

# C<sub>3</sub> News



Newsletter of College Chemistry Canada / La Chimie Collégiale au Canada

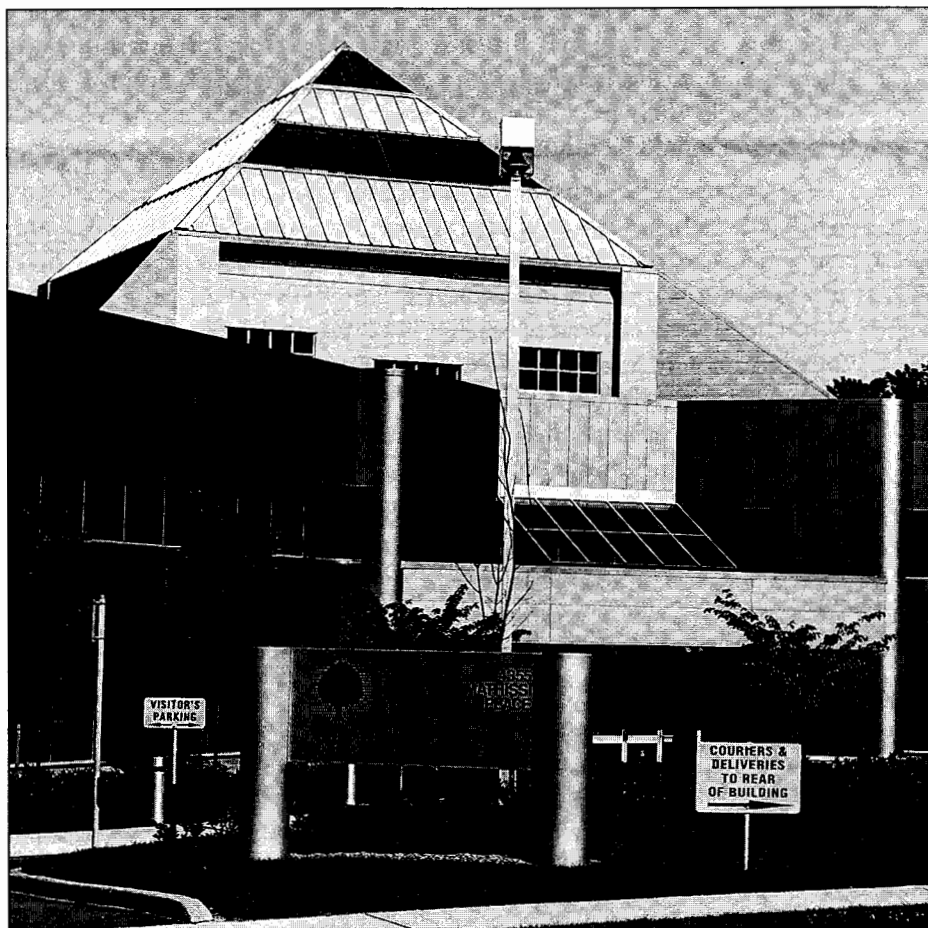
Despite some last minute changes in location and arrangements, the 1993 Joint C<sub>3</sub>-2YC<sub>3</sub> conference in Providence, Rhode Island, brought together chemical educators from Canada and the United States for a diverse program featuring sessions on Chemtec, Program Articulation, Women in Chemistry, Chemistry and the Physically Challenged, the use of computers, and the (nearly) traditional "Chemical Potpourri."

Approximately 30 College Chemistry Canada members were able to make the trip, and all reports indicate that they did their best to destroy the myth of Canadians as being socially reserved and conservative.

Our thanks to our U.S. hosts for organising this latest in a series of joint conferences. Conference papers will be published in *C<sub>3</sub> News* between now and our next conference.

Speaking of which . . .

Plans are already underway for the 1994 C<sub>3</sub> Conference (our 21st), to be held in Burnaby, British Columbia, and hosted by the British Columbia Institute of Technology and the Open Learning Agency. This is the latest in a number of collaborative activities between these two institutions, which sit across the road from each other near the Vancouver/Burnaby boundary. Hopefully, the conference will draw upon the strengths of both institutions: BCIT's close and active relationship with industry and the workplace (thus the conference's theme "Chemistry at Work") and the OLA's leadership in distance and independent learning. Tours of the BCIT campus and of the unique OLA facility will be part of the social program.



