted by Prof. Elisabeth Alföldi of the University of Toronto, a large-scale campaign was undertaken in the summer of 1970 under Dr. Russell. In some six weeks of work part of a large mosaic-paved court (later identified as a palaestra or exercise yard associated with a large adjacent set of public baths) and a small theatre were dug. As a result of this work it became clear that much of interest and value remained to be exposed. Thus funds were

again sought from the Canada Council and another season of extensive work was carried out in the summer of 1971.

A three-fold program was undertaken: excavation and restoration work in the palaestra, exploration and mapping of other areas of the site, and investigation of the possibility of cleaning and restoring some of the fine wall mosaics and frescoes to be found on the site. A larger team was recruited for this campaign; besides Dr. Russell as director and myself as assistant director and photographer, our staff from UBC included Prof. C.W.J. Eliot, now professor of archaeology at the American School of Classical Studies in Athens; students Pamela Rumball and John Humphrey and a former UBC student, Tom Boyd, as architect. Two students from the University of Toronto and a student conservator from the Institute of Archaeology at the University of London almost completed our number. We added our final members in Ankara, Turkey's capital — our *komiser*, Bey Altan Akat, who represented the Turkish authorities, and our cook, Kesban. Several days were spent in Ankara making final arrangements and assembling the great quantities of supplies and equipment — everything from chemicals to cutlery — necessary for work in an area far removed from the amenities of civilization.

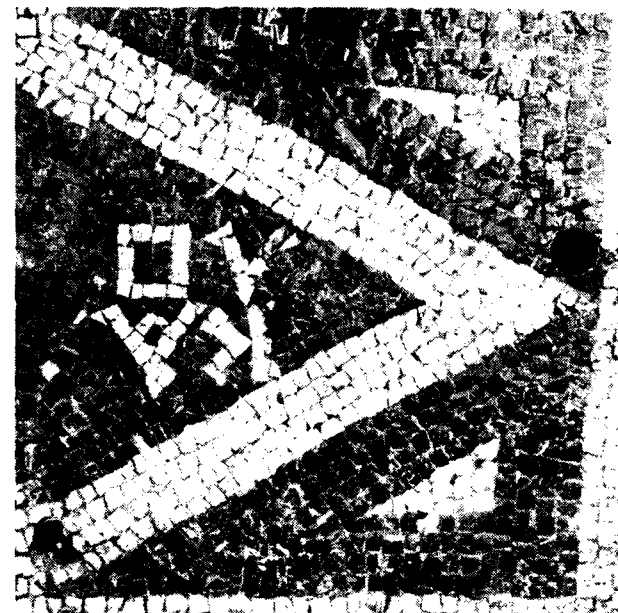
DIETARY STAPLES

Our dig house is about five miles from the nearest town and although some necessities could be found there — gas for the two ring burners which cooked our meals, bread and the occasional piece of goat meat to supplement the tomatoes, rice and eggplant that were our dietary staples — much had to be brought in with us. The house itself, a small, four-room concrete building perched high on a cliff above the sea, served as home, office and workroom for the dozen or so of

Please turn to Page Ten
See EXCAVATION

COURTYARD UNCOVERED

The major project undertaken in 1971 by UBC archaeologists at the ancient city of Anemurium was the uncovering of a large, 120-by-80-foot exercise courtyard that lay adjacent to one of the public baths in the ruins. The illustration at right by UBC architecture graduate Tom Boyd, a member of the expedition, shows approximately what the public bath complex looked like in the third century A D. The photograph at right below shows the mosaic-covered courtyard after the completion of excavation work this past summer. Aside from the courtyard itself, the only remaining recognizable feature of the bath complex is the line of the facade of the entrance to the baths proper at the far end of the exercise courtyard, one of the largest mosaic-covered areas known in Turkey. The fountain house in the illustration at right supplied water for the baths and an outdoor pool where the citizens of Anemurium took their ease.



Mosaic inscription at entrance to bath says "Have a good bath."



Dr. James Russell, associate professor of classics at UBC, is director of the Anemurium excavation.



Feature of belt buckle found in ruins is a Christian cross.

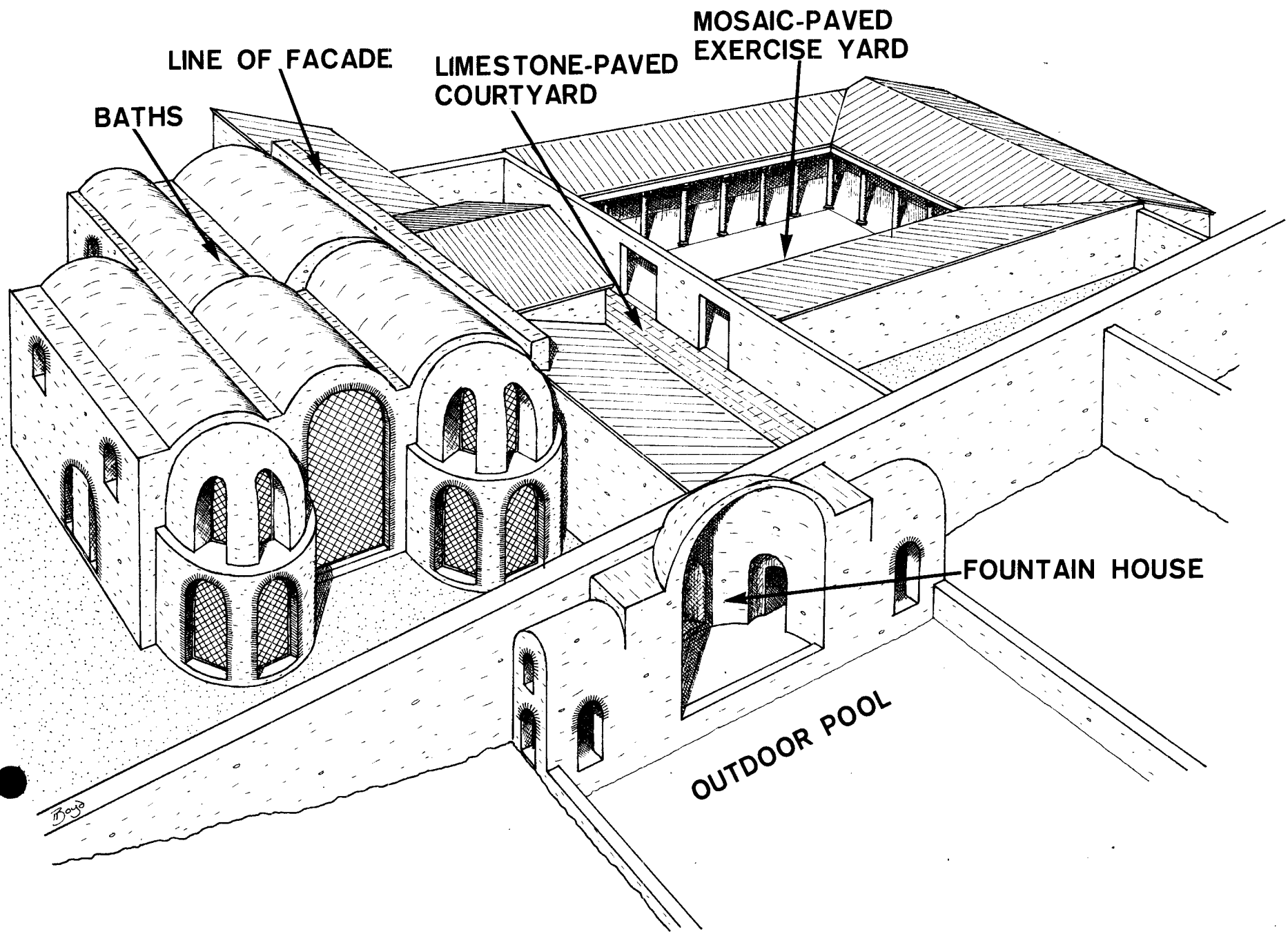
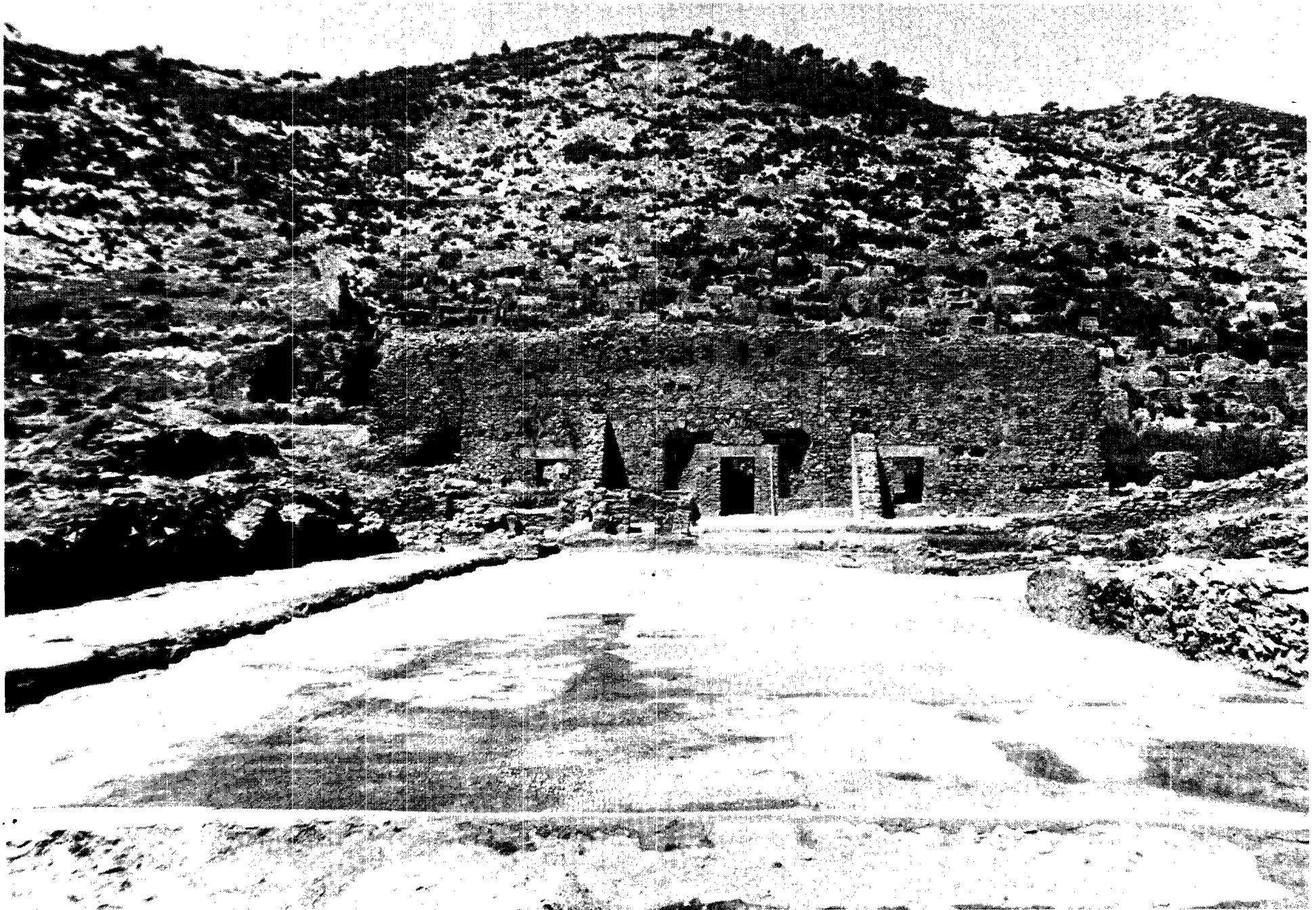


