

Expedition finds vents, ore

Artificial intelligence and robotics developments may be the keys needed to mine millions of tons of metal-bearing sulphides from the floor of the Pacific Ocean, says a University of B.C. geologist.

Prof. Dick Chase of UBC's Department of Geological Sciences is just back from a two-week scientific expedition to B.C.'s West Coast, 200 kilometres off Vancouver Island. 2,500 metres below the surface of the ocean, the expedition found deposits of sulphide compounds created when heated sea water rushes out of volcanic vents on the ocean floor.

Prof. Chase says the 1986 expedition, a joint effort by UBC and the University of Toronto, explored a large deposit of minerals found in 1984, and located a new hot vent area 30 kilometres to the north. The scientists carried out their work aboard the Canadian Forces auxiliary vessel Endeavour.

He estimates there are some three to 5 million tons of sulphides of zinc, copper, silver and gold in the area known as Southern Explorer Ridge. The size of the new vent field, on Northern Explorer Ridge, is not yet known.

"But," he hastens to add, "don't hold your breath in anticipation that these minerals will be immediately mined. At present it's cheaper to mine the same ores on dry land before we begin mining the seas."

The UBC-Toronto discoveries, he says, may help to spur Canadian development of specialized underwater vehicles that would roam the ocean floor, armed with a chemical probe that could identify ore-grade deposits. Robotically armed vehicles would collect the minerals, bringing them to the surface.

Technology of this kind may be closer than we suspect, Dr. Chase says. At least two federal departments -- Energy, Mines and Resources, Fisheries and Oceans -- are fostering research that could ultimately lead to the development of such vehicles.

In addition to the sulphides, which will be analysed at the University of Toronto, the expedition also collected volcanic rock. Prof. Chase will analyse the rock samples, many of which are geologically comparatively new.

The scientists used an instrument called a CTD/Transmissometer to locate the vents around which the sulphides grow. The CTD/Transmissometer detects particles of iron oxide in the plume of sea water that has mixed with volcanic vent fluid, and can measure the slight increase in water temperature of the plume.

In 1984, a similar expedition to Southern Explorer Ridge used Pisces IV, a diving submersible, to get a closeup view of the

ocean-floor vents. The scientists saw bizarre forms of life found nowhere else on earth.

These included meter-long worms that live in tubes and exist by breathing the hydrogen sulphide-laden vent water and ingesting multi-colored bacterial colonies. Large numbers of long-legged crabs were found feeding on the worms.

The ocean floor vents form where crustal plates on the ocean floor pull away from each other. Explorer Ridge is formed at the junction between the Pacific Plate, which is moving in the direction of Japan, and the Explorer Plate, which is moving under Northern Vancouver Island.

These massive plates rest on the almost molten earth's mantle. Slow currents in the mantle help to move the plates.

Prof. Chase, and UBC Prof. Steven Scott, University of Toronto, were chief scientists involved in the 1984, 1985 and 1986 expeditions. UBC students involved in the most recent expedition were geology students Gregory T. Shea and Alexander Denton and engineering student John Criswick.

Both the expeditions were supported by the Natural Sciences and Engineering Research Council of Canada. Profs. Scott and Chase are seeking sources of funding from industry and government to enable them to continue their research.



Looking over volcanic rocks dredged up this summer from the floor of the Pacific Ocean 200 kilometres off Vancouver Island are Prof. Dick Chase, left, of UBC's Department of Geological Sciences and colleague, Prof. Steven Scott of the University of Toronto. Rock samples will be analysed at UBC by Prof. Chase.

Comment asked on proposal

The University Health and Safety Committee has recently prepared a policy proposal for non-smoking at UBC, the details of which are published below. The committee, made up of eighteen members representing all areas of the campus community, welcome comments from students, staff and faculty. These comments will then be used in preparing a recommendation for consideration by the President in preparing recommendations to the Board of Governors.

Please address any comments you may have to the Wayne Greene, Director of Occupational Health and Safety, Old Administration Building. All comments must be received by September 26th.