*The Open Learning Agency, Burnaby, B.C. One site of the 21st C<sub>3</sub> Conference, 1994.*

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## C<sub>3</sub> President's Report

June 3, 1993

In my first term as President, my major focus has been on streamlining membership procedures and getting regional directors more involved in the operation of C<sub>3</sub>. Bob Perkins has worked hard to computerize the mailing list, and we are in the process of centralizing the mailout of renewal letters. The result is that our membership is at an all-time high. The role of the regional directors will shift from maintaining the membership list in their regions, to getting new members, and reporting on events in their part of the country. By the end of the year, these procedures should be running smoothly.

Conference calls continue to be an important part of the operation. This year calls were coordinated through the Open Learning Agency, with each participant's college paying for long distance charges. These meetings were especially important this year with the annual conference being held outside Canada, because Tom Whitfield was able to join us and update conference information. The C<sub>3</sub> Student Scholarship was conceived, debated, and put into effect during these teleconference meetings. The regional directors were invited to join one conference call, and one director (Cynthia Mutch) joined the meeting.

The future of the organization is bright...with the largest membership in our history, our first conference outside of Canada, and a solid financial statement. There is still much to be done. Many parts of the country are poorly represented, and we are in danger of becoming a bipolar (Vancouver-Montreal) organization. I'm counting on the new Directors to help rectify this imbalance.

I would like to thank Tom Whitfield and Anne-Marie Weidler-Kubaneck for organizing the Rhode Island Conference, and all of the outgoing Executive and Board members for the work they have done: specifically Phyllis Lake who has been our treasurer, and Gary Wilson as past-president.

**Bob Browne, President**



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**President:** Bob Browne

**Editor:** Alan Davis

**Mailing Address:**  
Open Learning Agency  
4355 Mathissi Place  
Burnaby, B.C.  
V5G 4S8

**Tel:** (604)-431-3219

**Fax:** (604)-431-3387

**E-Mail:** [aland@ola.bc.ca](mailto:aland@ola.bc.ca)

Articles of any length will be gladly accepted. Please send typewritten copy to the Editor at the above address or send by fax. Copy can also be sent on a 3 1/2" disk, MAC format using Microsoft Word, or any wordprocessor producing ASCII output.

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## C3/2YC3 Conference Highlights from the Community College of Rhode Island (CCRI)

Bob Perkins, Kwantlen College

We came from across the country to take in the atmosphere of the picturesque state of Rhode Island. Bob Browne will be handling the behind-the-scenes story of the conference; I will try to give you a taste of the topics presented.

The first sessions on Friday centered around the theme of new relationships between academic institutions and industry. The Rhode Island Commissioner of Higher Education, Americo Petrocelli (who has a Ph.D in chemistry), set the stage in the opening address by describing how his state is trying to keep more high school students interested in science. He maintained that a scientifically literate workforce is the only way that the USA will be able to continue providing the present high standard of living. For many of the students in the state, science and math courses were not being taken past Grade 10. The Tech-Prep (2+2) program as described by Judy Marmaras from CCRI is one innovation to try and change this. Students now have the option of taking course in their final two years of high school which will slot them into 2 year programs at the college. Wayne Suits (also from CCRI) described a program in which he went into one of the local companies to provide on-site instruction for one of their technology programs.

The company allowed the workers to adjust their hours to take part in the intensive hands-on program. Elizabeth Mancini (Admissions Director from CCRI) described the efforts by the college to facilitate articulation of the course in the various programs to allow transfer to 4 year colleges and universities for those students who wanted to continue their education.

After a break in the action for lunch, the second session dealt with ways to popularize chemistry. Ariel Fenster did his usual outstanding job supported by a wonderful selection of images from the vast reservoir of slide material which the trio of Fenster, Harpp, and Schwarcz have built up over the years. Everyone came away with material to bring into the classroom.