Illustration by Tom Boyd



Pictures by Dr. Hector Williams

UBC's OPEN DOOR DEAN

By Peter Thompson
Assistant Information Officer, UBC

The University of B.C.'s new dean of Science is going to continue the "open door" policy that he adopted from Dr. Gordon Shrum whom he succeeded in 1961 as head of UBC's Department of Physics.

"It worked well for Gordon Shrum and it did for me when I took over the physics department from him," said Dean George M. Volkoff. "As dean of the Faculty of Science, if anyone has a problem and I'm not busy he can walk in and get it done with right away, instead of having to wait for an appointment."

Dean Volkoff's appointment, by UBC's Board of Governors, became effective Jan. 1. Dr. Robert F. Scagel, head of the Department of Botany, had been acting dean since July 1, 1971. Prof. Kenneth C. Mann of UBC's Department of Physics, became acting head of the department Jan. 1.

Dr. Shrum, now chairman of B.C. Hydro, had a pivotal role in Dean Volkoff's life. Born in Moscow in 1914, Dean Volkoff enrolled at UBC in 1930 in the Faculty of Arts and Science to become, like his father and uncle before him, an engineer. But the influence of his first-year physics teacher, Dr. Shrum, was so intense that he changed his goal and graduated in 1934 with a B.A. degree with honors in physics and mathematics, winning the Governor-General's Gold Medal after leading his class in every year. His average mark in his last year was 97.9 per cent.

He went on to become one of Canada's leading theoretical physicists and developed a long and broad association with UBC. The man he succeeds as dean of Science, former Dean Vladimir Okulitch who retired June 30, 1971, is his brother-in-law. His wife, Mrs. Olga Volkoff, now a lecturer in the Department of Microbiology, registered as an undergraduate at UBC one year before her husband and was teaching in what is now UBC's Faculty of Agricultural Sciences when they married in 1940. Their oldest daughter, Elizabeth, graduated from UBC three years ago and their twin daughters, Alex and Olga, graduated last spring. Another brother-in-law, Mr. George Okulitch, head of the Fraser Valley Milk Producers' Association, is co-chairman of UBC's current drive to raise \$500,000 for the Faculty of Agricultural Sciences.

Some of Dean Volkoff's views have probably been influenced by his personal efforts to get an education during the depression. He put himself through UBC on

scholarships. During a period when funding of post-graduate fellowships was almost non-existent, he was sponsored by Dr. Shrum and the late Prof. Thomas C. Hebb, first head of UBC's physics department, to work toward his Ph.D. He went to the University of California at Berkeley in 1936, the year he received his M.A. degree in physics from UBC and became a Canadian citizen, to work under the famed J. Robert Oppenheimer. During the last year of his Ph.D. studies, which he completed in 1940, he was awarded a Royal Society of Canada fellowship for \$1,500.

Dean Volkoff isn't too chagrined that students seem to have become disenchanted with the physical sciences and that registration in physics and chemistry has declined across North America.

"Some students consider that the job market for physics and chemistry graduates is saturated. But the dedicated students will come anyway. Over the past 10 to 20 years, when the popularity of the physical sciences was at its height, the relative number of dedicated students in physics and chemistry didn't vary that much from what it was before. What is happening now is that students looking primarily for a career are tending to look elsewhere."

Nor is he too concerned with what appears to be a swing in student interest and research support in favor of the biological sciences. "Physicists and chemists," he said, "will become more involved in the biological sciences. You should remember that many of the fundamental discoveries in biology in the past couple of decades have been made by people trained as physicists."

(Francis Crick, leader of the two scientists who discovered the structure of the genetic master-molecule DNA, perhaps the greatest biological advance since the publication of Darwin's *The Origin of Species*, was a physicist. Crick became interested in the structure of protein, the basic ingredient of all living tissue, after reading *What is Life?* by Erwin Schrödinger, a theoretical physicist.)

Nor does Dean Volkoff subscribe to the view that scientists should be responsible for the results, bad as well as good, of their discoveries. In many cases, he said, scientists just aren't in a position to know what applications will arise from their work. "How could Einstein possibly realize what would come out of his $E = mc^2$," he asked. And secondly, it's presumptuous of

scientists to decide for themselves whether a basic discovery should or shouldn't be revealed to the public for fear of what might flow from it.

"Every discovery can be used for good or evil," he said. "Who is the scientist to decide unilaterally what is good for society? A new discovery may result in havoc if improperly applied, but it may also help a population of people across the world dying of some disease. Who is the scientist to think he should take these decisions upon himself? Without science, we'd probably still be living in caves and probably still bashing each other on the head."

Whether or not a scientist continues work in what promises to be a productive area for the good or evil of society is up to him, Dean Volkoff said. The decision is personal, rather like deciding whether or not to continue going to church.

He supports efforts to bring to public scrutiny technological or scientific alternatives.

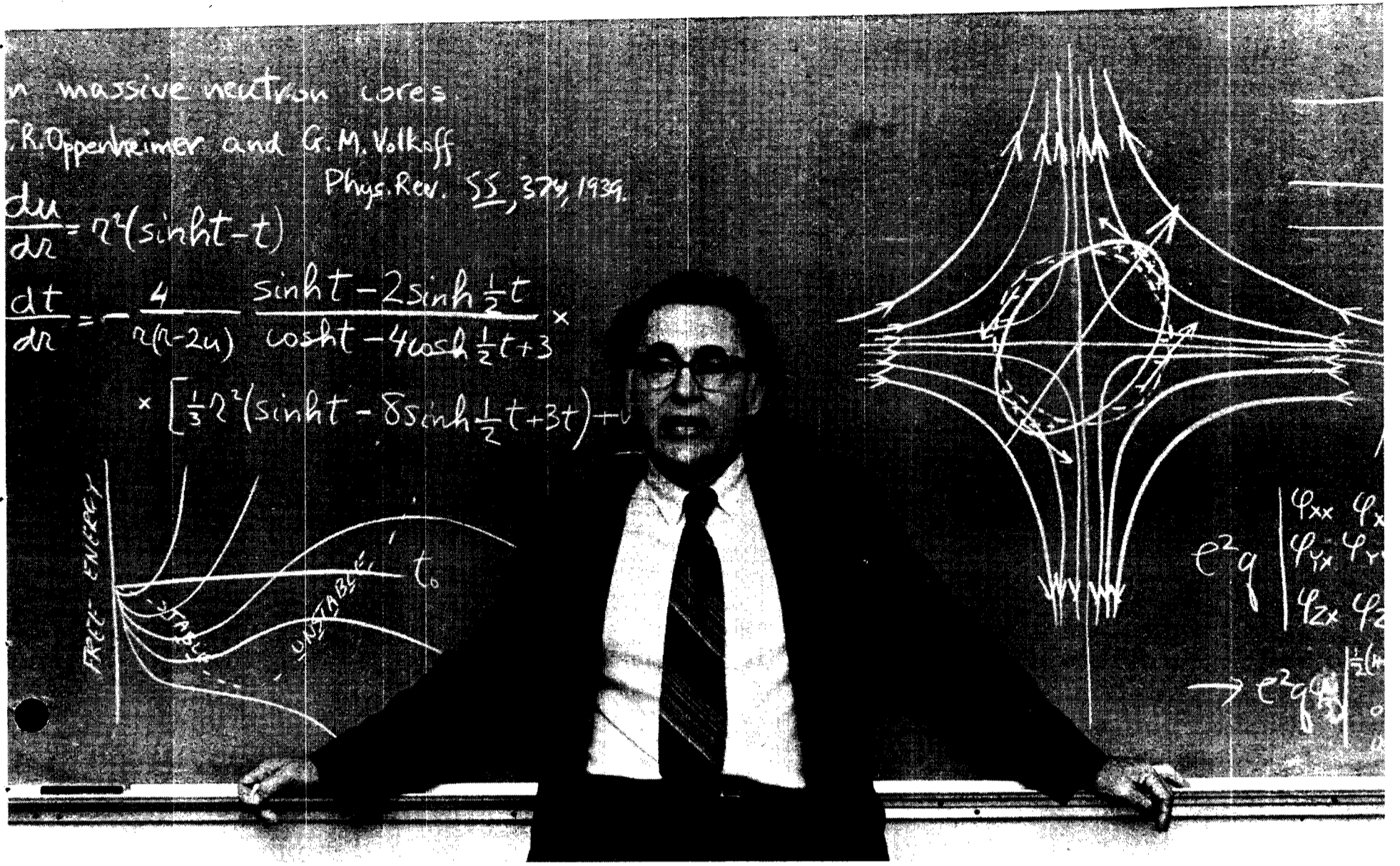
"I think the recent series of H.R. MacMillan Lectures on energy and the environment was very worth while. My only regret is that the Centennial Auditorium at the MacMillan Planetarium is small. The views for and against different energy sources should have received a mass audience and I'm glad to hear that the talks will at least be published."

