SURVEY CARRIED OUT AMONG STUDENTS

Sex Education Urged for B.C. Schools

University students think they know a lot more about sex than they actually do.

They are well informed on the subject of contraception, but their knowledge of the structure and function of human sex organs is inadequate.

And they are least well informed on the subject of venereal disease.

STUDY TOOK TWO YEARS

These are a few of the results to emerge from an exhaustive, two-year study carried out at the University of British Columbia by Dr. Anne McCreary Juhasz, associate professor of education.

As a result of her survey, carried out among 893 education students and freshmen from other faculties, Dr. Juhasz said: "The results clearly indicate that students in elementary and secondary schools need a reliable and accurate source of information on sex.

"My own view is that the school is the best place to give such a course on a regular developmental basis, and that the course should encompass both factual information and the psychological and sociological aspects of human behaviour."

Dr. Juhasz' questionnaire, administered to students voluntarily during the 1965-66 UBC session, was designed to find out the adequacy and accuracy of their knowledge.

The questionnaire was divided into two parts—one dealing with the source of sex information and the student's opinion of its adequacy at the time obtained, and a second section which Dr. Juhasz calls a "Sex knowledge Inventory," dealing with physiological aspects of sex.

STUDENTS' QUESTIONS USED

The second section was drawn from lists of questions submitted by high school and college students at instructional sessions given at Chilliwack in the Fraser Valley and UBC.

Please turn to page two

See STUDENTS OVERRATE KNOWLEDGE

UBC Reports

RETURN POSTAGE GUARANTEED

VOLUME 13, No. 2 | VANCOUVER 8, B.C. | 2 | FEBRUARY, 1967

OPEN HOUSE SET FOR 150,000

A COMBINED geology-oceanography team from UBC has discovered and analysed the first find of underwater mineral deposits on the B.C. coast. Examining manganese nodules found in Jervis Inlet are Dr. James Murray, right, leader of the team; graduate student Bob Macdonald, left, and oceanographer Dr. Edward V. Grill. Full story on the find and an article on mineral finds by UBC graduates will be found on pages four and five. Photo courtesy of The Province.

UBC expects to welcome some 150,000 people to the Point Grey campus March 3 and 4 for the 1967 Open House.

The event, held every three years, will actively involve more than 5,000 students in the preparation and operation of displays, for traffic control, and as guides to direct visitors.

All of UBC's faculties, schools and departments are preparing exhibits for the event, which is designed to reflect the general theme, "The University and the Nation," and Canada's current centennial celebrations.

PLANNED BY COMMITTEE

A joint faculty-student committee, chaired by law student Jim Taylor, has been meeting for nearly a year to organize and set policies for Open House.

Taylor said: "It is our purpose to demonstrate the many and varied activities of both faculty members and students. We will attempt to show the link between the nation and the University and the contribution that each has made to the other.

"The University will also be depicted as a place where this generation is dealing with some of the problems that will concern Canadians in the next 100 years."

The event will be officially opened by Senator Norman MacKenzie, President Emeritus of UBC, on Friday, March 3, at 7 p.m. at a brief outdoor ceremony in front of the Library, where a huge graphic symbol designed by a fine arts student will be erected.

Here are a few of the highlights planned for Open House:

- Student Model Parliament in Brock Hall on both days debating the issues of Confederation.
- A continuous series of 10-minute academic lectures in the Buchanan building on subjects embracing the humanities and the sciences.
- Display on the Canadian Arctic by the dept. of geography, including samples of 30,000-year-old ice.
- Display of the first find of undersea minerals in a B.C. coastal inlet by the dept. of geology. (See story on page 4.)
- Non-stop entertainment by student groups in the UBC auditorium and displays by 40 student clubs in the armoury.
- A display on the famous Canadian medical doctor, William Osler, in the new Woodward Library.
- A paper dress competition and fashion show by home economics students in the Hebb Lecture theatre at 8 p.m. on Friday, March 3.
- A scale model of balloon logging operations and water bombing by the faculty of forestry.

On Saturday, March 4, UBC's Alumni Association will welcome graduates to its new quarters in Cecil Greek Park — formerly Yorkeen House. There will be displays and tours of the house until 4 p.m. on Saturday, March 4.

DR. PETER A. LARKIN

Fisheries Institute Head Named

Dr. Peter A. Larkin, 42, has been appointed Director of the Institute of Fisheries at the University of B.C., President John B. Macdonald has announced.

Dr. Larkin was associated with the Institute of Fisheries and the Department of Zoology of the University from 1949 to 1963 and gained a distinguished reputation locally, nationally and internationally as a brilliant scholar and research worker in the fields of fish populations and fisheries' management.

From 1963-66 he served the Fisheries Research Board of Canada as director of its Research Station at Nanaimo, B.C., returning to the University in October, 1966.

Earlier in his career Dr. Larkin was gold medalist and Rhodes Scholar at the University of Saskatchewan, and studied for his doctorate in the Bureau of Animal Populations at Oxford University.

He served the Province of British Columbia as director of its fresh water fisheries research program from 1949 to 1955.

"Dr. Larkin brings to his new post a unique combination of experience spanning the interests of the University, the province and the nation in the vitally important field of fisheries," Dr. Macdonald said.

TO DEAL WITH LEARNING DIFFICULTIES

Specialists Trained at Education Clinic

The vanguard of a corps of specialists who will one day attack learning difficulties among B.C. school children is training at a new Education Clinic at the University of B.C.

The primary purpose of the clinic, which started operating this year in the Faculty of Education, is to train experts to deal with a wide range of problems which prevent children from making normal progress in school.

NORMAL PROGRESS AIM

Dr. Robin Smith, professor of educational psychology and director of the clinic, says it has been estimated that between 10 and 20 per cent of Canadian school children have learning difficulties of one kind or another.

As an example of how the UBC Clinic operates, Dr. Smith cites the case of a 15-year-old boy who was referred to the clinic last year by a lower mainland school board.

"When this boy came to us he was able to read only at the mid-grade one level," said Dr. Smith. "He had moved recently to this province and had a major handicap with which the school was not equipped to deal."

Tests administered at the clinic by Dr. Smith and two graduate students working toward their doctorate degrees revealed that among other difficulties, the boy was unable to remember words, designs or pictures which he observed.

SUBSTANTIAL PROGRESS MADE

"The prevailing methods of reading instruction for a boy with this sort of problem just won't work," said Dr. Smith. "We have been trying an alternate method and he has already made substantial progress.

"It will be essential, of course, that the instructional procedures which we develop in the clinic be continued in the boy's school if he is to maintain his rate of progress.

GRADUATES HELP AT LOCAL LEVEL

"Eventually, the doctoral candidates now training at UBC will be hired by school boards to set up smaller clinics to deal with these special problems and also to provide guidance to teachers and parents at the local level for dealing with difficult cases."

The educational psychologists being trained by Dr. Smith are only one part of the total program being carried on within the setting of the clinic.

Other faculty of education members who are experts in such areas as speech, reading and guidance and counselling are also supervising graduate students, as are professors in the field of special education, which includes hearing and visual problems as well as studies of retarded and gifted children.

The clinic also serves as a demonstration centre for undergraduate students to introduce them to some of the educational problems they may encounter when they begin their teaching careers.

"Quite obviously the teacher dealing with normal students has to be able to recognize and provide the initial information about a child with a learning problem," said Dr. Smith. "The clinic provides a setting within which they can encounter some of these problems and see some of the remedial techniques which can be applied."

STUDENTS OBSERVE PROBLEMS

To enable students and researchers to observe subjects, the clinic has a large central room where tests are administered. Flanking this room are two-tiered observation units behind one-way glass, enabling students to observe the children without being seen. Up to 70 students can watch a demonstration at a time.

Ranged along one corridor of the clinic are four smaller rooms for administering tests with special equipment. Each room can be observed through one-way glass from a large adjacent seminar room.

All facilities will be wired for tape recording and closed circuit television and sound broadcasting to rooms in the clinic or other parts of the faculty of education building.

Dr. Smith expects that more than 100 children will visit the clinic this academic year to take part in research studies or for observational purposes.

"Our primary aim at the moment has to be the training of specialists who will one day be scattered throughout the province to deal with learning problems in schools.

COOPERATE WITH SCHOOL BOARDS

"As a result we are not a service clinic in the sense that we can accept any child who has a problem. We are now co-operating closely with school boards in Vancouver and New Westminster who refer some children with problems to us.