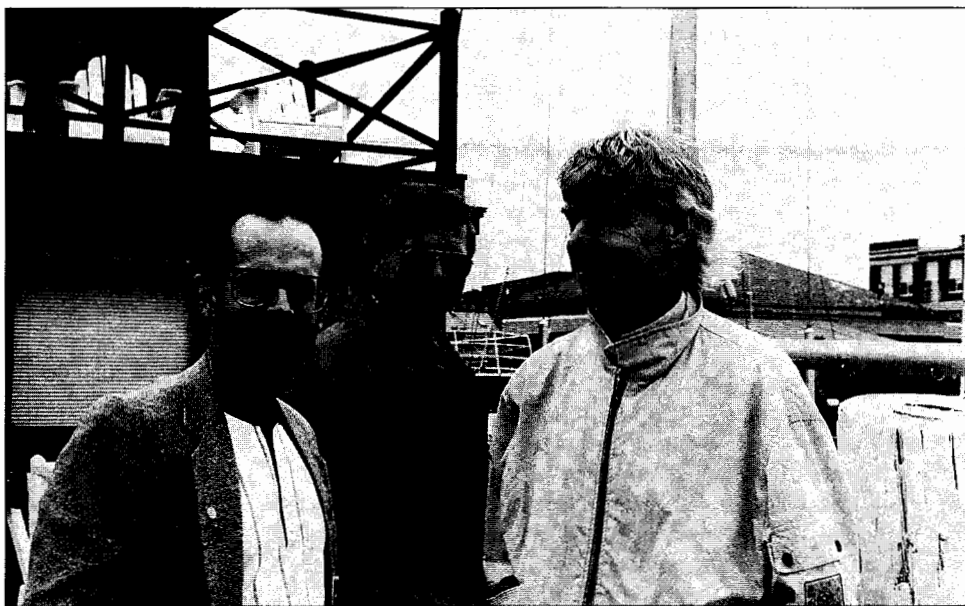
Session three examined women and minorities in science. Suzanne Gardner (Kwantlen College) and Margaret Heldman (Langara College) described the results of a survey of chemistry departments in BC colleges in regards to the physically challenged student. Very few students were identified, and most institutions have no official policies/specialized equipment in place. Geoff and Marlene Rayner-Canham (Grenfell College) then gave a very inform-

ative historical account of some early women chemists. Sudhir Abhyankar (Grenfell College) then presented the results of a survey of first year female science students at his college. He found that only half of them indicated that they had decided on a career before entry, and 72% of these indicated that it would be in the health science area with only about 10% in the physical science area. After one semester, the majority (87%) of the students indicated that they enjoyed taking science courses, 78% of them thought that it was not any more difficult for a woman to become a scientist.

The first day ended with a panel discussion chaired by Elise Herschenhardt of Millipore-Waters (the company involved with the on-site program described by Wayne Suits above). Two graduates of the ChemTec program at CCRI spoke about their experiences in the program and in the workplace. Elise also gave us a eye-opening look at some of the difficulties faced by a woman scientist in the upper levels of management.

Day two of the conference started with a look at new curricula. Rinte Raap (Camosun College) gave us a detailed tour of some of the best science/art displays in Europe's Museums. Many of the original pieces of equipment and glassware used three hundred years ago are available for public viewing. Rin uses the material in his classes to give the students an appreciation of how science has developed over the years, and that art owes much of its beauty to science. Chemistry in Context, an approach to teaching chemistry from an environmental/sociological perspective, was the substance of a presentation by Arden Zipp (NY State U). Ken Chapman (ACS) then described how the national organization is approaching the science literacy problem (identified by Americo Petrocelli in the opening address) in its SciTec program. Uni Susskind (Mott College) reported on the deliberations of the ACS Task Force on General Chemistry, i.e., what exactly should be in the first general chemistry course, and how do we deliver the material to students?

— continued on page 6



C3 members at play: Left to right, Bob Perkins, Gary Wilson, and Bob Browne

## THE LAST WORD

The Ultimate Scientific Dictionary  
(Courtesy of Bob Perkins, Kwantlen College)

### Activation Energy:

The useful quantity of energy available in one cup of coffee.