Dean Volkoff himself has been involved in research the results of which he couldn't have predicted. He has also worked, during the Second World War, on research which was kept from public discussion.

He could not have foreseen the results of his Ph.D. thesis under Oppenheimer. Large bodies of gaseous matter in space would form "neutron stars," he postulated, if compressed by huge gravitational forces. Electrons orbiting around the nucleus of gaseous atoms would be pushed towards the nucleus, forming a compact mass. As the electrons and nuclei came closer together, the force of electrical repulsion between them would increase until it equalled the gravitational pressure squeezing the gaseous matter together.

This is a type of research that so infuriates some members of the public. It was a mathematical exercise. Theoretical physics was combined with mathematics to produce a hypothesis, a prediction. Perhaps not even a prediction but a mathematical projection of what would happen if certain theoretical considerations are

Prof. George Volkoff, the new dean of the Faculty of Science at UBC, is a theoretical physicist who predicted the existence of pulsars, or neutron stars, in 1939 while working with famed physicist J. Robert Oppenheimer in California. The central mathematical formula of the paper predicting pulsars is on the blackboard to Dr. Volkoff's right. Picture by the UBC Photo Department.



elaborated. It was impossible to check whether these so-called neutron stars existed in the heavens or not. To stretch a simile, it was a piece of scientific theology put together by a brilliant student expensively educated. To some people, a waste of time, talent and money.

And so the subject of "neutron stars" lay dormant for exactly three decades until radio astronomers at the University of Cambridge picked up periodic bursts of radio signals from outside the solar system. Other such sources were soon discovered and the objects emitting them were named pulsars. They turned out to be neutron stars, 100,000 times smaller than ordinary stars, invisible in the light spectrum but much more active in the radio spectrum than ordinary stars and rotating at tremendous speeds. They are still a mystery to astrophysicists.

Dean Volkoff's secret research was during the Second World War. He returned to UBC's physics department in 1940 as assistant professor, then joined the National Research Council's group doing work on heavy-water nuclear reactors at the University of Montreal. His wife worked in Montreal at the same time, producing Canada's first penicillin for the pharmaceutical firm of Ayerst, McKenna & Harrison, and unaware of the nature of her husband's work. He was in charge of theoretical physics for the NRC's atomic energy project. While he was still in his late 20's, his work contributed to the design of Canada's first atomic energy plant at Chalk River, Ont.

For his war work he was named a Member of the Order of the British Empire in 1946. He is one of the few UBC professors to have received an honorary degree while an active member of the faculty; he received a D.Sc. in the fall of 1945.

When he returned to UBC after the war he initiated, along with his graduate students, research at the University in nuclear magnetic resonance when the Hennings Building was opened in 1947. The first Ph.D. awarded by UBC went to Dr. T.L. Collins, one of his graduate students.

Although he will extend the open-door policy set by Dr. Shrum into the dean's office, Dean Volkoff's work habits differ from Dr. Shrum's. Dr. Shrum was an early bird who liked to break the back of the day's work in the early hours. Dean Volkoff prefers to walk the short distance from his home on Western Parkway in the Endowment Lands, arrive at about 9:30 a.m., work

through the day, go home for supper and then return for paper work in the evening.

Evenings that aren't spent working are usually taken up by music or theatre. Like many mathematically trained people, he has a passion for music. "I meet more people in physics, chemistry, engineering and other such departments at musical events than I do from the humanities," he said.

He has passed his appreciation of music and the arts on to his daughters. "I'm glad they're daughters because I'm not the type to take his boy out and play ball. I've never been interested in sports. On the other hand I enjoy nothing more than getting my wife and daughters all dressed up and having the pleasure of taking them to the opera."

While a boy he was diagnosed as having endocarditis, inflammation of the lining of the heart. "There's some doubt in my mind about this since it was before sulfa drugs and penicillin and many of my medical friends tell me I would have been dead without them." Nevertheless, he used the diagnosis throughout his school years as an excuse to avoid athletics.

The only form of physical exercise he enjoys is hiking, a pastime that has been useful in enticing at least one physicist to join the physics department when he was head. Prof. Erich Vogt, now on leave of absence at Cambridge University, finally decided to join UBC while hiking with the Volkoffs on Hollyburn Mountain on the North Shore.

It was Prof. Vogt, Dean Volkoff and Prof. John Warren of the physics department who in the mid-1960s organized and promoted the idea of TRIUMF, the nuclear accelerator now being built on UBC's south campus by four western universities and the federal government. TRIUMF is the first inter-university project in Canada. Prof. Warren was its first director and Prof. Vogt associate director.

Three years ago Dean Volkoff was appointed a member of the National Research Council, becoming one of 15 top Canadian scientists and engineers who meet three times a year to decide on allocation of research and scholarship funds to support scientific work in Canadian universities.

Academic decisions, he said, should be left to those who have to live with them. He is opposed, for example, to student participation in tenure decisions. Tenure assures a faculty member permanent employment and

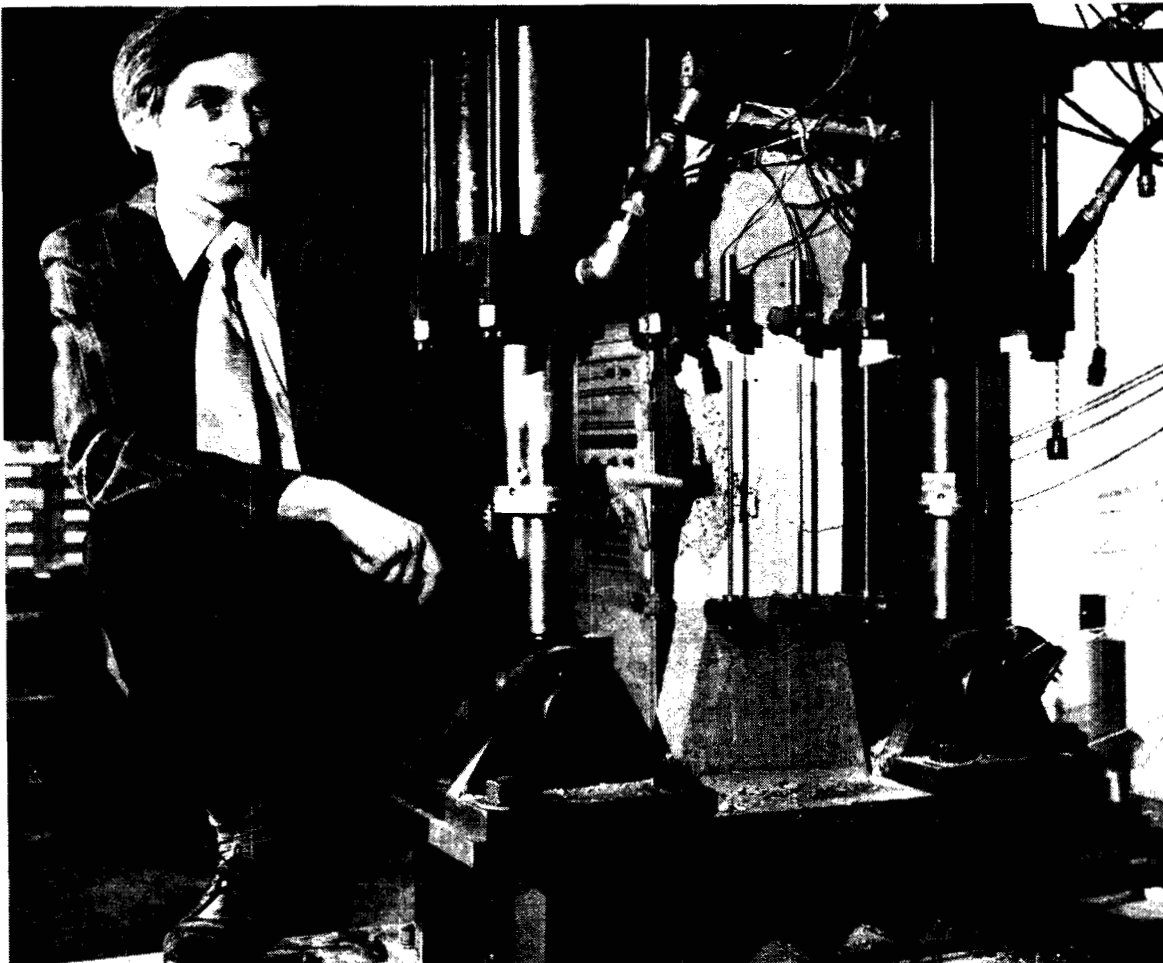
was brought into existence as an attempt to guarantee academic freedom. He thinks it is unfortunate that furor has surrounded the cases of some professors who have not been offered tenure.