Clean Indoor Air

The University recognizes that no individual has the right to pollute the air of others with any substances known to be hazardous to health. In general, employers are required by the Industrial Health and Safety Regulations to ensure that stringent contamination and air quality conditions are met. Exposure to smoking in the workplace or public areas of the campus is a health hazard as well as an annoyance, and all persons on the University's campus, whether students, staff, or visitors have the right to breathe clean indoor air in places of public assembly, passage, workplace or classroom.

1. Public Areas

Smoking is not permitted in public areas, such as the following:

- * conference rooms
- * lecture rooms
- * laboratories
- * common study rooms
- * elevators
- * hallways or foyers
- * washrooms
- * indoor recreation areas or change rooms
- * public reception areas
- * theatres

A maximum of 50% of the seating in Food Service facilities may be designated as smoking areas, but these areas must be away from access to the servery, and should have ventilation to prevent smoke drifting to pollute the air of non-smokers.

2. Places of Employment

In addition to the places noted above, any employee may object about smoke in his or her workplace. They shall address their objections to the Department Head or Director, to the supervisor, or to the safety committee chairman of the area, who shall be responsible for attempting to reach an accommodation, if possible, between the preferences of smoking employees and those employees who do not

wish to have their air polluted by smoke.

Where an agreement cannot be reached which is satisfactory to all of the affected employees, the preferences of non-smoking employees will prevail. The Dean, Director or Department Head will then prohibit smoking in the workplace so that all employees will work in a smoke-free environment. This shall include private offices where the building's air circulation system draws the smoke into the air space of others, and would also include staff lunchrooms.

3. Signs

The majority of the adult population of the Vancouver area are non-smokers, thus non-smoking is the norm, and smoking is the exception. Signs, therefore, shall be posted to indicate areas where smoking is permitted. It is emphasized that the absence of non-smoking signs does not infer that smoking is allowed.

All buildings will have a sign at the entrance to inform visitors that the University's policies prohibit smoking except in designated areas.

4. Communication

The University's "Clean Air Policy" will be communicated to all students in the University's academic calendar. Students who continue to smoke in restricted areas shall be dealt with first by the Dean of their faculty, and, if necessary, through the President's Advisory Committee on Student Discipline.

The "Clean Air Policy" will be communicated to all University employees. Any member of the University who refuses to cooperate with the policy as stated above shall be dealt with through the normal disciplinary procedures.

5. Smoking Areas

Where possible, areas where smoking is permitted will be specifically designated in buildings which have adequate ventilation to separate the smoking room's air to prevent the contamination of the building air supply.

First Asian Centre visit

The former commissioner-general of the Sanyo Pavilion at Expo 70, a man who played a key role in the building of UBC's Asian Centre, visited the campus this summer for his first-ever look at the handsome centre.

Kazuhiko Nishi was the man who decided to donate the steel girders that support the unique, pyramidal roof of the building.

The idea of relocating Sanyo's Expo 70 pavilion at UBC was suggested to Mr. Nishi by Prof. Shotaro Iida of the Department of Asian Studies.

However, Mr. Nishi, now retired from a public relations post with Sanyo, had never seen the reconstructed building, which was redesigned for University use by Vancouver architect Donald Matsuba and landscaped by Roy Sumi.

President David Strangway invited Mr. Nishi to come to Vancouver this summer to view the