"An even larger problem is the fact that faculty members who use the centre also carry substantial teaching loads and as a result cannot spend as much time as they would like in carrying out research."

EQUIPMENT used at UBC's new Education Clinic to illustrate developments in a child's ability to think is demonstrated to two doctor of education students by Prof. Robin Smith, centre, Clinic's director. After completing their training at UBC, students like Mrs. Joyce Hops, left, and Mrs. Peggy Koopman will deal with learning problems among B.C. school children. Photo by B. C. Jennings.

CONTINUED FROM PAGE ONE

Students Overrate Their Own Knowledge

"We first gave the second part of the questionnaire to 40 freshmen students and discovered that a surprising number didn't even know the meaning of many common words and concepts, such as circumcision, puberty, abstinence, as well as the names of some of the sexual organs," Dr. Juhasz said.

As a result of this pre-testing session, the questionnaire was further revised and a team of three doctors scrutinized it and agreed on the right answers to the multiple-choice questions.

The next step was to administer the test to 75 graduate nurses at UBC in order to have some standard against which to measure the results among the main body of students.

Here are some of the general conclusions Dr. Juhasz reached after analysing the 893 questionnaires:

1. Students think they know a lot about sex, but the results show they don't.

Dr. Juhasz said: "In the first part of the test we asked students to evaluate carefully their own knowledge of sex.

"They clearly overrated their own knowledge since the second part of the test showed they had inadequate knowledge on things like the physiology of sex.

"The results show that 86 per cent of the freshmen and 54 per cent of the fifth year students who took the questionnaire were in the lowest quarter of scores obtained.

"The areas which gave them the greatest difficulty were conception and venereal disease. They were generally well informed on two aspects — contraception and menopause."

2. Male students, on the whole, knew more about sex than females, the survey showed, but several interesting points came out of the study.

GIRLS KNOW MORE

For instance, among girls, those with first class standing knew more than those with lower standing. Men with first class marks, on the other hand, had the least knowledge among males. Male students with second class marks were the most knowledgeable among the men.

Only children, the survey found, were less knowledgeable than students with brothers and sisters, and males with no religious affiliation tended to be more knowledgeable than those who were religiously committed.

The results obtained from the first part of the test also turned up some surprising results, Dr. Juhasz said.

By far the largest number of students said they obtained their sex information from reading material. This is in contrast to studies done elsewhere which indicate that most information is obtained by word of mouth from companions or friends.

DR. ANNE M. JUHASZ

"One interpretation of this result is that in the atmosphere of the University, students head for the library where they can find answers to their questions," Dr. Juhasz said.

Other main sources of information were first year biology courses, parents, or companions or friends. The survey clearly showed that companions and friends played a minor role in conveying information.

OBTAINED TOO LATE

Only ten per cent of the male students obtained information from their parents, while 20 per cent of the females obtained it from the same source.

"Another interesting aspect of the study was that two-thirds of the students said they got their information on sex too late and most expressed a desire to get such information much earlier in life," said Dr. Juhasz.

She pointed out, however, that the student's idea of what amounted to the "best time" to get such information was purely subjective. Students were not asked to give a specific age which they thought best to receive such information.

IN ENGINEERING AND LAW

Two Named to Expand Continuing Education

UBC has appointed two extension department administrators to expand continuing education for the legal profession and engineers.

The appointments bring to eight the number of persons in the extension department who are actively administering continuing education programs for professionals in such areas as pharmacy, social work, agriculture, fisheries, forestry and business and industry.

The latest appointments are Dr. Geoffrey T. Mathews, a professional engineer who will administer the program in engineering, and Mr. Kenneth C. Woodsworth, a member of the Ontario bar and a University of Toronto graduate, who will head the continuing legal education program.

The UBC program for engineers will be the only one of its kind in Canada and was initiated by a recently-formed Council on Continuing Education for Engineers made up of representatives from the Engineering Institute of Canada, the Association of Professional Engineers of B.C. and UBC's faculty of applied science and extension dept.

KENNETH C. WOODSWORTH

DR. GEOFFREY T. MATHEWS

Dr. Mathews, who will administer the program, is a former senior research engineer with Columbia Cellulose, the Reed Paper Group in England, and the United Kingdom Atomic Energy Authority.

LEEDS GRADUATE

He is a graduate of the University of Leeds, where he received his bachelor of science degree with honours in 1954 and his doctor of philosophy degree in 1957.

The continuing education program for engineers is designed to maintain and develop the competency of engineers at all levels. Seminars and conferences on such topics as management principles, applied mathematics and technical engineering concepts will be offered.

Initially the program will be directed to engineers in the Vancouver area and expanded to other parts of the province in 1967.

Mr. Woodsworth, administrator of the continuing education program for the legal profession, will expand the program in consultation with the B.C. bar and the faculty of law, said Dean George F. Curtis, UBC's dean of law.

BUILD ON PAST

He said the expanded program will build on a successful series of conferences and seminars which the University has sponsored in the past decade in such areas as tax and labour law as well as an annual refresher course covering many fields of law.

"Mr. Woodsworth will first make a general survey of what is happening in other parts of the continent in continuing legal education, and then begin planning an expanded program of continuing legal education in consultation with the B.C. bar and the UBC law faculty," Dean Curtis said.

He said the expanded program would be available to members of the bar throughout B.C.

Mr. Woodsworth, 52, was born in Japan and educated at the University of Toronto where he received his bachelor of arts degree in economics and political science in 1936. He served in the Canadian Army's Intelligence Corps during World War II with the rank of Captain.

PRACTISED LAW

From 1951 to 1955 Mr. Woodsworth was a student at Osgoode Hall Law School in Toronto and was admitted to the Bar of Ontario in 1955. He practised law from 1955 to 1964. Since 1964 he has been teaching Anglo-American law and conversational English at Kwansei Gakuin University in Japan.

Analyser Purchased With $20,000 Research Grant

Two UBC researchers studying the improved use of proteins in poultry and livestock feeds have been awarded a $20,000 National Research Council grant to buy a complex machine to speed up their laboratory analysis.

Dean of Agriculture Blythe Eagles said that the large grant to provide an amino acid analyzer was made in recognition of the co-operative research being done by Prof. Jacob Biely, head of the department of poultry science, and Prof. Warren D. Kitts, of the division of animal science.

Prof. Biely is making a detailed study of the amino acid composition of wheat and fish products to assess their specific nutritive values as poultry feed. Prof. Kitts is studying the nutritive value of various crops, particularly with alfalfa and clover, used to supplement livestock rations.

"Basically, we are seeking ways to make more efficient use of the protein content in foods by gaining a more precise knowledge of just what content is in each," Prof. Biely said. "If we can save one or two percent a year of the protein through more efficient feeding, it will mean many thousands of dollars saving to poultry and livestock raisers."

The amino acid analyzer provides an automatic reading of the quantities of up to 20 amino acid compounds in a protein sample from food, or from body tissue and fluids, in eight hours. The analysis could take several weeks by chemical methods, or several days by bacteriological methods.

TWO UBC SCIENTISTS have received top awards for outstanding contributions to research in the fields of biochemistry and geography. They are Dr. J. Ross Mackay, above left, for his Arctic research, and Dr. Gordon Dixon, right above, for research leading to the synthesis of insulin. See stories below.

Massey Medal Presented

The top Canadian honor in geography, the Massey Medal, has been awarded to Dr. John Ross Mackay, 51, professor of geography at the University of B.C.

The award was presented to Dr. Mackay Feb. 7 at Government House in Ottawa by the Governor-General, the Hon. George Vanier, on behalf of the Royal Canadian Geographical Society.

Dr. Mackay is the first academic to receive the Massey Medal since it was established in 1959 to recognize among Canadians "outstanding personal achievement in the exploration, development or description of the geography of Canada."

DISTINGUISHED CONTRIBUTION

In citing Dr. Mackay, Dr. O. M. Solandt, president of the Royal Canadian Geographical Society, said the society was honoring him "for the distinguished contributions he has made to our knowledge of physical geography in Canada, in particular the influence of glaciers on landforms . . .

"Dr. Mackay's special interest is in the western Arctic and sub-Arctic territories of Canada, and for 12 out of the last 16 years he has carried out geographic research in those areas.

"He has contributed new knowledge of permafrost phenomena and of the influence of glaciers on landforms and has acquired an international reputation as an authority in those fields of study.