"Though there has been a lot of dissent over a few cases recently, it is because we have such beautiful means of amplification these days. The vocal minority becomes as much a cliché as the silent majority. I'll bet there have been a dozen or more cases in the past couple of years in which tenure hasn't been granted that we haven't heard about.

"Many people within the University are not offered re-appointment with tenure when their probationary appointment runs out because the University thinks it can get better people. The market changes all the time, of course, with supply and demand. Right now it's a buyer's market. After a person has been with the University for, say, four years, many would say we were heartless and arrogant to let him go. But if we did re-appoint such a person with tenure, then some other person in the job market, perhaps better qualified, would go without. We try to get the best we can at all times for the benefit of the department, the University and future students who'll be coming to UBC. I don't think it's proper to ask students, whose time here is limited, to make these decisions."

Dean Volkoff often describes himself as a frustrated travel agent. "Next to physics, I'd prefer to be in the travel business," he said. "I'm always telling my friends, whether they appreciate it or not, where they should stay on their travels, where they should go, how they should get there and what time of the year they should go."

As a child he came from Moscow to Vancouver where he received his elementary education. Then he went with his parents to Harbin, Manchuria, where a large number of Russians had gathered after the Russian Revolution. He attended secondary school there while his father was a professor in the Polytechnical Institute. From Harbin he returned to Vancouver to enrol at UBC. His knowledge of Russian and his position as a leading theoretical physicist have since taken him around the globe, often as part of Canadian government delegations. He took part in the seven-week conference at Geneva in 1958 to study the possibility of detecting violations of a possible agreement on suspension of nuclear tests. The conference's successful conclusion contributed to the nuclear test ban.



ASSISTANT professor of civil engineering Dr. Richard Spencer carries out research into the behavior of buildings during earthquakes on this dynamic testing apparatus. The machine allows varying loads, simulating earthquake conditions, to

be applied to building parts in the laboratory and makes it possible to predict deterioration or damage these parts might suffer under earthquake stress. Test results are used to help develop better designs for critical parts of buildings.



KWAKIUTL Indian earthquake mask, above, complete with moveable visor to cover the eyes, was used in dance designed to appease the gods whenever an earthquake struck. Picture courtesy the UBC Museum of Anthropology.

EARTHQUAKES

and what UBC is doing about them

predict quakes any better than the Kwakiutl Indians, but they certainly have a greater understanding of them. In the past year alone, faculty members have conducted studies on earthquake-related topics such as marine geophysics, seismology, propagation of seismic waves, instrumentation, seismological studies of the earth's core and the effect of earthquakes on the wobble of the earth's axis. This last area of research has been carried out by Dr. D.E. Smylie, associate professor of geophysics. He has become prominent among North American scientists for his work in this field, and has co-authored an article on the subject for the *Scientific American*.)

A major topic of concern to UBC researchers is the new theory known as "plate tectonics." This theory gives earthquake researchers, for the first time, an adequate understanding of the worldwide distribution of earthquakes. While it has been known for a long time that most earthquakes are caused by the release of stress in the earth's crust and upper mantle, the origin of these stresses has not been understood.

The plate-tectonics theory explains the build-up of the stresses by the relative motion of large rigid plates, which together form the outer layer of the earth. Some of the boundaries of these plates occur at continent-ocean borders, some in the middle of the oceans.

At some continental margins, there is a sliding motion between the two plates. Where this occurs, such as along the western edge of North America, many shallow (and possibly damaging) earthquakes take place. For example, the San Andreas fault is part of a feature along which the Pacific Ocean basin is moving northwest relative to North America at the rate of about one inch a year.

In other regions, such as the Aleutian Islands and the western coast of South America, there is a slow but monumental crashing of one plate against another. As the two plates collide, one is forced underneath the other and the resultant release of stress may cause earthquakes.



SOIL DYNAMICS are studied in a sophisticated laboratory established by Dean of Applied Science Dr. W.D. Liam Finn, shown at right discussing an experiment with research associate Mr. Setsuo Noda. Model of a dam is enclosed in a shake-table which can accurately duplicate ground motions during an earthquake. Behavior of the real structure can be deduced from recordings made on sensitive instruments. Picture by UBC Photo Department.

The plate on the oceanic side of the continent's edge descends beneath the continent at about a 45 degree angle to depths of hundreds of miles. A collision can produce both deep and shallow earthquakes and explains the devastating tremors that occur in the mountains of western South America.

The descending slab becomes heated and its material is absorbed into the deeper parts of the earth. This raises the question of how the slab's material is replaced. Scientists now know that new material from deep in the earth is added to the plates along a 40,000-mile chain of submerged mountains located roughly in the middle of the oceans, where shallow earthquakes occur frequently but receive little publicity because they are far from populated areas.

ENERGY GENERATED

However they may be caused, earthquakes generate energy in the form of seismic waves which can travel tens of thousands of miles and still be recorded by sensitive seismic instruments. The seismograms which are recorded can then be analysed for a variety of research purposes.

Dr. R.M. Ellis, associate professor of geophysics, has been using earthquake data to examine features of the earth's crust in western Canada. In a project now being developed he hopes to determine the depth to which the rigid plate extends beneath western B.C.

Another geophysics researcher, Dr. R.M. Clowes, is supervising a study of the variation of the speed of earthquake waves as a function of depth in the earth's central core, using data which he compiled while carrying out research at the Australian National University.

There is also continuing theoretical work within the department on the subjects of earthquake mechanisms, the propagation of seismic waves, the effects of crustal structures on recorded seismograms, as well as other projects. Such research involves mathematical and statistical procedures too complex to be explained in such limited space.

Dr. Smylie, along with several graduate students, has completed this past year a generalized theory of earthquake displacement fields based on realistic models of the earth. Dr. Smylie has for some time been investigating the effect of earthquakes on the wobble of the earth's axis, known as the Chandler wobble, and his latest efforts have yielded the most precise computations to date of the effects on the wobble expected from quakes. The study also investigated the speed of shock waves from quakes as they travel through the earth's core, mantle and crust.

Another approach to the study of crustal and upper mantle features which relate to the plate-tectonics theory, and one which complements earthquake studies, is the use of chemical explosions to produce seismic waves. The advantage of these explosions is that their time of detonation and place of origin are precisely known, whereas the times and positions of naturally-occurring earthquakes must be determined from recorded data.

Dr. Clowes is developing a system for recording seismic waves from artificially-created explosions which have been reflected from deep within the earth's crust below the ocean floor. When put into operation the program will involve setting off small chemical explosions — completely safe explosions — in the waters off B.C.'s coast and timing and recording the shock waves that result. The intent is to study, in a much more detailed way than has been possible in the past, the complex plate tectonics of the coastal region of B.C. and how this region fits into the global plate-tectonics picture.

A land-based seismic recording project using explosives has already been carried out as the result of a co-operative venture between Dr. Ellis and UBC graduate students and the earth physics branch of the federal Department of Energy, Mines and Resources. Recordings were made between Prince George and Prince Rupert in an effort to look at the earth's crust in central B.C.

Perhaps the most ambitious project envisaged by the department is the installation of a six-component array of seismometers in the area surrounding the

soon-to-be-completed Mica dam in B.C.'s interior. The complex system would record any seismic activity which might result from the filling of the reservoir behind the dam. The decision on grant applications for this project is being awaited even as this is written.

Taken as individual projects, these studies are rather academic exercises, but as parts of ongoing worldwide earthquake research, they are major steps on the path to a workable theory of the cause of earthquakes and perhaps their eventual predictability. The benefits to life and property from such a breakthrough need no explanation.

An interesting display in the Department of Geophysics is the campus seismic station. In the front hall is a seismograph recording 24 hours a day. It is sensitive enough to detect and record the vibrations caused by winds on trees and the effects of ocean waves striking the beaches and cliffs of Point Grey. Naturally, it is also sufficiently sensitive to detect and record the vibrations from earthquakes around the world, which is its primary function.

The amount and scope of earthquake and related research is a small miracle considering the limited staff and funds available. Despite grants from the National Research Council and Defence Research Board and others, the department continually requires funds to update its seven-year-old seismology equipment and carry out field programs, which are expensive.

It is perhaps worth mentioning the often-confused roles of the seismometer and seismography. The seismometer is the device which converts the mechanical motion of an earthquake into an electrical signal. The seismograph picks up the signals, amplifies, filters and records them. From these, the geophysicist translates the data into, among other things, a measurement of the quake's magnitude on the Richter scale, numbering from zero to infinity. The magnitude of an earthquake is an instrumental measure, and for any given quake the magnitude is the same anywhere. This is not to be confused with earthquake intensity, the effect of an earthquake on a given site. This qualitative measurement varies according to the distance the location is from the earthquake's epicentre, or place of origin, and the size of the earthquake.

DOING SOMETHING

While the geophysics department worries about the cause, location and path of earthquakes, the job of actually doing something about them in down-to-earth terms falls to the civil engineering department.