### Atomic Theory:

A mythological explanation of the nature of matter, first proposed by the ancient Greeks, and now thoroughly discredited by modern computer simulation. Attempts to verify the theory by modern computer simulation have failed. Instead, it has been demonstrated repeatedly that computer outputs depend upon the color of the programmer's eyes, or occasionally upon the month of his or her birth. This apparent astrological connection, at last, vindicates the alchemist's view of astrology as the mother of all science.

### Bacon, Roger:

An English friar who dabbled in science and made experimentation fashionable. Bacon was the first science popularizer to make it big on the banquet and talk-show circuit, and his books even outsold the fad diets of the period.

### Biological Science:

A contradiction in terms.

### Bunsen Burner:

A device invented by Robert Bunsen (1811–1899) for brewing coffee in the laboratory, thereby enabling the chemist to be poisoned without having to go all the way to the company cafeteria.

### Butyl:

An unpleasant-sounding word denoting an unpleasant-smelling alcohol.

### CAI:

Acronym for "Computer-Aided Instruction". The modern system of training professional scientists without ever exposing them to the hazards and expense of laboratory work. Graduates of CAI-based programs are very good at simulated research.

### Cavendish:

A variety of pipe tobacco that is reputed to produce remarkably clear thought processes, and thereby leads to major scientific discoveries; hence, the name of a British research laboratory where the tobacco is smoked in abundance.

### Chemical:

A substance that: 1) an organic chemist turns into a foul odor; 2) an analytical chemist turns into a procedure; 3) a physical chemist turns into a straight line; 4) a biochemist turns into a helix; 5) a chemical engineer turns into a profit.

### Chemical Engineering:

The practice of doing for a profit what an organic chemist only does for fun.

### Chromatography:

(From Gr. chromo [color] + graphos [writing].) The practice of submitting manuscripts for publication with the original figures drawn in non-reproducing blue ink.

### Clinical Testing:

The use of humans as guinea pigs. (See also PHARMACOLOGY and TOXICOLOGY.)

### Compound:

To make worse, as in: 1) a fracture; 2) the mutual adulteration of two or more elements

### Computer Resources:

The major item of any budget, allowing for the acquisition of any capital equipment that is obsolete before the purchase request is released.

### Eigen Function:

The use to which an eigen is put.

### En:

The universal bidentate ligand used by coordination chemists. For years, efforts were made to use ethylene-diamine for this purpose, but chemists were unable to squeeze all the letters between the corners of the octahedron diagram. The timely invention of en in 1947 revolutionized the science.

### Evaporation Allowance:

The volume of alcohol that the graduate students can drink in a year's time.

### Exhaustive Methylation:

A marathon event in which the participants methylate until they drop from exhaustion.

### First Order Reaction:

The reaction that occurs first, not always the one desired. For example, the formation of brown gunk in an organic prep.

### Flame Test:

Trial by fire.

### Genetic Engineering:

A recent attempt to formalize what engineers have been doing informally all along.

**Grignard:**

A fictitious class of compounds often found on organic exams and never in real life.

**Inorganic Chemistry:**

That which is left over after the organic, analytical, and physical chemists get through picking over the periodic table.

**Mercury:**

(From L. Mercurius, the swift messenger of the gods.) Element No. 80, so named because of the speed of which one of its compounds (calomel,  $\text{Hg}_2\text{Cl}_2$ ) goes through the human digestive tract. The element is perhaps misnamed, because the gods probably would not be pleased by the physiological message so delivered.

**Monomer:**

One mer. (Compare POLYMER.)

**Natural Product:**

A substance that earns organic chemists fame and glory when they manage to synthesize it with great difficulty, while Nature gets no credit for making it with great ease.

**Organic Chemistry:**

The practice of transmuting vile substances into publications.

**Partition Function:**

The function of a partition is to protect the lab supervisor from shrapnel produced in laboratory explosions.

**Pass/Fail:**

An attempt by professional educators to replace the traditional academic grading system with a binary one that can be handled by a large digital computer.

**Pharmacology:**

The use of rabbits and dogs as guinea pigs. (See also CLINICAL TESTING, TOXICOLOGY.)

**Physical Chemistry:**

The pitiful attempt to apply  $y=mx+b$  to everything in the universe.

**Pilot Plant:**

A modest facility used for confirming design errors before they are built into a costly, full-scale production facility.