"In addition, he has made a substantial contribution to the methodology of all geography by his publications on special techniques in cartography."

Dr. Mackay has developed techniques for showing scientific information on special types of maps — a work becoming increasingly important in Canada for recording information on land capability and land use for scientific study.

BORN IN FORMOSA

Born in Formosa in 1915 of Canadian missionary parents, John Ross Mackay received his early education at the Canada Academy in Kobe, Japan. He graduated with a bachelor of arts degree and first class honors from Clark University in Massachusetts in 1938, and received his master of arts degree at Boston University in 1941.

He joined the teaching staff at McGill University in 1946 and received his doctorate of philosophy from the University of Montreal in 1949, joining the UBC Department of Geography the same year.

His many summer visits to the Arctic have been either as leader of field parties for the geographical branch of the federal Department of Mines and Surveys or on smaller expeditions.

Dixon Wins Steacie Prize

A biochemical achievement which led directly to one of the great feats of chemistry history — the first laboratory production of a protein by the synthesis of insulin — has brought a second top Canadian scientific award in less than a year to Dr. Gordon Henry Dixon, 38.

The associate professor of biochemistry at the University of B.C. has been awarded the Steacie Prize for his contribution toward the synthesis of insulin.

YOUTH EMPHASIZED

Last April, Dr. Dixon was first recipient of the Ayerst Award, initiated in 1966 to recognize and encourage fundamental biochemical research in Canada by scientists under 38 years of age.

The Steacie Prize also emphasizes the youth of the recipient in commemoration of the confidence placed in young scientists by the late Dr. E. W. R. Steacie while President of the National Research Council.

The Steacie Prize consists of the annual proceeds of the E. W. R. Steacie Memorial Fund established by the late Dr. Steacie's friends.

Dr. Dixon was presented on February 3 with a cheque for $1,200 contained in a gold-lettered leather folder made by Mrs. Steacie.

The presentation was made by Prof. H. E. Gunning, head of the chemistry department at the University of Alberta and a trustee of the E. W. R. Steacie Memorial Fund, at a small private dinner given in Dr. Dixon's honor by UBC President John B. Macdonald at the UBC Faculty Club.

Dr. Dixon's contribution to the synthesis of insulin was made at the University of Toronto (from which he came to UBC in 1963). While working with Dr. A. C. Wardlaw and Dr. Strathearn Wilson of the Connaught Medical Research Laboratories he succeeded in splitting natural bovine insulin into its two component chains of amino acids. The resulting product, with a low yield of insulin (1 to 2 percent) was an important contribution to the subsequent successes of Chinese and later American biochemists in synthesizing pure insulin — thus making proteins in a laboratory for the first time.

The Steacie Prize also recognizes tne work for which Dr. Dixon received the $1,000 Ayerst Award in April, 1966. The research for which the Ayerst Award was given involved breaking up haptoglobin, a protein found in human blood plasma which appears to serve as a scavenger of hemoglobin, the oxygen-bearing protein.

The Ayerst Award was established by the Canadian Biochemical Society "to recognize meritorious biochemical research in Canada . . . to stimulate fundamental research by younger biochemists (and) . . . to recognize an individual who has accomplished outstanding research and demonstrated independence of thought and originality at an early stage in his career."

FIRST FIND IN PACIFIC NORTHWEST

Geologists Discover Manganese Nodules

The first evidence of underwater mineral deposits in a B.C. coastal inlet has been discovered and analyzed by a team of University of B.C. geologists and oceanographers.

The research group, headed by Dr. James W. Murray, assistant professor of geology and oceanography, found nodules of manganese oxides last summer in 1,100 feet of water in Jervis Inlet, 130 miles north of Vancouver.

(Manganese is a valuable mineral for industrial purposes, and is widely used in the steel and glass manufacturing industry).

EXCITING FIND

It is the first time that these minerals have been found beyond the shoreline in a B.C. coastal inlet or on the continental shelf of the Pacific northwest, Dr. Murray said.

"This is an exciting find, and one which opens up the possibility that there may be underwater deposits of minerals of commercial value in B.C. coastal inlets," Dr. Murray said.

He warned, however, that it would be premature to attempt to mine these minerals at present, or to assume that commercial quantities of metals are available in coastal inlets.

"In the first place," he said, "this is an isolated find which only suggests that there may be other deposits in other inlets. We have no evidence that there are such underwater deposits elsewhere on the B.C. coast.

"In addition, underwater mining is in its infancy. Some techniques for accomplishing it have been worked out, but the economics of such an industry are unknown at this time.

STUDY CONTINUES

"What we are undertaking presently is a detailed study of the marine geology to determine if the minerals are associated with any special geological conditions, and a careful study of the geochemistry of the area to determine the conditions under which the metals form.

"The nodules were discovered on the sea bottom 10 miles from the head of the inlet atop a submarine ridge which rises approximately 400 feet above two adjacent flat-bottomed basins."

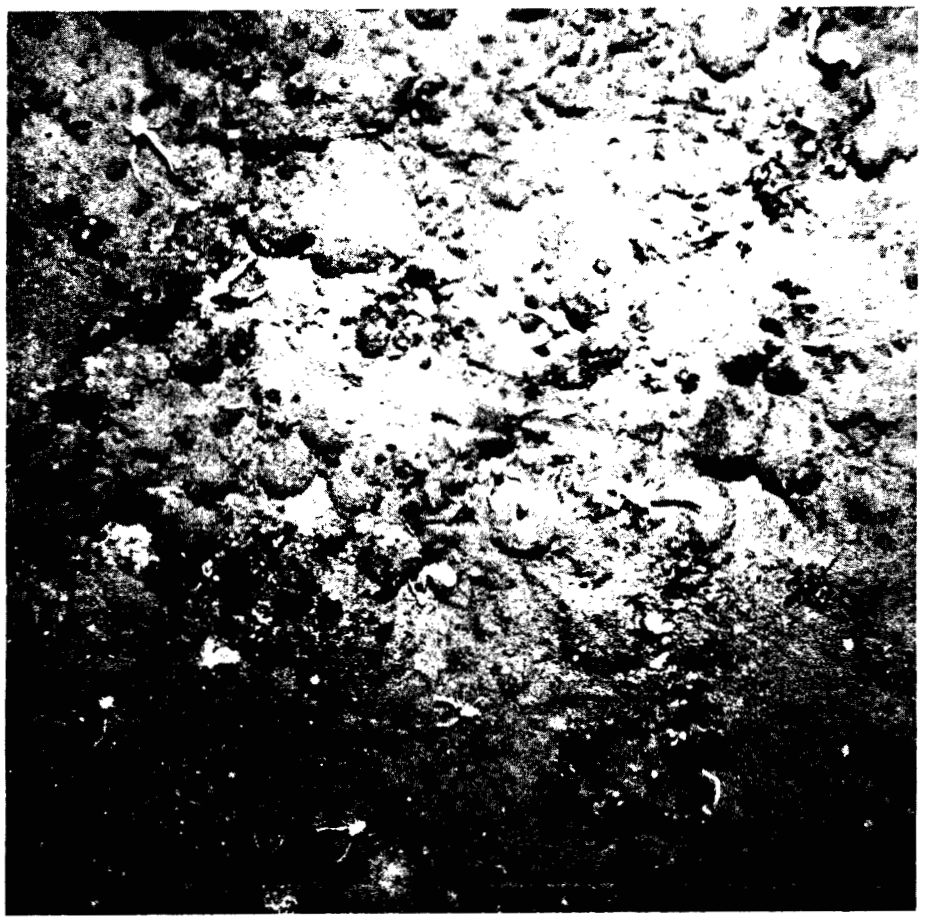
The nodules were discovered in June, 1966, by Dr. Murray and a graduate student, Bob Macdonald, a candidate for the degree of master of applied science in geology and oceanography, whose thesis is a study of the marine geology of Jervis Inlet.

Dr. Murray said: "We were carrying out routine sampling of the floor of the inlet from the research vessel 'Ehkoli,' operated by the Hydrographic Branch of the Department of Energy, Mines and Resources. Sampling was done by a 'clam shell' grab which picks up bottom sediments and rocks when tripped by hitting the sea floor.

"The form of these nodules is very distinctive. They are either spherical or disc-shaped encrustations with a hard central core composed of rock fragments. More rarely, they have the form of flat irregular masses of metallic oxides.