Prof. Sheldon Cherry initiated research into earthquakes in the civil engineering department in 1960. He is currently chairman of the Canadian National Committee for Earthquake Engineering. This committee is responsible for recommending guidelines for construction in earthquake zones.

Prof. Cherry is quick to point out that there is only so much that can be done about earthquakes.

"You never use the word 'quakeproof'; you can make a structure earthquake-resistant, but the philosophy of earthquake engineering is to design the building in such a way that a minor quake will cause no damage, and in the event of a catastrophic quake to make sure that even if the building is destroyed, people will be able to get out of the building.

"If we know the type of earthquake ground motion at a given site, if we can say 'this is exactly the way the ground would vibrate at this point,' we are sufficiently advanced in our techniques that we could tell almost exactly how the building would behave," says Prof. Cherry.

"But you have to know the characteristics of the structure."

Research in the department is centred on the effects of earthquakes on soils and buildings.

To find out more about the effect of earthquakes on soils the UBC civil engineering department has developed a sophisticated Soil Dynamics Laboratory. Started in 1964 by Dr. W.D. Liam Finn, dean of Applied Science, with continuing support from the National Research Council of Canada, the laboratory is one of a very few in the world equipped to carry out a wide range of tests on the behavior of soils

during earthquakes. As well as carrying on basic research, the laboratory has been available to Canadian industry to assist in assessing the earthquake resistance of dams, dykes for flood protection, nuclear reactor foundations and shore-front structures.

The most important feature of the Soil Dynamics Laboratory is a new type of shake-table which can accurately duplicate the ground motions during an earthquake. Model dams, dykes or buildings can be placed on this table and shaken as they would be during an earthquake so that the behavior of the real structure can be deduced.

BUILDINGS TILT

One of the most difficult and dangerous problems faced by designers is the tendency for sand under water to become a liquid or quicksand when shaken by an earthquake. Buildings on such sands will tilt or settle into the ground. The soils dynamics group, consisting of Dr. R.G. Campanella and Dr. P.M. Byrne in addition to Dean Finn, have developed special and, in some cases, unique equipment to detect the possibility of this happening. Recently Dr. Finn was a consultant to the United Nations, which is helping the Mexican government set up a similar seismic laboratory in Mexico City.

Special computer methods have been developed to compute the movements and stresses in structures during earthquakes. Dean Finn has lectured extensively on these methods in the Soviet Union, Bulgaria and Mexico. Engineers from these countries as well as from the United States, Turkey and Japan, have all spent periods at the Soil Dynamics Laboratory.

Research into the behavior of buildings during earthquakes is being carried out by Dr. Richard Spencer, assistant professor of civil engineering and graduate student John Glanville. With National Research Council support, Dr. Spencer has built a special dynamic testing machine which can apply varying loads, simulating earthquake conditions, to parts of buildings.

This machine makes it possible to predict deterioration or damage these parts might suffer during an earthquake. Test results are used to help develop better designs for critical parts of buildings, and to provide data for special computer programs which Dr. Spencer uses to analyse behavior of complete buildings.

These programs take into account the damage and other consequences of the severe deformations that can occur in buildings during earthquakes.

Around the same time that UBC's civil engineering department acquired the shake-table, it submitted a bid for a major development grant from the National Research Council, its principal source of funds. The money would have been used to set up a major research centre, with sufficient facilities to study nationwide earthquake data.

Although UBC didn't obtain the grant, Prof. Cherry says the department is still working toward a centre along these lines.

"One of the projects which would be of concern to such a centre would be research leading to the development of micro-zoning maps showing which parts of a region are more prone to earthquakes than others. We have these on large-scale maps, of course, but we need them for smaller areas like Greater Vancouver."

Cherry confesses that such a map is still a long way off, but until then he and his department will continue to look for better ways to build structures and better places to put them.

UBC

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Taking the Blandn

Dr. George S. Tomkins, chairman of the social studies department of UBC's Faculty of Education, has been on leave of absence since September, 1971, to serve as co-director of the Canadian Studies Foundation, an independent foundation incorporated in February, 1970. The foundation's aim is to improve the quality of studies about Canada in the elementary and secondary schools of Canada. UBC Reports interviewed Dr. Tomkins about the work of the foundation when he was in Vancouver recently.

UBC REPORTS: What led to the organization of the Canadian Studies Foundation?

DR. GEORGE TOMKINS: The fundamental rationale for the establishment of the foundation is contained in a 1969 report entitled *What Culture? What Heritage?* It was written by Mr. A.B. Hodgetts, a teacher from Port Hope, Ontario, and can best be described, I suppose, as a lament for a nation's history teaching. Mr. Hodgetts and I are now the co-directors of the foundation.

There's a pretty broadly based Board of Trustees chaired by Mr. Walter Gordon, the former federal government cabinet minister. The Board includes a lot of people who are well known in public life in Canada — journalists Pierre Berton and Pat Carney, both graduates of UBC; Dr. John Deutsch, president of Queen's University and former head of the economics department at UBC; Mr. Donald MacDonald, the president of the Canadian Labor Congress and a number of members of the Canadian Senate, including Senator John Nichol, who is also a UBC graduate.

UBCR: The presence of Mr. Gordon on the Board of Trustees and other people who have had nationalistic sentiments attributed to them might lead an observer to assume that the foundation is nationalistic in its goals and was bent on developing what is called a "Canadian identity." Is that so?

DR. TOMKINS: There is the danger of that assumption, I suppose. If I were asked if the foundation was a nationalistic enterprise I would have to answer yes, but not in the sense that we are seeking to promote any particular version of Canadian nationalism or particular view of Canada. On the contrary, we think, as the Hodgetts report indicated, that the trouble with school material about Canada is that it has emphasized a bland consensus view of the Canadian past. We hope to develop approaches to emphasize the variety of Canadian life and the regional diversities that constitute Canada. The aim is to promote a rational and intelligent approach to the study of Canada and only in this sense can the work of the foundation be termed a nationalistic enterprise.

CANADIAN IDENTITY

I'd like to comment too on the use of the term "Canadian identity." Mr. Jean Louis Gagnon, the head of Information Canada, recently wrote about this problem and made some observations to which I wholly subscribe. He expressed the hope that we would never develop a Canadian identity and I would be very disturbed if the purpose of the foundation was to promote an ideological concept of Canadianism. Regionalism is a fact of Canadian life and unity in diversity, to use a somewhat hackneyed phrase, is the essence of Canada. The Hodgetts report showed rather convincingly that history teaching in Canada tended to ignore the rich texture of Canadian society. I agree with Ramsay Cook, of York University, that the nation-state, not the nationalist state, is the appropriate polity for Canadian society.

UBCR: The problem you've been discussing is also, to some extent, bound up with the increasing Canadian obsession with the imposition of American influence on our culture. Is there a lack of material about Canada available in the schools and is there undue American influence?

DR. TOMKINS: I would agree that there has been very real and, in some cases, justifiable, concern about this problem recently. Again, I have to say that I would deplore any nationalistic bias which would result in a reversion to centralized control of the curriculum when our schools are, for the first time, being given some healthy freedom in this regard.

There is, of course, the continuing problem of the ownership of Canadian publishing firms by foreign-based companies, British and European as well as American. I favor action which would ensure that some fixed

DR. GEORGE TOMKINS: "It's an inescapable fact that there exists some excellent material on Canada, printed and published by foreign-owned publishing houses."



Picture by UBC Photo Department

ess Out of Canadian History

proportion of Canadian publishing should be controlled by Canadians.

On the other hand, there is the inescapable fact that there exists some excellent material on Canada, written by Canadians but published and published by foreign-owned publishing houses. There are safeguards too, probably more than we need, on the kinds of materials which get into the schools through the provincial departments of education, the school boards and individual teachers.

PROJECT INTERESTS

There are some pretty militant individuals, who see themselves as protecting the interests of Canada, who are demanding the exclusion of foreign textbooks and the imposition of Canadian-written and produced material. All this raises the ugly spectre of censorship at a time when we are attempting to be more flexible and open-ended. I don't think we need to be too concerned about "protecting" Canadian children. I don't think we can do it and it's questionable whether such a thing is desirable at a time when there is increasing awareness of things Canadian and an increasing flow of published material about this country.

In summary, I'd have to say that the deploring of a lack of material on Canada is overdone. Someone asked me recently if it wasn't the case that textbooks on the history and geography of Canada were being written and imposed on our schools by Americans and I had to answer that I don't know of a single history or geography of Canada in use now or in the past in Canadian schools that was written by an American.

Looked at another way, of course, militant expressions of concern can be beneficial. They almost inevitably result in the initiation of corrective measures and in my particular area of interest — the social sciences — where it is a fact that there has not been sufficient concern about Canada and Canadian problems, nor has there been a body of trained Canadians capable of tackling questions of significance to this country, the situation is changing already. Right across Canada one can now find excellent graduate programs for training Canadians for the schools and universities.

I think I should point out here that I am not speaking on behalf of the foundation in most of my preceding remarks. The foundation doesn't have policies on these kinds of questions and is only interested in promoting better material about Canada and better ways of teaching about the country.

UBCR: This is probably a good point to leave the generalizations and talk about specifics. Can you describe how the foundation is going about its work?

DR. TOMKINS: Behind the viewpoint expressed in the Hodgetts report that teaching about Canada in the schools, contrary to all its stated objectives, tends to strengthen the divisive influences in our society. It does not counterbalance the inevitable and desirable regionalism of Canada by giving students an adequate understanding of the total Canadian environment. The Hodgetts report and studies done by the Royal Commission on Bilingualism and Biculturalism reveal that most schools have not helped to lessen prejudicial attitudes nor have they fostered an awareness of the distinctive characteristics of our multi-ethnic society.