GRANT DEADLINES

OCTOBER 1986

- * Agriculture Canada
 - Extramural Research Grant [31]
- * Alberta Forest Service
 - Forest Development Research Fund Grant [15]
- * Alberta Heritage Fdn. for Medical Research
 - Medical Research Fellowships [1]
- * American Chemical Society: PRF
 - Research Type AC [1]
- * American Council of Learned Societies
 - China Conference Travel Grants [1]
- * American Lung Association
 - Training Fellowships [1]
 - Trudeau Scholar Awards [1]
- * Arthritis Society
 - Associateships & Assistantships [15]
 - Fellowships [15]
 - Research [15]
- * AUCC: International Relations
 - International Scholarships Post Doctoral [31]
- * B.C. Cancer Foundation
 - Travel Grant for Post-doctoral Fellows [15]
- * B.C. Heritage Trust
 - Historical Archaeological Program [1]
- * Cambridge Univ. (Peterhouse)
 - Research Fellowships [25]
- * Canadian Commonwealth Schol/Fell. Committee
 - Research Fellowships [31]
 - Visiting Fellowships [31]
- * Canadian Cystic Fibrosis Fdn.
 - Fellowships for Training and Research [1]
 - Research [1]
 - Scholarship [1]
 - Studentship [1]
- * Canadian Geriatrics Research Society
 - Research [1]
- * Canadian International Development Agency (CIDA)
 - CIDA/ICDS Institutional Development Linkages [10]
- * General Motors Cancer Res. Fdn.
 - Research Prize [2]
- * Guggenheim, John Simon, Memorial Foundation
 - J.S. Guggenheim Fellowships [1]
- * Hannah Institute
 - Publications Assistance [1]
- * Health, Education and Welfare, U.S. Dept. of
 - Small Grants Program [1]
- * IMASCO-CDC Research Foundation
 - Research [1]
- * Institute of Urban Studies, Winnipeg
 - CMHC Senior Fellowship [15]
- * International Union Against Cancer
 - Eleanor Roosevelt Cancer Fellowships [1]
 - International Fellowships [1]
- * Japan Society for the Promotion of Science
 - JSPS Fellowship for Research in Japan [1]
- * Japan World Expos. Commem. Fund
 - International Projects [31]
- * Juvenile Diabetes Fdn. (US)
 - Career Development Award [1]
 - Postdoctoral Fellowships [1]
- * Kidney Foundation of Canada
 - National Research Fellowship Program [1]
 - Research [15]
- * Malignant Hyperthermia Assoc.
 - Grant-in-Aid [15]
- * MRC: Awards Program
 - Visiting Scientists [1]
- * MRC: Grants Programs
 - MRC Group [1]
- * MRC: Special Programs
 - France/Canada MRC Exchange [1]
 - Research for Dyskinesia & Torticollis [1]
- * Multiple Sclerosis Society of Canada
 - Career Development Grants [1]
 - Postdoctoral Fellowships [1]
 - Research [1]
 - Research Studentships [1]
- * National Defence Canada
 - Military and Strategic Studies Program [10]
- * National Inst. of Education (US)
 - NIE Research Grants [6]
- * National Kidney Foundation
 - Research Fellowships [1]
- * National Research Council of Canada
 - The Steacie Prize [4]
- * NSERC: Fellowships Division
 - University Research Fellowship [1]
- * NSERC: Intl. Relations Division
 - CIDA/NSERC Research Associates: LDC's [15]
 - Exch: Braz., Czech., Japan, Bulg., UK, Suisse, Germany, Austria [15]
 - International Collaborative Research [15]
 - International Scientific Exchange Awards [15]
- * NSERC: Major Installation
 - Major Installation [1]
- * NSERC: Vector Computer Facility
 - Dorval Vector Access [1]
- * Osgoode Society
 - Fellowship in Canadian Legal History [15]
- * Royal College of Physicians and Surgeons of Canada
 - Detweiler Clinical Traineeship [1]
- * Secretary of State c/o S.S.H.R.C.
 - Bora Laskin Fellowship in Human Rights [1]
- * Solicitor General of Canada
 - Criminological Research [1]
- * SSHRC: Fellowships Division
 - Canada Research Fellowships [1]
 - Jules & Gabrielle Leger Fellowship [1]
 - Postdoctoral Fellowship [1]
 - Sp. PDF for Research on Urban Poverty in Canada [8]
- * SSHRC: Intl. Relations Division
 - Aid to International Secretariats [1]
 - Bilateral Exchange: China [1]
 - Bilateral Schol. Exchange: Japan & Hungary [1]
 - Bilateral Scholarly Exchange: France [1]
 - International Collaborative Research [1]
- * SSHRC: Research Commun. Div.
 - Aid to Learned Journals [14]
 - Aid to Occasional Conferences [30]
- * SSHRC: Research Grants Division
 - Research [15]
 - Research Time Stipend [15]
 - Standard Research Grants [15]
- * St. John's College
 - Commonwealth Fellowship [1]

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