"The nodules are relatively soft and couldn't possibly have withstood the rigorous forces of glacial transportation. We believe, therefore, it is likely they are a chemical precipitate either from sea water or from water in the sediment.

"We think that the ridge itself was formed as a result of glaciation approximately 10,500 years ago, a very short time in geological terms.



MANGANESE nodules litter the floor of Jervis Inlet in this underwater photograph taken by UBC graduate student Bob Macdonald.

RAPID RATE

"If these assumptions are correct we are dealing with a very rapid rate of manganese deposition."

The concentration of manganese in the nodules is very high. Tests carried out by Dr. E. V. Grill, a chemical oceanographer at UBC, indicate a value of 38.1 per cent manganese oxide. This is a relatively high concentration in comparison to the average for nodules discovered elsewhere. There should be no problems in the metallurgical extraction of the manganese.

Dr. Grill said: "The chemical processes which cause the manganese to precipitate out and form the nodules on the inlet floor are not at all clear."

According to Dr. W. H. Mathews, head of UBC's department of geology, any commercial survey of the incidence of metallic minerals in coastal inlets would be premature. Dr. Mathews said: "Much more basic research needs to be done on underwater geological and geochemical conditions before such a survey would be useful.

"If we could determine the conditions under which metals would form in specific instances, we then might be able to predict where it would be useful to look for undersea minerals."

Dr. Murray said that additional tests had been carried out to determine if there were any other minerals present on the floor of the Jervis Inlet ridge.

OTHER ELEMENTS

"We found that the manganese nodules also contain major concentrations of eight elements, including magnesium, copper, aluminum, sodium and iron; minor concentrations of six elements, including zinc, nickel, molybdenum and vanadium; and traces of seven elements, including silver, lead, chromium and boron."

Dr. Grill stated that on the basis of present information it appears that the Jervis Inlet nodules will not differ fundamentally in composition from those found in other areas of the oceans.

DR. WILLIAM Mathews, above, head of UBC's geology dept. since 1964, says his department's graduate program for the training of specialists is severely limited by a shortage of building space. "We could take additional graduate students, over and above the 25 currently enrolled, if our facilities were not so cramped," he says. Despite this, approximately 900 students in all years are taking geology courses, all but 200 of them in the first and second years. At present, the department graduates about 35 geology majors per year. Dr. Mathews, an expert in glaciology and glacial geology, got his bachelor and master of applied science degrees at UBC in 1940 and 1941 before going to the University of California at Berkeley, where he received his doctorate in 1948. UBC Extension photo.

BY GRADUATE STUDENT

Mineral Find Began With Routine Sampling

For UBC graduate student Robert Macdonald, routine sampling of sea floor sediment with his supervisor, Dr. James Murray, in Jervis Inlet last June resulted in the exciting discovery of underwater minerals off the B.C. coast.

A candidate for a master of applied science degree in geology and oceanography, Macdonald now has an absorbing thesis topic — a study of the marine geology of Jervis Inlet, specifically in the area where the manganese nodules were found.

On board the research vessel 'Ehkoli,' a clamshell grab picking up sea floor sediment and rock brought the unusual material to the surface.

IDENTIFICATION CONFIRMED

"We called them manganese nodules for the rest of the cruise and our identification was confirmed later by laboratory tests. We realized then that although the find wasn't of economic value, it was of great academic interest," Macdonald said.

Interested in underwater photography since the age of 16 when he began scuba diving, Macdonald took underwater photos of the nodules. (One of these is reproduced above.)

The minerals lie in 1,100 feet of water and since a scuba diver can descend effectively only about 200 feet, the camera was lowered by cable.

FALSE READING

"We took photos at the time of the discovery but when the film was developed we had 500 feet of nothing. Due to a false reading of the echo sounding equipment the camera had not been lowered all the way to the sea floor."

Four months later Macdonald returned to Jervis Inlet with technician Ian Slater.

"The second time we relied on the unscientific method of judging from the feel of the cable when the camera reached bottom. Even then we got only 200 frames out of 400 feet."

CHOSE ENGINEERING DEGREE

Sailing and scuba diving during high school led Macdonald to oceanography.

"When I began at UBC I was interested in the applied aspects of oceanography rather than in pure research. For this reason I chose an engineering degree rather than a pure science degree."

He received his bachelor of applied science in geological engineering at UBC in 1965 and then spent a year doing geophysical surveys throughout B.C. for a mining company.

"I met Dr. Murray, who was the only UBC faculty member in the field of geological oceanography, during my final year of engineering. I kept in touch with him and last September he accepted me as a graduate student."

LAB ASSISTANT

Last summer Macdonald had a fellowship with the Institute of Oceanography to help with research and he now has a laboratory assistantship.

UBC REPORTS

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GEOLOGY DEPARTMENT SURVEY SHOWS:

Graduates Develop $19 Billion in Minerals

Geology graduates from the University of B.C. have discovered, or made major contributions in developing, Canadian mineral deposits worth $19 billion during the last quarter century. Among them, $6 billion in deposits were direct discoveries of UBC geology graduates.

TOTALS COMPILED

The totals were compiled in an 18-month survey of graduates and their work recently completed by the UBC department of geology.

"The success of our graduates working in the mining and petroleum industry in finding or proving these enormous resources in no way diminishes the contributions of government geological surveyors and the practical prospectors," said Dr. W. H. Mathews, head of the geology department.

"The subsequent contributions of the miner or driller, and the mining or petroleum engineer, the stockholder, the financial expert, and others are still needed to convert underground riches into usable metal, oil and gas.

"The discovery and proving of a mineral deposit is only a step in its full development, but it is obviously a very vital step.

EARLY DISCOVERIES

"In earlier days in Canada many resources were discovered without too much difficulty by recognizing conspicuous oxidized outcrops or oil seeps, which required no special training.

"But the most obvious discoveries have been made. Deposits now being sought offer little or no surface indiction, and are much harder to find. Consequently, modern exploration is conducted mainly by university-trained geologists, geophysicists, and geological engineers. It is not surprising that graduates trained in these fields at UBC are prominent in current development of our mining resources.

"The contribution of this group of graduates may seem to overshadow, but only because they are measurable in terms of dollars, the notable contributions of other geology graduates who have elected to work in such fields as government, education, engineering or research.

CONTRIBUTE TO WEALTH

"The University as a whole can take pride in the achievements of its graduates, and can justly claim that though it has not directly participated in these developments, it has indirectly contributed most substantially to the wealth of the nation. Through taxes and revenues coming from new mines and oil fields, the Universit,'s graduates have helped to pay for its operations."

Metallic and non-metallic mineral resources discovered or developed during the past 25 years by geology graduates of the University of British Columbia are listed at right. Mine sites are shown on the map at the bottom of this page.

Persons listed include those who made primary discoveries, those who first recognized the economic possibilities of known 'showings' and those who made major contributions to an exploration program leading to development or enlargement of mineral resources. This list is doubtless incomplete and some names may have been inadvertently included. Modern mineral exploration involves a sequence of events, ideas and interpretations with which many persons are associated and in some cases it may be difficult to single out the central contributors on the path to success.

DEVELOPMENT DRAMA

The list may, thus, be incomplete, but it does indicate those graduates who were notable protagonists in the drama of development.

The worth of the discoveries and developments has been expressed in terms of gross value, the most appropriate measure from the standpoint of contribution to the nation as a whole.

Estimates of gross value are based on available information on mineral already produced combined with that likely to be produced in the future at present commodity prices.