Broadly speaking, the foundation assists in the development of and co-operation between project teams of educators in different parts of Canada. The teams consist of classroom teachers, university professors of different disciplines, experts in learning theory and practice, and administrators. The ultimate aim of the projects that are being funded is to develop classroom materials and teaching methods that will reflect the nature of Canadian society in all its diversity and help students to understand and become more involved in their total Canadian environment. Typically, materials used in Nova Scotia to teach children there about British Columbia have been produced in Toronto publishing houses. We happen to think that British Columbia might play a role in interpreting this province to others, and vice versa.

UBCR: Can you be a bit more specific about the projects?

DR. TOMKINS: Certainly. Our largest project is called Project Canada West and is concerned with developing units of classroom work based on the theme

of urbanization. The central organization is located in Edmonton and consists of a director and supporting office staff. There is a policy committee associated with the project representing the academic community and the four western teachers' organizations.

All the universities of western Canada are associated with the project in one way or another. There are 14 teams of teachers and academics in western Canada working on various sub-projects, four of them in British Columbia. Various UBC faculty members are contributing in various ways. (See box below.) To be more specific, one of the sub-projects being

UBC Faculty Help Foundation

Nineteen members of the UBC teaching staff from five faculties and departments are or have been involved in various aspects of the work of the Canada Studies Foundation.

The faculty members are listed below by faculty and department.

FACULTY OF EDUCATION — Prof. C.J. Brauner, Mr. J.N. Sutherland, Mr. J.W. Kehoe, Mr. D.C. Wilson, Mr. A.M. Gunn, Dr. T.R. Bentley, Dr. Gerald Walsh, Dean Neville Scarfe, Dr. Ian Housego, Prof. R.J. Hills, Prof. F.L. Brisse, Mr. Dennis Milburn.

POLITICAL SCIENCE — Dr. Paul Tennant.

ANTHROPOLOGY — Dr. E.K. Maranda.

HISTORY — Dr. Charles Humphries and Mr. Keith Ralston.

GEOGRAPHY — Prof. J. Lewis Robinson, Dr. Gary Gates and Dr. Cole Harris.

carried out in Nanaimo involves the development of new ways of studying what used to be called "civics." The study of civic and municipal government hasn't always been the most attractive topic for young people and some quite imaginative approaches are being taken to the problem in Nanaimo.

At Britannia Secondary School here in Vancouver another sub-project is developing units of classroom material to enable students to study the inner city.

Three members of the UBC geography department are involved in a national project called the Geography of Canada Project, which is developing a series of monographs to be used by teachers and is designed to upgrade geography teaching in Canadian schools. One of the UBC geographers, Prof. Lewis Robinson, is also a consultant to a sub-project of Project Canada West in Burnaby. This deals with a study of resource provinces and in the shield areas of the eastern provinces. Teachers and students are making firsthand studies of such communities in British Columbia.

The foundation also aided the Faculty of Education here, with the assistance of the Center for Continuing Education, in sponsoring a conference in Kamloops in October, 1971, on the subject of Canadian Studies.

Looking at the work of the foundation nationally, we have several other large projects underway in eastern Canada, each again built around specific themes. One is exploring new ways of getting Canadian literature and art into the curriculum, another is identifying major events in Canadian history which are taught in radically different ways by English and French historians. In the latter project the object is to locate materials that reflect these differing interpretations and have teachers from, say, Montreal teach Toronto students and vice versa. The two projects I've mentioned above are bilingual.

I think I should emphasize here that we are not aiming for a wholesale revision of the school curriculum across Canada. The project groups are attempting to produce units of work in the area of Canadian studies that can be plugged into the curricula now in existence in the ten provinces.

Let me say that in recent months of travelling between here and Halifax, I've been impressed with the deep and sincere interest in our work on the part of teachers, school administrators, university administrators and academics and leading business, professional and

labor people I've met. We are developing new patterns of co-operation, especially between teachers and university academics where it's been badly needed. And creative teachers — of whom there are many more than people in the universities assume — are responding to the challenge, both individually and collectively. The B.C. Teachers' Federation, for instance, is giving a great deal of support to Project Canada West.

UBCR: And the function of the foundation in all this is money, guidance and encouragement?

DR. TOMKINS: That just about sums it up. The foundation funds all the projects I've mentioned. The funds enable teachers to be released from regular classroom duties to work on curriculum development, and to purchase, develop and try out new materials.

UBCR: Where do the funds come from?

DR. TOMKINS: Mostly from corporations and other foundations. The Canada Council is a major contributor and here in the west the Vancouver Foundation has been especially generous in its support.

My own function within the foundation is to give guidance and assistance to all the projects. I visit each group, meet with them and attempt to iron out difficulties and evaluate what they are doing.

UBCR: If the aims of the foundation are to be achieved it would seem to be necessary to have some machinery for ensuring that the material developed by the various projects actually gets used in the various provinces of Canada. How are you going to go about this?

DR. TOMKINS: Well, first of all, let me say that the foundation was established with the approval of the Council of Ministers of Education of Canada and they have given continuing support and encouragement to it. The Council is kept in close touch with our work through Dr. Maurice Richer, the Council's secretary-general, who is an active member of the foundation's Board of Trustees.

DEPEND ON QUALITY

In the final analysis, however, the acceptance and adoption of the classroom units being developed by the foundation will depend on their quality. What will probably make the material attractive is the fact that we are not attempting a wholesale revision of the curriculum. Remember, we're not concerned about the quantity of Canadian studies in the schools; it's more a matter of improving the quality and the breadth in the light of the Hodgetts report. My own feeling is that the quality of the material, coupled with co-operation between various levels of education on a cross-Canada basis, will go a long way to ensure the success of the foundation's program.

UBCR: What is the future of the foundation?

DR. TOMKINS: The foundation hopes to accomplish its goals within five years and then go out of business. When materials from the projects I've described earlier are actually in use there will have to be an assessment and evaluation of them. For the immediate future we are exploring the possibility of a national bilingual journal for teachers of Canadian Studies and possibly a yearbook of Canadian Studies.

UBCR: The foundation is exclusively concerned with Canadian Studies at the elementary and secondary school levels. Do you think it's time a similar study was carried out at the university level?

DR. TOMKINS: I think there's more going on in this area that is generally realized. Our UBC calendar, after all, lists many courses that deal wholly or partly with Canada. The Association of Universities and Colleges of Canada is in the process of establishing a committee to look into Canadian Studies. Here at UBC I understand there's a committee in the Faculty of Arts that is looking at Canadian Studies and, of course, there are continuing debates in the Senate on this topic.

In my own faculty — Education — there is a move to develop Canadian Studies programs, because if we are to improve the situation in the schools we have to produce teachers who are better qualified in this area. Such programs could be the means for promoting general in-service curriculum development work co-operatively with teachers in the field — an enterprise which I have long believed deserves high future priority for the Faculty of Education.

EXCAVATION

Continued from Page Two

us on the excavation plus occasional visitors, which could include neighborhood dogs, cats, snakes and scorpions. Water was brought in on donkey-back from a well a third of a mile away from the sea and light in the evenings was provided by a gas lantern and flickering kerosene lamps.

We began the day with breakfast at 5 a.m. and work itself commenced at 6 a.m. and lasted until 5:30 p.m. Saturday, the local market day, was the day off and we used it for excursions to neighboring places of interest — the great 13th-century castle of Anamur, for example, some five miles down the coast, or the verdant foothills of the surrounding mountains where we visited the source of the ancient aqueduct that once supplied the great quantities of water used by the population of Anemurium in its heyday, when no less than six large public baths provided places for relaxation and entertainment.

We hired some 60 workmen from the local farms and villages and although most of these had to travel three or four miles to and from work we had far more jobseekers than we could possibly employ. Work on the excavation was the major source of seasonal employment in the area and the results of the previous year's earnings were evident in the transistor radio in every trench and the new bicycles which had for many replaced the old donkey. Used to long hours in their fields, the local workmen could keep up a rugged pace of work even when the temperature passed the 100 mark and the humidity rose to 90 per cent. Although for most of the older men the work was just a job, many of the younger ones, especially the senior high school students, came to take an increasing interest in the uncovering of this particular facet of their country's incredibly rich past.

Each of us supervised a small team of pickmen, shovelmen and wheelbarrow boys who carefully cleared away the heavy overlay of rock and earth that covered the ancient buildings. The extensive use of rubble and concrete, which collapses into a chaotic mess, made progress often very slow, but by the end of the season we had succeeded in clearing most of the great complex of mosaic-paved rooms and courts that lay before the bath buildings. Here at last lay revealed one of the largest mosaic-covered areas known in Turkey, a great courtyard some 120 by 80 feet in extent with a fine polychrome mosaic in geometric patterns around the sides and a coarser blue and white mosaic in the central area, which served for the actual exercise.

MAIN ARTERY

At the east end appeared a monumental staircase linking the palaestra with a street, lined with colonnades, that appears to have been the main north-south artery of the city. Here, much to our delighted surprise, we found an inscribed statue base in honor of a local athlete who had been five times victorious in great international athletic competitions like the Olympic games. The find is especially significant for it names the city, the first appearance of its name yet found on the site. Equally interesting is another inscription, this time in mosaic, at the threshold of the main entrance to the bath, saying in Greek, "Have a good bath!" A similar inscription also appears at the exit with the legend "You've bathed well!"