**Polymer:**

Many mers. (Compare MONOMERS.)

**Prelims:**

(From L. pre [before] + limbo [oblivion].) An obligatory ritual practiced by graduate students just before the granting of a Ph.D. (if the gods are appeased) or an M.S. (if they aren't).

**Publish or Perish:**

The imposed, involuntary choice between fame and oblivion, neither of which is handled gracefully by most faculty members.

**Purple Passion:**

A deadly libation prepared by mixing equal volumes of grape juice and lab alcohol.

**Quantum Mechanics:**

A crew kept on the payroll to repair quantum, which decay frequently to the ground state.

**Rate Equations:**

(Verb phrase.) To give a grade or a ranking to a formula based on its utility and applicability.  $H=E$ , for example, applies to everything everywhere, and therefore rates an A.  $pV=nRT$ , on the other hand, is good only for nonexistent gases and thus receives only a D+, but this grade can be changed to a B- if enough empirical virial coefficients are added.

**Research:**

(Irregular noun.) That which I do for the benefit of humanity, you do for the money, he does to hog all the glory.

**Sagan:**

The international unit of humility.

**Scientific Method:**

The widely held philosophy that a theory can never be proved, only disproved, and that all attempts to explain anything are therefore futile.

**SI:**

Acronym for "Systeme Infernelle".

**Spectrophotometry:**

A long word used mainly to intimidate freshman nonmajors.

**Spectroscope:**

A disgusting-looking instrument used by medical specialists to probe and examine the spectrum.

**Toxicology:**

The wholesale slaughter of white rats bred especially for that purpose. (See also CLINICAL TESTING, PHARMACOLOGY.)

**X-Ray Diffraction:**

An occupational disorder common among physicians, caused by reading X-ray pictures in darkened rooms for prolonged periods. The condition is readily cured by a greater reliance on blood chemistries; the lab results are just as inconclusive as the X-rays, but are easier to read.

**Ytterbium:**

A rare and inconsequential element, named after the village of Ytterby, Sweden (not to be confused with Iturbi, the late pianist and film personality, who was actually Spanish, not Swedish). Ytterbium is used mainly to fill block 70 in the periodic table. Iturbi was used mainly to play Jane Powell's father.

## C<sub>3</sub> Business

At the 1993 annual meetings of the executive, board and membership, the following reports were received:

- **Program Coordinator** – Anne-Marie Weidler-Kubanek reviewed the arrangements and finances for the 1993 conference; C<sub>3</sub> will close its accounts with a small net profit.
- **Past President** – Gary Wilson has developed a C<sub>3</sub> brochure for use by members to encourage others to join, and to raise the profile of C<sub>3</sub>.
- **Secretary** – Bob Perkins reported that C<sub>3</sub> membership is at an all-time high, partly as a result of an efficient, computerised membership record system.
- **Editor** – Alan Davis reported that, in 1992/93, four newsletters were published, with significant contributions received from several C<sub>3</sub> members.
- **Treasurer** – C<sub>3</sub> continues to be in excellent shape under the care of Phyllis Lake.
- **Fees for 1993/94:** The annual C<sub>3</sub> membership fee will be \$20 for the period June 1, 1993 to May 31, 1994.
- **Future Conferences:**
  - 1994 – OLA/BCIT in Burnaby, B.C.
  - 1995 – Algonquin/Heritage in Ottawa/Hull
  - 1996 – Yukon College, on the 100th anniversary of the Gold Rush
  - 1997 – Sir Wilfred Grenfell College, Newfoundland (for the 500th anniversary of Newfoundland, and the 25th anniversary of C<sub>3</sub>)
  - 1998 – Medicine Hat (tentative)
- **New Board of Directors** – See page 8 of this newsletter for the names and addresses of those elected for 1993/94.
- **Regional Directors** – Those directors in attendance reported on their activities. Bill Blann's note on the North Prairie is given below. The 180 paid memberships, by province, are as follows:

Yukon/Terr	BC	AB	SK	MN	ON
1	48	21	2	0	12
PQ	NB	NS	PEI	NF	USA
87	0	0	0	3	6

## More Conference Highlights — *continued from page 3*

The next three papers revolved around the topic New Approaches to Instruction. Geoff Rayner-Canham (Grenfell College) explained how he has used substances familiar to the general public to illustrate chemical principles. One successful forum included 300 high school students and teachers. He maintains that we need to take the "mystery" out of chemistry, and one way of achieving this is to use more examples involving common materials where possible. Mauri Ditzler (College of the Holy Cross) and Harry Wilson (John Abbott College) then presented two similar yet different approaches to the role of the chemistry laboratory. Mauri uses "discovery learning" in which the students sent out to gather data to answer a question. For example, do pennies lose mass as they pass from person to person in general circulation? Samples of pennies are collected and then weighed individually. The masses are plotted as a function of the year the pennies were minted. The graph reveals an unexpected result, i.e., the composition of pennies has changed over the years. He has used similar questions in his first and second year course to make more effective use of the laboratory time. Harry described the results of his 6 years of teaching introductory chemistry without lectures. The instruction is centered totally on the laboratory by the use of "problems of the week". The students work in teams of 5 students, and the goal is to come up with a way of solving "the problem". The class time is spent on learning techniques which may be of use in solving "the problem". Harry provides 2 booklets: one which describes the experimental techniques to be covered in the course, and the second one which contains lecture notes (from when he used to lecture) on the theory which they will be responsible for at the end of the course (they must cover this on their own) when they write a common exam with the other sections who use the "traditional" method of instruction.

The conference finished off with three papers in the area entitled Chemical Potpourri. LeRoy Pazdernik (U du Quebec) described his use of some modified micro scale glassware for inorganic syntheses. Bob Perkins (Kwantlen College) described some methods used to try and improve the problem-solving skills of chemistry students. Many adults returning to school after several years find that numerical calculations initially cause problems. He suggests that when faced with a problem the students ask themselves three questions: "Can I hold it in my hand?", "Is that a good number or a bad number?", and "Do I have to make an assumption?". Based on the answers to these questions, the students can plan a possible solution to the problem. In his second presentation, Bob described the use of molecular models and a step-wise oxidation of methane to methanol to methanal to methanoic acid to carbon dioxide to help students improve their understanding of redox processes.

Overall, the quality of the presentations at the conference was excellent, all the delegates came back with plenty to think about. Equally valuable were the discussions with instructors from Canada and the USA, comparing notes on administrative support, teaching loads, working conditions etc ...