DEPOSIT	GROSS VALUE	GRADUATES CLOSELY ASSOCIATED	
Bellshill Lake, gas	$50 million	J. Rudolph	BASc '48
Boss Mountain, Mo	$50 million	M. Menzies et al	BASc '49
Brenda, Mo, Cu	$1 billion	B. Brynelsen	BASc '35
		M. Menzies	MASc '51
Bugaboo Mountain, Fe	$40 million	M. Menzies	BASc '49
		B. Brynelsen	BASc '35
Burnaby Is., Fe	$75 million	W. R. Bacon	MASc '42
Canada Tungsten	$60 million	C. E. Dunn	BA '50
Cariboo Bell, Cu, Au	$150 million	W. R. Bacon	MASc '42
Caribou, Cu	$50 million	C. Cheriton	MASc '49
Cassiar Asbestos	$350 million	W. Smitheringale	MASc '25
Catface, Cu	$3 million	J. Macdougal	MSc '54
Clinton Creek, Asbestos	$300 million	W. Smitheringale	MASc '25
Craigmont, Cu	$300 million	R. E. Renshaw	BASc '42
Crest, Fe	?	R. A. Stuart	BASc '50
Crowsnest Pass, coal, open pits	$20 million	C. B. Newmarch	BASc '41
		J. J. Crabb	MA '51
Balmer N. Mine	$250 million	J. J. Crabb	MA '51
Daiber, gas	$2 million	C. B. Newmarch	BASc '41
Duncan Lake, Pb, Zn	$150 million	D. W. Heddle	MASc '51
		T. W. Muraro	BASc '57
		C. O. Swanson	MASc '22
Dynasty, Pb, Zn, Ag	$1 billion	A. E. Aho	BASc '49
		R. G. Davis	BASc '62
		J. S. Brock	BA '64
		J. F. Fairley	BASc '64
East Calgary, sulfur, gas	$500 million	J. Rudolph	BASc '48
Elliot Lake, uranium	$4 billion	F. R. Joubin	MA '43
Emerald, Tungsten	$12 million	M. S. Hedley	BASc '30
Endako, Mo	$300 million	C. Riley	MA '29
		L. Adie	BASc '47
Galore Creek, Cu	$1 billion	J. A. Gower	MASc '52
		J. R. Woodcock	BASc '51
Granduc, Cu	$500 million	G. W. H. Norman	BASc '26
Granisle, Cu	$200 million	K. C. Fahrni	BASc '36
H. B., Zn	$20 million	W. T. Irvine	BASc '37
		C. O. Swanson	MASc '22
H. U. Orebody, Sullivan, Pb, Zn	$5 million	C. O. Swanson	MASc '22
Highland Bell, Ag	$12 million	H. V. Warren	BASc '26
		D. F. Kidd	BASc '27
Kennedy Lake, Fe	$40 million	B. Brynelsen	BASc '35
Keno Hill, (1950-), Ag, Pb	$150 million	W. Smitheringale	MASc '25
Lac Jeannine	$4 billion	R. H. B. Jones	BASc '23
Lime Creek, Mo	$200 million	J. A. Gower	MASc '52
Middle River, Cu	$10 million	W. Holyk	BASc '49
Mt. Washington, Cu	$2 million	M. Menzies	BASc '49
		B. Brynelsen	BASc '35
Newman Peninsula, Cu	$60 million	M. Menzies	BASc '49
		B. Brynelsen	BASc '35
Oungre, oil	$10 million	C. B. Newmarch	BASc '41
Phoenix, (1960-), Cu	$20 million	R. H. Seraphim	BASc '47
		W. H. White	MASc '39
Pinchi Mercury	$50 million	J. G. Gray	MA '36
Rainbow Lake Trend, oil	$2 billion	J. Rudolph	BASc '48
Ruddock Creek, Zn	$3 million	E. Dodson	BA '54
Tasu, Fe, Cu	$650 million	A. Smith	BA '32
Timmins, Cu, Zn, Ag	$2 billion	W. Holyk	BASc '49
Tulsequah Chief, Big Bull, Zn, Pb, Cu, Ag, Au	$50 million	R. G. McEachern	BASc '41
		W. T. Irvine	BASc '37
		C. O. Swanson	MASc '22
Wabush, Fe	$4 billion	R. H. B. Jones	BASc '23
Western Mines, Zn, Cu, etc.	$120 million	H. C. Gunning	BASc '23
Yreka, Cu	$2 million	M. Menzies	BASc '49
Zeballos, Fe	$40 million	A. Smith	BA '32

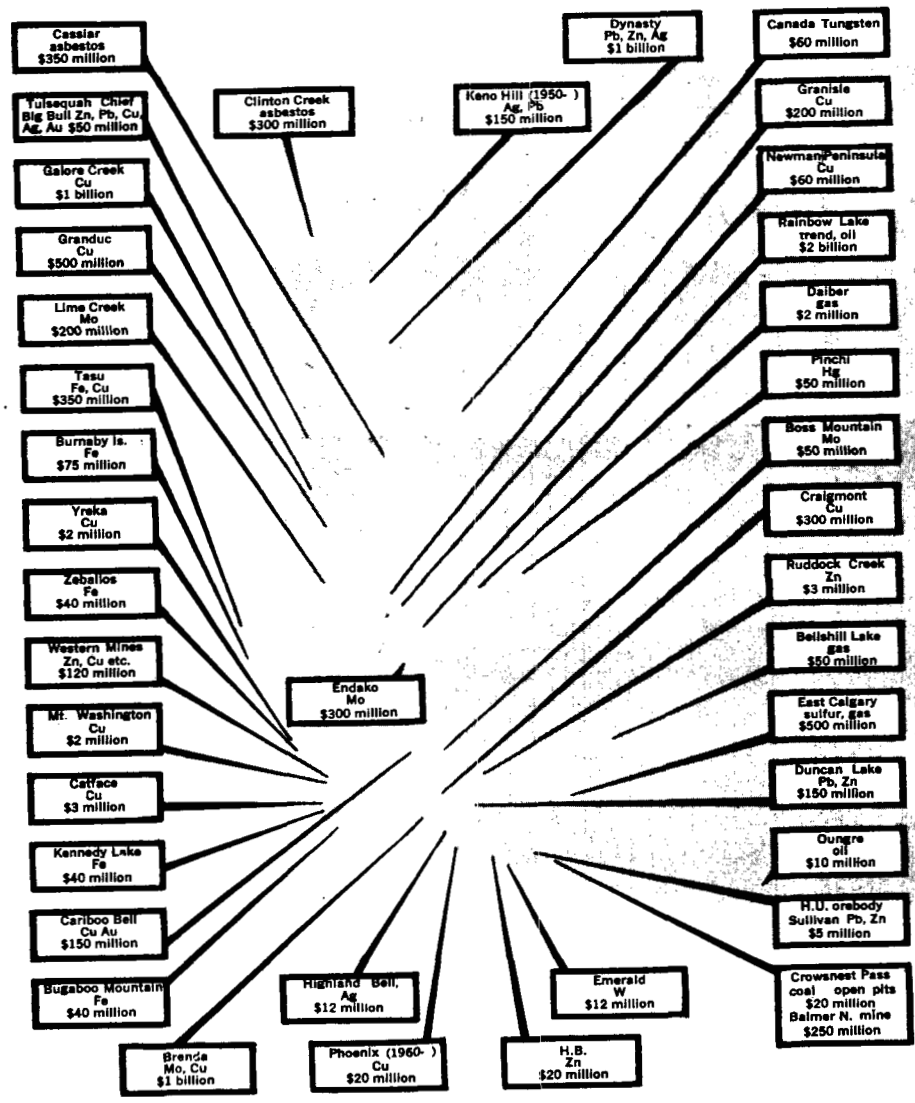
Lectureship Inaugurated

An annual lectureship has been established at the University of B.C. honouring the late Professor George J. Spencer, who died in July, 1966, at the age of 78.

Prof. Spencer, an internationally-known entomologist, joined the UBC faculty in 1924 as an assistant professor and was named professor emeritus of zoology following his retirement in 1954.

Even after retirement Prof. Spencer maintained an active interest in research and teaching and continued to work at the Spencer Entomological Museum at UBC until a month before his death.

The inaugural Spencer Memorial Lecture will be given March 30, 1967, by Prof. Sir V. B. Wigglesworth, Quick Professor of Biology at Cambridge University and a leading expert in the field of insect physiology.



MINERAL WEALTH DISCOVERED OR CONFIRMED BY U.B.C. GEOLOGY GRADUATES

READING MACHINE for the blind has been developed at UBC by associate professor of electrical engineering, Dr. Michael Beddoes, above. Scanner at left looks at a page of type letter by letter and transforms it into a musical code which is being learned by a blind subject, Miss Cynthia Moffat, right. Photo courtesy of The Province.

PRINT CONVERTED INTO SOUND

Reading Machine for Blind Developed by UBC Professor

An associate professor of electrical engineering at the University of B.C. has returned from a year's leave of absence in the United States with kinks ironed out of a machine which will enable the blind to "read" printed material in the form of sound.

Dr. Michael P. Beddoes has perfected his "Lexiphone," as the machine is called, over the past six years on grants from the P. A. Woodward Foundation, the Canadian National Institute for the Blind, the National Research Council, the Vancouver Foundation, and UBC.