This great complex, however, seems to have had a rather short life. Constructed about the middle of the third century A.D., it was abandoned about a hundred years later and squatters began to build their houses in the area. We dug a number of these crudely built structures of the fifth to mid-seventh century, discovering many items of everyday household use, such as lamps, glasswares, keys, locks, belt buckles, cosmetic and writing instruments, and even a kitchen, complete with hearth, breadboard and mortar for grinding the grain into flour. Most spectacular was a bronze lead-filled weight, which weighed almost 25 pounds, in the form of the goddess Athena; the story quickly spread through the surrounding countryside that we had discovered a statue of Attila the Hun, filled with gold, and we soon received a visit from the local police who wanted to know if we wanted protection!

These scattered traces of everyday life and a layer of ash in some of the houses clearly indicated the site had been suddenly abandoned and destroyed about the year 650 A.D. We know from historical sources that the great wave of Islamic expansion began to spread across the East about this time and there

seems little doubt that marauding Saracen fleets made coastal life too dangerous for the Christian inhabitants of Anemurium. It is likely that they withdrew to less exposed settlements in the surrounding hills and left the site to the silence of the succeeding centuries. In the Middle Ages a small settlement was established in another part of the site but the days of Anemurium as a prosperous coastal city were forever over.

We also began the exploration of areas immediately adjacent to the palaestra-bath complex and uncovered, again to our surprise, a large fountain house from which gushed forth water into a huge tank, some 70 by 135 feet in extent. In the same area, but even more significant, were traces of an ancient glass factory, one of a handful known from this period of the early Byzantine empire. Cheap

glasswares largely replaced fine pottery for table use in the fifth century A.D. but the kilns and factories that produced it have always been elusive; ours may provide important information for the history of glass technology.

WRITE HISTORY

Our two seasons of work at Anamur have only begun to reveal the rich potential of the site; years of study and excavation remain before we can begin to write the history of this city. Great quantities of raw data, inscriptions, dozens of small finds, hundreds of coins and thousands of pieces of pottery must be studied and the tale they tell unfolded. Our actual digging — and we plan another season of work for May and June of this year — is only the first step.

Picture by Dr. Hector Williams



Scorpions are one of the hazards of life in Turkey. This one was captured by a Turkish workman digging at the Anemurium site.

LETTERS TO THE EDITOR.

ENDOWMENT LANDS

Dear Sir: Please add Simon Fraser University to the list of institutions whose members use the University Endowment Lands. (See *UBC Reports*, Oct. 27, 1971) I, personally, have found the forest thereon a productive area in which to procure bark and timber beetles for research on these economically important forest pests.

Sincerely,
J.H. Borden,
Associate Professor,
Dept. of Biological Sciences,
Simon Fraser University

Dear Sir: I read the articles relative to the University Endowment Lands. It is abundantly clear that even if utilized for building, the income to the University would always be a minor part of total budget. For that reason I tend to support Mr. Belshaw's position relative to the creation of a city or provincial park.

I am enclosing a piece of literature relative to the Cook County Forest Preserves which provide a ring around this large metropolitan area (Chicago). I believe there is almost universal support of this long-range plan for keeping the countryside in its normal state, for the use of the population-at-large.

Perhaps this information will lend further support to those who are conservation minded.

Sincerely,
John A McLaren, M.D.
Wilmette, Illinois

Dear Sir: I have been reading with interest the University Endowment Lands controversy reported in recent issues of *UBC Reports*. As a young boy I had access to these lands and later attended UBC there. It was not until I worked abroad at the University of London (Imperial College) that I began to realize the true value of the University Endowments Lands (UEL). Imperial College, because of the finite limits of its properties, is being forced to grow inwards rather than outwards. The result is a very crowded maze of buildings. This could happen to UBC if it sold off its lands to outside interests.

I endorse the idea of developing the UEL into a provincial park, providing there is a minimal

disruption of the "natural" state of the forest (as it exists today). This would ensure future generations of city children the opportunity of easy access (as I had) to the wilderness. The people of B.C. could then have a university and park for which they would be justifiably proud.

Yours sincerely,
Dr. G.M. Elfstrom (B.A.Sc.'68)
The University of Tennessee Space Institute
Tullahoma, Tennessee

The last sentence of Dr. Elfstrom's first paragraph gives the impression that UBC owns the Endowment Lands. UBC does not hold title to the Lands, which are under the jurisdiction of the provincial government. —Ed.

RESEARCH FOREST

Dear Sir: In *UBC Reports* dated Dec. 1, 1971, you wrote a report on 'Best-Use' Forestry. In this report you made a very brave statement which I believe is false. The statement in question is "nearly all the trees cut in the Interior are cut by shears." If this is so, why have I never seen them in operation, if they're so widely used and I'm from the Interior. It's probably because your information is entirely incorrect. I'd advise you . . . to keep to the facts and don't try to pad your report with useless information.

John C. Mallett
Forestry
B.C. Institute of Technology

Assistant Information Officer Peter Thompson, author of the article, comments: "According to an official of the Canadian Forestry Service, 'it may be accurate to say that shears were used in most areas last year and that this year most trees will be harvested by mechanical tree cutters — shears, or tractor-mounted augers and chainsaws.'"

Dear Sir: The article by Peter Thompson in your Dec. 1 issue ("Best-Use Forestry Planned") highlighted the often-ignored fact that forest management is a political as well as a technical issue, and one that will move to the forefront of public awareness as available recreational land becomes increasingly overcrowded and over-priced.

However, I disagree that the most just and feasible solution is to "educate" the public to accept the

Job Prospects Appear Brighter

Job prospects for University of B.C. bachelor degree graduates this spring may not be as bleak as some expect.

At least not if the experience of UBC students who graduated with bachelor degrees last spring is any indication.

Last year's job prospects for Canadian university graduates were predicted to be the most depressing in decades in a number of official and unofficial reports done by federal government agencies and other sources.

But a series of "post-graduation activities" reports on UBC graduates by the University's Office of Student Placement show that last spring's bachelor graduates did much better than predicted.

GOOD SHOWING

The good showing by UBC graduates last spring indicates that the prediction of national employment opportunities for graduates were off base as applied to UBC. Perhaps the same exception to gloomy national employment predictions will occur this spring.

Of course, using the Student Placement Office reports as a firm guideline to job opportunities this spring could be completely misleading. The employment conditions that existed last spring and summer may have changed for the worse. But on the other hand they may be the same or better.

At any rate, the good job-finding record of UBC graduates last year in the face of predictions of high unemployment rates is a heartening omen if nothing else.

The UBC surveys were for the Faculties of Medicine, Dentistry, Arts, Science, Law, Pharmaceutical Sciences, Forestry, Applied Science,

Commerce and Business Administration and Agricultural Sciences. Not surveyed were the Faculties of Education and Graduate Studies.

The reports asked graduates what they planned to do for the year ahead; for example, whether they were continuing to graduate school or professional training, planning to travel, or wanting to work and had found a job or were unemployed. The information was gathered through the summer and early fall.

This article deals only with the Faculties of Applied Science, Arts, Agriculture, Commerce, Forestry and Science.

Surprisingly, the highest unemployment rate among these was in Commerce, presumably one of the most employable graduate groups. Its 10.6 per cent unemployment rate was about half again as great as that of Arts graduates.

To some extent it may be unfair to compare the employment data of one faculty with another, since information on some faculties was gathered a month or so before others.

The Arts survey shows, incidentally, that the faculty's 7.3 per cent jobless rate was insignificantly higher than the 7 per cent recorded in a survey of that faculty by the Placement Office in 1964 during the golden years of graduate employment.

This is all the more astonishing when it is remembered that the Arts graduating class last year was about 50 per cent larger than the 1964 class, and that the percentage of the class looking for jobs last year was 40 per cent compared with about 30 per cent in 1964.

Some of the Arts and Science students had jobs that didn't correspond to the abilities or knowledge they acquired at UBC. In the case of Arts graduates, no information on the suitability of jobs was

recorded in the 1964 survey and so a comparison with jobs taken in 1971 is impossible.

The 1971 Science survey showed that some graduates were "unsuitably" employed.

The surveys for Forestry, Commerce and Applied Science list a number of graduates in "non-career" jobs.

One male agriculture graduate worked in a gasoline station and three female graduates worked as a secretary, assistant in a pharmacy and as a draftsman.

FACULTY RUNDOWN

Here is a rundown by faculty:

Arts: 800 received bachelor's degrees and 683 were contacted for the report. Only about 14 per cent of the 1971 arts class continued towards master's and Ph.D. degrees, a drop from 25 per cent in 1964. About 32 per cent were continuing in professional training — accounting, teaching, medicine, librarianship and others — approximately the same number as eight years ago. Among the departments in the faculty graduating more than 10 students, Sociology had the highest unemployment rate and Economics the lowest.

Science: 430 received bachelor's degrees in the spring. Twenty-two were in double degree programs in dentistry or medicine and were excluded from the survey. The remaining 408 were contacted and 358 responded. About 23 per cent were going into graduate school, 20 per cent into professional studies, 32 per cent took jobs, 5 per cent were going to travel, 8 per cent were unemployed and 10 per cent went into technical training, or unclassified studies. The highest jobless rate was among Geology graduates. The rate for Geophysics graduates was second highest.

Applied Science: 226 received bachelor's degrees and 205 were contacted. About 68 per cent had career jobs — jobs that fitted their training — 16 per cent were going to graduate school or other university training, 8 per cent were going to travel for a year, 5 per cent were jobless and 3 per cent had non-career jobs. Graduates in electrical engineering were the hardest hit among the unemployed.

Commerce: 169 received bachelor's degrees and 156 were contacted. 103 had career jobs, 11 were continuing their education in graduate school or law, 11 were travelling, 13 were in non-career jobs and 18 jobless. Among the options open to Commerce students, those graduating in economics and industrial relations were least able to get career jobs.

Forestry: Of the 49 receiving bachelor's degrees, 44 were contacted of whom 39 had career jobs, three were jobless, one was travelling and one had a non-career job.

Agriculture: 42 students received bachelor's degrees and information was received from 38. Of these, 11 were going to continue their education in graduate school or professional training, four were travelling, 21 got jobs and two were unemployed.

Some of the strangest information concerned the type of work done by some graduates. Many of the jobs were logical and fitted the educational experience of the graduate. Foresters joined forest companies, engineers took jobs in construction and engineering firms, sociology graduates became job counsellors and probation officers, fine arts graduates were employed in museums and in the field of archaeology.

ANOMALOUS JOBS

But other jobs were anomalous, probably because of the tight job market, but in a few cases because of the preferred choice of the graduate.

Fine arts graduates took jobs in bookkeeping and drug research, two French graduates worked as a stewardess and dental assistant, two psychology graduates as a customs officer and in real estate sales, a graduate in international relations worked as a truck driver, a German student taught English in Japan, and English graduates took jobs as an immigration officer, laborer, ticket agent and sanitation worker.

While two economics graduates became management trainees, another became a steelworker. One mathematics graduate became a computer programmer and another a radio news announcer.

LETTERS TO THE EDITOR

paramountcy of corporate interests and profits, and consequently the need to compensate these interests when public wishes are placed first. More and more people in this province are questioning the right of private companies to utilize Crown land with callous disregard for the needs and interests of the broader community. I doubt very much that it will be possible to convince the public to pay for what belongs to it by right: access to public land, air free of noxious smoke and fumes, and water free from dangerous wastes and chemicals.

Therefore, perhaps our "educational" efforts ought to be directed instead towards the forest companies. With some effort, it should be possible to persuade them that protection of the environment and care for the rights of others are part of the price that must be paid for the use of a public resource. We might begin by reminding them of the fate of the automobile manufacturers, who also thought their political clout rendered them immune from the consequences of corporate arrogance and irresponsibility.

Yours sincerely,
Michael D. Wallace,
Assistant Professor,
Department of Political Science, UBC

SUZUKI ON SCIENCE

Dear Sir: Thank you for David Suzuki's article. It is shocking, but in a most salutary way, and he sees through the shabby veneer of pseudo-scientific, pseudo-democratic, pseudo-religious, jet-age society with the incisive penetration of the Hebrew prophets. I heartily concur with his protest that Canada is a "colonial branch plant to the U.S." When are we going to kick the Yankees out? Have we the guts to do it? Or will our children be born into this feudalism? . . .

Yours in the fight for economic sovereignty,
Vince Venables, B.A. '50,
North Kamloops, B.C.

Dear Sir: I have just been reading the Dec. 1 *UBC Reports* and, as usual, find the content most interesting. I know of no other publication of this sort. In fact few newspapers equal it in quality of news presentation and quality of writing. It must be a

mighty effort and out in that vast silent population mass, it should and I suspect is, having an effective impact. Your success is tremendous . . .

I thought Suzuki's talk was excellent. From my viewpoint, he is probing deeply, as one expects the University to do, and zeroing on the vital targets. Of course, being way out there in the vanguard may seem lonely for him at times, but being a leader is a lonely role. As long as he can be sure that he isn't in a squirrel cage but in the right ball park, then he is on safe enough ground. I suspect he can thread his way through life safely enough . . .

Yours sincerely,
Lester W. McLennan, UBC '22,
Fullerton, California

NETHERLANDIC LITERATURE

Dear Sir: I appeal to all Dutchmen and Flemings and to all Canadians interested in assisting a course on Netherlandic literature in translation to be given at UBC next academic year.

We are planning to introduce a course entitled "Dutch literature in translation" to be organized by the UBC Center for Continuing Education. We would like to start in September of this year.

Since the establishment of the Canadian Association for the Advancement of Netherlandic Studies in June, 1971, and the prime minister's recent statement to Parliament on Canada's multiculturalism, it is clear that the culture of the ethnic communities in this country will get the attention and support which they deserve. The Dutch and Flemish communities should not stay behind! At the University of Calgary Netherlandic literature has been taught for several years and there are projects to introduce similar courses at other Canadian universities. Vancouver and surroundings accommodate a great number of persons of Dutch and Flemish origin. In order to be able to start we need some 20 participants. That is why you should not hesitate to send in your name and address and to acknowledge your interest. Write to: Prof. S.A. Vosters, Buchanan 256a, The University of British Columbia, Vancouver 8.

S.A. Vosters,
Department of Hispanic
and Italian Studies, UBC

UBC ALUMNI Contact



This portrait of Cecil Green Park was executed by Vancouver artist and UBC graduate Raymond Chow on a commission from the Young Alumni Club and presented in August to Dr. Cecil Green in recognition of his generous support of UBC.

YOUNG ALUMNI CLUB

Renewed Program Activity

Despite the fact that all available meteorological evidence indicates that spring is not yet here, the Young Alumni Club has nonetheless launched into its spring program. Could it be they know something we don't?

Since Jan. 6, Young Alumni Club members have been taking part in two informal social functions a week at Cecil Green Park, 6251 N.W. Marine. The spring program involves functions on:

- Thursday evenings, Jan. 6 – April 6, 8 p.m. – 12 midnight;
- Friday evenings, Jan. 7 – April 7, 4 p.m. – 12 midnight.

The program offers members the opportunity to

listen or dance to taped music or just take part in an evening of socializing.

Young Alumni Club membership is open to alumni and members of the graduating classes of all faculties. Membership fee is \$3. The program presents a pleasant opportunity for alumni and senior students to drop into Cecil Green Park and relax after a week's work or studying.

Alumni and students who are not now members are invited to join and may do so at Cecil Green Park any evening the club is functioning.

In other news of interest to students, the UBC Alumni Association will again be holding a series of "Intellectual Evenings" – a program which enjoyed considerable success with students last year. The series last year involved informal discussions between faculty members and students on the topic, "Science: Friend or Frankenstein?"

This year there will be a series of three Intellectual Evenings, held at Cecil Green Park on Tuesday evenings at 7:30 p.m., starting on Feb. 8. The general topic is "University in the Community." Details on speakers and precise topics are expected to be completed soon. Further information may be obtained by phoning the UBC Alumni Association at 228-3313.

Alumni Active In Two Centres

A Universities of Canada Club has been formed in New York for alumni of Canadian universities living in that area.

The club is an outgrowth of the activities of the Canadian Universities Ball Committee which since 1969 has staged an annual alumni ball in New York. As well as continuing this social function, the Universities of Canada Club will provide a permanent, accessible focus for both individual Canadian alumni and Canadian alumni associations already organized and functioning in New York. The UBC representative on the club is Miss Rosemary J. Brough of 340 East 58th Street, N.Y.

In other branch news, a dinner for UBC graduates is to be held on Friday, Feb. 18, in Edmonton. The affair will begin with a "happy hour" in the Garrison Club, Prince of Wales Armory, at 6 p.m., followed by a buffet dinner at 7 p.m. in the dining room.

A guest speaker from UBC is to attend, but final arrangements for this part of the program have not yet been completed. Tickets for the dinner are \$2.50 each and reservations may be made by phoning Mr. Gary Caster, 469-5146 in Edmonton.

Nominations Open for Offices

Nominations are open for the election of officers to the board of management of the UBC Alumni Association. The board governs the affairs of the Association.

UBC alumni will vote this spring by mail ballot to elect officers to the following positions, each for a one-year term: **president, first vice-president, second vice-president, third vice-president, treasurer, members-at-large (four to be elected), a representative of each degree (20 to be elected).**

Nominations must be signed by five alumni and have the written consent of the person nominated, who must be a UBC graduate.

Such nominations, together with a photograph and 75-word biographical resume of the candidate, are to be received by the Returning Officer no later than **midnight Feb. 10, 1972.**

Alumni will vote by mail ballot in the latter part of March, with the results being published by May 1.

Mail nominations to: Returning Officer, UBC Alumni Association, 6251 N.W. Marine Drive, Vancouver 8, B.C.

Options for Women Explored

One of the highlights of the spring UBC continuing education program is a series of courses to assist women in developing their personal potential.

In co-operation with the UBC Alumni Association, the Center for Continuing Education is putting on a workshop for women at Cecil Green Park, 6251 N.W. Marine Drive, on six Wednesday mornings (9:30 a.m. – 11:30 a.m.) from Feb. 2 to March 8. Dr. Clare Buckland, lecturer with the School of Home Economics, will conduct the workshop designed to assist women develop "a clearer sense of selfhood and more energy for creative and experimental ventures, whether in human relationships or in work." The course fee is \$15.

Two other workshops, which grew out of the

popular "Options for Women" program, will also be held. One will focus on Choosing and Finding Careers and will introduce women to the preparation of personal resumes, job investigation and occupational behavior. The workshop will consist of three meetings on Wednesday mornings, from 10 – 11:30 a.m. in room 307, Vancouver Public Library, starting Feb. 9. Fee is \$5.

The other workshop, Return to Education, will introduce women to the possibilities, approach and local resources for picking up discontinued education. It will involve three meetings on Wednesday afternoons, from 1:30 – 3 p.m. in room 307, Vancouver Public Library, starting Jan. 26. Fee is \$5.