"The ideal situation would be a machine which would convert print into the spoken word," said Dr. Beddoes. "Such a machine would be very expensive, however, and we have concentrated on developing a simple machine which can be manufactured inexpensively and incorporate such features as portability."

Dr. Beddoes estimates that the latest version of the Lexiphone could be manufactured for between $1,000 and $2,000 and could be easily transported from place to place.

Utilizing such recent developments as micro-electronics, the machinery which converts the letters into sound could be fitted into a box about the size of a blackboard duster.

The most radical change carried out by Dr. Beddoes in the past year was a complete revision of the sound code which the blind person hears.

"A year ago we had developed a sound code for nine letters of the alphabet which utilized four sound pitches, three hisses and a click.

"These sounds were heard in various combinations by the blind person, who had to memorize the sound code corresponding to each of the alphabet letters.

SIMPLER CODE

"There were, however, some real shortcomings to this code. It was complicated and some listeners had trouble distinguishing between the various code sounds."

Dr. Beddoes worked out a simpler sound code for the machine while on a year's leave at Massachusetts Institute of Technology.

The new sound code, which Dr. Beddoes describes as "melodic," uses an increased number of pitch values and sliding tones which are also varied in strength.

The new sound code is pleasant to listen to and can be controlled by a highly accurate page scanner.

Part of the value of the new code is that a large number of cells — as many as 50 — can be used in the scanner, resulting in a better sound definition of each individual letter.

At MIT, Dr. Beddoes experimented with the new code and three blind teen-agers.

COMPUTER HELPS

Computer tapes, which eliminate the errors to be expected from an early prototype of the machine, were used by the teen-agers in a home training program.

After 30 hours of instruction they were able to read material from the computer tapes at a rate of 400 words per minute utilizing a 260-word vocabulary.

Dr. Beddoes will continue to test the new code on blind subjects at UBC.

In operation, a book or any printed material lies on a platform which moves past photo-electric cells. The cells convert each letter into electrical signals and these, in turn, control sound generators which produce the sound code.

Forestry Professor Dies at 56

Dr. John E. Bier, professor of forest pathology at UBC, died January 24 at the age of 56, after a short illness.

Dr. Bier was a graduate of the University of Toronto, where he received the degrees of bachelor of science in forestry in 1932, master of arts in 1936, and doctor of philosophy in 1938. He had been a member of the UBC faculty since 1957.

DEAN'S TRIBUTE

Dean J. A. F. Gardner, head of the faculty of forestry, said Dr. Bier's death "deprives the faculty of an outstanding research scientist and teacher who has made a notable international contribution to forestry research during his lifetime.

"At UBC he developed a strong research group in the area of forest pathology. As a result of his investigations he developed a biological method of controlling tree-killing fungi which holds great promise for the entire forest industry."

From 1935 until 1956 Dr. Bier was employed by the federal department of agriculture as a forest pathologist, as officer in charge of forest pathology laboratories in Victoria and Toronto and as associate chief of the forest biology division in Ottawa.

At UBC Dr. Bier was first a member of the department of biology and botany. He transferred his services to the faculty of forestry in 1965.

In 1965 Dr. Bier was also named head of two North American Organizations on plant and tree diseases — the Canadian Phytopathological Society and the Western International Forest Disease Work Conference.

DR. JOHN BIER

TREK THROUGH ALASKA WILDERNESS

Engineer Joins Cold Test Force in Arctic

A professor of electrical engineering at the University of B.C. is one of 14 scientists taking part in the most complete physiological monitoring experiment ever attempted under Arctic conditions.

Prof. Fritz Bowers, 41, an expert in electronic monitoring equipment, is the only Canadian invited to take part in the American-sponsored experiment in Alaska February 1-22.

DETAILED STUDY

He joined the scientific task force at Fort Wainwright, Alaska, on February 1, where the Arctic Aeromedical Laboratory of the United States Air Force is located.

"The object of the experiment is to investigate in great detail the effects of extreme cold on the human body," Prof. Bowers said. "Participants will carry out various exercises and maneuvers at low temperatures. The results will have great value for physiologists and designers of Arctic survival equipment."

Before the scientists leave the U.S. Air Force Laboratory for a ten-day, 100-mile trek on snowshoes through the Alaska wilderness near Fort Wainwright, they will acclimatize themselves to Arctic conditions, and undergo a thorough physiological examination.

DR. F. K. BOWERS

A total of 22 scientists are involved in the project. Fourteen of them, including Dr. Bowers, will act as "subjects" in the experiment. During the 100-mile trek, seven will eat standard army C rations, while the other seven will be on half rations.

Each of the subjects will be equipped with an instrument pack which will include a tape recorder for monitoring pulse rates, body temperature and breathing rates.

RECORD TEMPERATURES

Subjects will also swallow a pill containing a tiny radio transmitter to record internal body temperatures. The transmitter signals will be picked up by a receiver included in the instrument pack.

The remaining eight scientists in the task force will move about in a mobile trailer and meet the experimental group at several points on the 100-mile route to take blood samples and administer other tests.

"We have been told that at this time of year typical temperatures in the area are of the order of 40 degrees below zero," Prof. Bowers said. "The party will carry camping gear, including two-man tents for shelter. However, experience has shown that tents should be used only under extreme conditions such as blowing snow, and I expect that given normal conditions we will sleep outdoors in 'mummy' or sleeping bags."

EVALUATE EQUIPMENT

Dr. Bowers will evaluate the effectiveness of the electronic equipment and make recommendations for its improvement.

The experiment is under the direction of Dr. Terrance Rogers, professor of physiology at the University of Hawaii, and is sponsored by the U.S. Air Force and the National Aeronautics and Space Administration.

Among the 22 scientists participating are representatives of the British Medical Research Council, and a scientist from Australia.

UNIQUE RESEARCH FACILITY

Alberta Joins TRIUMF Plan

Nuclear scientists at the University of Alberta have joined with 36 scientists at the University of B.C., Simon Fraser University and University of Victoria in pressing for the development of the $19 million Tri-University Meson Facility (TRIUMF) on the University of B.C. campus.

UBC has provided a five-acre site in the research and field work area now being developed on the southernmost 280 acres of the campus. The UBC Board of Governors will be legally responsible for the operation of TRIUMF.

An information brochure just published by interested scientists set the cost estimate at $19 million after nearly a year of design study. It says the annual operating cost will be about $3 million. Capital funds will be sought from federal and provincial governments.

"TRIUMF constitutes an opportunity for a major research facility, unique on the world scene," the pamphlet says. "It enjoys unparalled co-operation of scientists from four universities whose enthusiasm for the project forecasts an exciting and stimulating period in Western Canada.

"TRIUMF is expected to be the first project of its kind to be completed anywhere in the world. As such it will attract scientists and graduate students from across Canada and abroad.

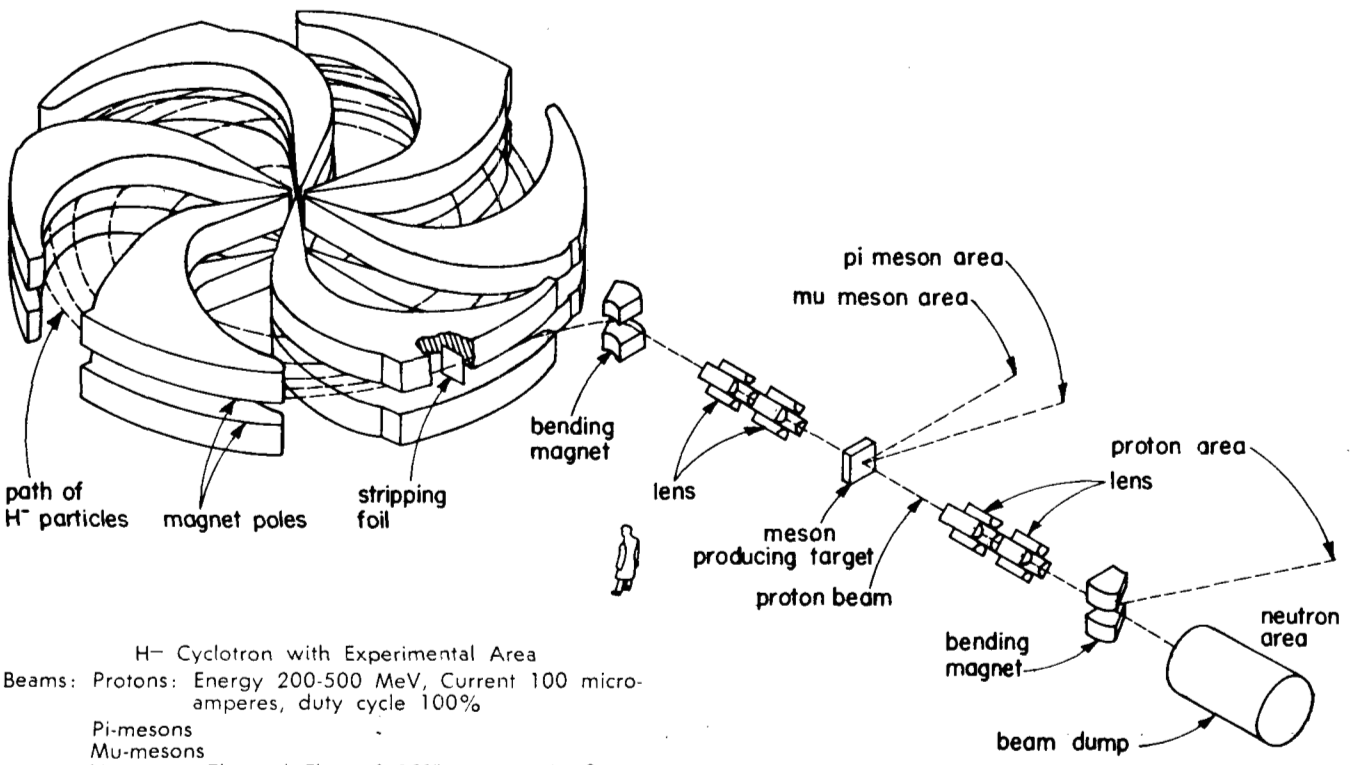
"As a byproduct to its nuclear science, TRIUMF will provide major facilities for chemistry and materials science. The development of the project offers challenges to Canadian industry and the TRIUMF research program promises to stimulate the development of new industry and technology in British Columbia.

"As the first facility with very intense beams of mesons and high energy protons, TRIUMF would open up new areas in the understanding of nuclear processes, contribute to the long-range exploitation of nuclear energy and provide new tools for materials research."

The TRIUMF study group includes 42 physicists and chemists on the staffs of the four participating universities who have about 90 graduate students.

When TRIUMF comes into full operation in 1972, it is estimated that 90 staff members (including 40 postdoctoral fellows) and 180 graduate students will be involved, as well as 80 technical personnel staffing the machine.

"It will provide an ideal research opportunity for many of the large numbers of graduate students in science expected by 1972," the pamphlet says.



H⁻ Cyclotron with Experimental Area
Beams: Protons: Energy 200-500 MeV, Current 100 microamperes, duty cycle 100%
Pi-mesons
Mu-mesons
Neutrons: Thermal Flux of 10^{13} neutrons/cm²sec

TRIUMF Offers Many Research 'Firsts'

The research facility for TRIUMF consists of an accelerator and an experimental area as shown on the above drawing. It would be located on a site given to the project by UBC.

The TRIUMF accelerator is a new version of a cyclotron. As in all cyclotrons, electrically charged particles of low energy are brought into the machine at its center between the poles of a large magnet. The magnet guides the particles in a circular path. A suitably designed electric field boosts the energy of the particles, each boost making them travel in larger circles so that they spiral outward, as shown, until the particles achieve a high energy at the outer edge of the machine.

Two very recent innovations make it possible to achieve an intense beam of particles outside the cyclotron. The first of these is the unusual shape of the magnet consisting of six spiral sectors as shown in the drawing. This keeps the particles in step with the boosting mechanism and allows an almost unbroken stream of particles to pass through the machines.

INNOVATIONS SUCCESSFULLY TESTED

The second is the use of negative hydrogen ions (H— ions), which are produced from hydrogen atoms by adding an extra electron instead of removing one to leave a proton. The use of the ions now makes it possible to get almost all of the accelerated particles out of the cyclotron.

At the outer edge of the machine a stripping foil removes the two electrons from each H— particle changing it into a proton. Because the proton has an electric charge opposite to that of the H— ion, the magnetic field makes it swing out of the machine as shown.

Both of these innovations have been successfully tested in the last two years in machines producing proton beams of energy about 50 million electron volts (MeV).

TRIUMF would be the first project to extend this use to the higher energies (500 MeV) required to produce the unusual kinds of subatomic particles called mesons. The proton beams of TRIUMF would have an intensity 1,000 times greater than that of any existing machine at this energy.

The various beams available in the TRIUMF experimental area are shown on the drawing. Secondary beams of mesons are produced when the proton beam passes through a suitable target. Experiments with the proton beam itself can be carried out simultaneously.

For all of these beams TRIUMF yields a higher intensity than any existing accelerator facility. No other project planned anywhere in the world has all the beam qualities listed in the drawing.

As the first facility with very intense beams of mesons and high energy protons TRIUMF would open up new areas in the understanding of nuclear processes, contribute to the long-range exploitation of nuclear energy, and provide new tools for materials science.

PARTICLES STILL A MYSTERY

The atomic nucleus consists of fundamental building blocks, neutrons and protons, held together by the very strong nuclear forces which provide nuclear energy.

These forces act through the exchange of other subatomic particles (called mesons) between the neutrons and the protons.

The hierarchy of particles and forces is still a scientific mystery whose study constitutes the field of elementary particle physics — pursued throughout the world with large accelerators of much higher energy but much lower intensity than that of TRIUMF.

On the other hand, the structure of atomic nuclei, whose study constitutes the field of nuclear physics, has been pursued with low energy accelerators (energy below 100 MeV). TRIUMF aims to straddle the unexplored middle ground between the two fields. Some of the research problems in this new field of intermediate energy physics are:

1. Photographing the structure of nuclei with new tools capable of providing much clearer pictures than heretofore; the nucleus exhibits an astonishingly rich variety of substructures and changes in shape whose understanding will extend nuclear technology and tell us more about the interior of stars.
2. Probing new sources of nuclear energy, for example the release of neutrons in the collisions of high energy proton beams with heavy nuclei.
3. Forming new nuclear systems consisting of atomic nuclei with added mesons; many major surprises are expected in such systems.
4. Examining the structure of the mesons themselves under more controlled conditions than are possible with the weak beams presently available.

FIRST IN WESTERN CANADA

The above list will grow — many of the greatest rewards in such a new field of science cannot be anticipated now.

The proton and meson beams of TRIUMF would be useful in many new chemistry experiments studying the deposition of energy in materials. The neutrons in the beam dump would be used, like those from a nuclear reactor, to study the structure and vibrations of matter, to make radioactive isotopes, for the analysis of metallurgical and other specimens for industry and research. TRIUMF would offer the first such facilities in Western Canada.

FRANK READ

Frank Read's Back!

Frank Read, the coach who developed several medal-winning crews for UBC in the decade from 1950 to 1960, has rejoined the UBC coaching staff.

Mr. Read has been named supervisor of the UBC - Vancouver Rowing Club program which will prepare crews for several international meets in 1967, including the Pan-American Games in Winnipeg.

He will oversee the general coaching and training programs for the UBC-VRC crew and manage rowing facilities and equipment.

COACHING DUTIES

Day-to-day coaching duties of the crew will be handled by two former members of award-winning crews, Waynne Pretty, now director of the Dunbar Community Centre in Vancouver, and John Cartmel, a technician in the school of physical education research laboratory and trainer for UBC athletic teams.

Mr. Read and his associates will prepare the Thunderbird rowing team for four major competitions in 1967, including the Pan-American Games trials June 17 in St. Catherines, Ontario, and the Games at Winnipeg August 2-5, as well as the North American Championship Centennial Regatta at St. Catherines August 10-13.

COMMITTEE STRUCK

A committee has been struck to investigate the possibility of developing a rowing course near UBC on the Fraser river for practice purposes.

Chairing the Rowing Advisory Committee is Aubrey F. Roberts, former director of the UBC Development Fund, and a long-time supporter of UBC's rowing program.

DR. A. M. JOHNSON, head of UBC's health services, has been elected president of the B.C. Medical Association for 1966-67.

Nutritionist To Head Home Economics School

A specialist in nutrition and biochemistry, Dr. Melvin Lee, 41, has been appointed head of the School of Home Economics at the University of B.C.

Dr. Lee will arrive at UBC to take up the appointment July 1. He is now assistant professor of preventive medicine and lecturer in dentistry, specializing in teaching and research in nutrition and biochemistry, at the University of California Medical Centre in San Francisco.

Dr. Lee will succeed Dr. Charlotte Black, who retired two years ago. Miss Winnifred Bracher, who has been acting head of the school, will remain as a staff member.

"Home economics is making a very important contribution to the University in training people in the field of nutrition and dietetics," said Dean of Arts Dennis M. Healy, chairman of the selection committee which recommended Dr. Lee.

"An increasing number of men with the interests and training in the larger areas being covered are coming into a field which, until 10 years ago, was principally of interest to women teachers.

"Schools of medicine and dentistry are working more closely with schools of home economics in the field of nutrition, which is also attracting men into the home economics field.

"In addition to his high standing in the scientific community, Dr. Lee was recommended to us on the basis of a good understanding of people and the problems of family life and the consumer."

Born in New York, Melvin Lee graduated from Montebello High School in Montebello, California, in 1943 and received a bachelor of arts degree in zoology at the University of California at Los Angeles in 1947.

He received a master's degree in zoology at the University of California at Berkeley in 1952 and a master's degree in animal nutrition there in 1958. He has been a faculty member at the University of California School of Medicine since 1958.

MRS. BARBARA VITOLS

'61 Graduate Joins Staff

Mrs. Barbara Vitols, a 1961 UBC graduate, has been named program director of the Alumni Association, Director Tim Hollick-Kenyon has announced.

She will be responsible for the planning of all alumni programs, including homecoming, class reunions, annual meeting and dinner, conferences and seminars.

An arts graduate, Mrs. Vitols is a former script assistant for the Canadian Broadcasting Corporation, and was secretary to the head of the economics and commerce department at Simon Fraser University before joining the alumni staff.

Up coming alumni events which Mrs. Vitols will plan include the annual student-alumni banquet in Brock Hall on March 14 at which President John B. Macdonald will be guest speaker, and the annual alumni dinner meeting on May 11.

ALLAN McGAVIN NAMED TO ADVISORY BRD.

Board of Governors member Allan M. McGavin has been appointed by the Board to represent the University of B.C. on the provincial Financial Advisory Board. He succeeds John E. Liersch.

The board advises the provincial government on dividing provincial grants among the three public universities. Each university appoints a member.

The chairman, UBC Dean Emeritus S. N. F. Chant, and three other members, are appointed by the provincial cabinet.

Mr. McGavin also was appointed to the Board of Management of the Health Services Centre.

MRS. CLARE M. EARLE

President Names Assistant

A University of B.C. graduate and former principal of York House School, Mrs. Clare M. Earle, 53, has been appointed administrative assistant to University of B.C. President John B. Macdonald.

The appointment was effective on February 10.

TRANSITION PERIOD

"Mrs. Earle will work with my executive assistant, Gordon Selman," Dr. Macdonald said. "The knowledge she gains during the coming months of administration within the President's office will be available for the transition period which will begin when my resignation becomes effective on June 30 — at which time Mr. Selman also will transfer fulltime to his recent appointment as director of the department of extension."

Born in Vancouver, Mrs. Earle graduated (as Clare M. Brown) at the head of the UBC arts class in 1936. She received a master's degree in 1937 in student personnel administration from Teachers' College, Columbia University.

SCHOOL PRINCIPAL

Mrs. Earle was principal of York House School in Vancouver from 1958 to 1964, and for two years president of the B.C. Independent Schools Association. She comes to UBC from a post as administrative assistant to the minister of the Unitarian Church of Vancouver.

As Clare Brown, she served in the office of the UBC Dean of Women in 1937-38, and spent a year in a similar capacity at the University of Toronto.

Athletic Fields Named

The University of B.C. has named as Thunderbird Park the major athletic complex being developed in the central and southern campus area.

The Board of Governors also approved naming a replacement stadium which will go into use there next September as Thunderbird Stadium, and a new dressing pavilion in the new field area as John Owen Pavilion in honor of the late trainer and coach.

The new practice track has been named Harry Logan track in honor of Emeritus Professor of Classics Harry T. Logan, who was a runner at McGill and Oxford Universities and a very strong force in the development of athletics at UBC.

Three new fields were named:

- Arthur Lord Field in honor of Mr. Justice Lord, who also pioneered in developing UBC athletics, notably as president of the Men's Athletic Association in 1916 and 1919;
- O. J. Todd Field in honor of Dr. Otis J. Todd, a well-known soccer administrator on provincial and national levels.
- Frank Buck Field in honor of Dr. Frank M. Buck's contribution to developing athletic fields and facilities while developing the original UBC campus.

Two older fields already named Wolfson and Chris Spencer Fields are included in Thunderbird Park.

Article Wins Journal Prize

An assistant professor of political science at the University of B.C. has been named the recipient of an annual award offered by a journal of international politics.

Dr. Mark W. Zacher, of UBC's political science department, is the 1966 winner of the International Organization prize for an article entitled "The Secretary-General and the United Nations' Function of Peaceful Settlement."

The journal "International Organization" is edited by leading scholars in the field of international politics and is published in Boston. The edition of the journal carrying Dr. Zacher's article will appear shortly.

The competition, which carries an award of $300, is open to any political scientist aged 33 or under. About 15 papers were submitted for the 1966 competition.

Articles for the 1966 award had to be on some aspect of the UN's peaceful settlement activities.

FIRST EXPERIMENTAL EVIDENCE PRESENTED

Physicists Make Important Quasar Find

The first clear experimental evidence that Quasars lie outside our own galaxy has been presented by a research team in the University of B.C.'s physics department.

THEORY RULED OUT

The experiment, carried out over the past two months, rules out a prevailing theory that Quasars are a component of the galaxy in which earth is located.

Quasars (short for Quasi - Stellar Radio Sources) were first detected in 1960, and caused great excitement among astronomers who believed at the time that they would lead them finally to an understanding of the evolution of the universe.

At first it was assumed they were the furthest objects ever observed in the universe, but more recent evidence has suggested that Quasars may be much closer than originally supposed, perhaps even within our own immediate galaxy.

RELIABLE INFORMATION

The UBC experiment is important because it is the first reliable information regarding the distance of Quasars obtained from direct astronomical observations of the radio emission from a Quasar rather than from theoretical inferences.

The UBC team, headed by Dr. William Shuter, has shown that one of the Quasars, known to astronomers as 3C 147, must lie more than 12,000 light years (70 million billion miles) away from the earth, which puts it near the edge of our galaxy and very likely well outside it.

Dr. Shuter described the experimental work in this way:

"Our experiment consisted of taking observations of the radio emission from the Quasar at Owens Valley Radio Observatory, in California, operated by the California Institute of Technology.

OBSERVATIONS MADE

"Previously at the Dominion Radio Astrophysical Observatory in Penticton we had gathered observations of radio waves emitted from three spiral arms of our own galaxy in the same direction as the Quasar.

"Putting these observations together we found that all three of the spiral arms of our own galaxy absorbed an appreciable fraction of the radio emission from the Quasar. The obvious conclusion was that this particular Quasar was beyond the furthest of the three spiral arms which is located right at the edge of our galaxy at a distance of 12,000 light years, and therefore the Quasar must lie outside our galaxy.

'RED SHIFT'

"Previous estimates of the distance of Quasars from earth have been based on a well known observational effect known as the 'red shift.' Put simply this means that the light emitted by any object receding from the observer appears more red. In Quasars for which the light is very red-shifted it was originally assumed, and is still widely believed, that the Quasars were near the edge of the universe, their apparent recession and red shift being produced by the expansion of the universe.

RESULT OF EXPLOSION

"More recently it has become difficult to hold this view, and several alternate explanations for the red shift have been proposed, a typical example being the suggestion that Quasars are the result of an explosion that occurred at the centre of our own galaxy only five million years ago, and although they are receding rapidly are still in the vicinity of our galaxy.

"Our own experiment is of prime importance in selecting which of these recent proposals is likely to be the correct one."

Assisting Dr. Shuter in the experiment was UBC graduate student H. Clinton Pulley, and Dr. D. H. Rogstad of the Owens Valley Radio Observatory.

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