## “Chemistry At Work”

The 21st C<sub>3</sub> Conference: Burnaby, British Columbia

*June 9th, 10th, and 11th, 1994*

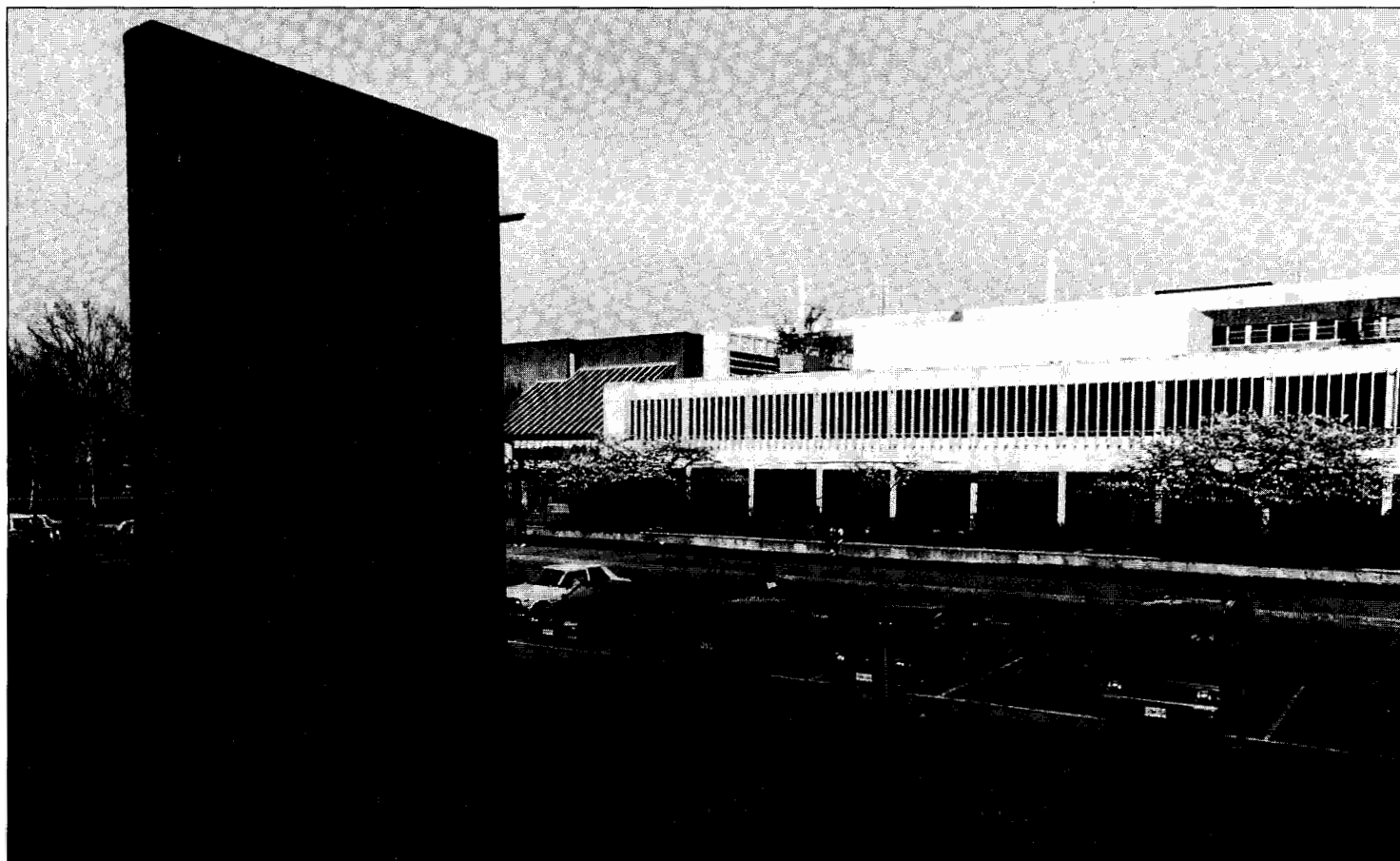
**Program Coordinator:** Alan Davis, OLA  
**Conference Coordinator:** Ken Yakel, BCIT  
**Conference Location:** IBM Centre, BCIT  
**Accommodation:** Holiday Inn, Metrotown  
 (20 minute walk, 5 minute drive)  
 Burnaby Inn (10 minute walk)  
 BCIT Student Residences  
**Social Program:** Wine & Cheese (June 9th)  
 Banquet and Entertainment (June 10th)  
 Vancouver Restaurants (June 11th)

### PRELIMINARY CALL FOR PAPERS

If you would like to have a paper considered for inclusion in the program, please provide a brief synopsis and an indication of length, special requirements, etc., to Alan Davis. Areas of programs being considered include (though are not restricted to):

- Chemistry in Industry and the Workplace
- Chemistry and the Independent Learner
- Chemical Potpourri (teaching tips)

Information on hiking, boating, fishing, camping, etc., will be available upon request.



*British Columbia Institute of Technology, site of the 1994 C<sub>3</sub> Conference.*

*Photo: Ian Cameron*

## The Gnus from the Northern Prairie Region — *And I bet you thought they were musk-oxen!*

Bill Blann, Keyano College

A change in the neighbourhood was registered this spring when a letter expressing interest in C<sub>3</sub> was received from Dr. Dietmar Kennepohl, who has taken over the position at Athabasca University vacated by Arthur Last. (This makes Dietmar our new next door neighbour, being scarcely three hundred kilometers down the road. Art has moved to the Fraser Valley and thus left the region.) The neighbour on the other side, Lloydminster's Hossein Divanfard, phoned to say he will be able to attend the conference in Providence. The rest of the Gnus are from Fort Murk.

E-mail has struck in this corner of the wilderness, as Keyano has been tied into the internet system. Thus we have a new entertainment in the form of following the address routings. Keyano for instance is reached via S.A.I.T. (which makes eminent sense for a northern college), and one is informed that for the college to contact its lawyer's office down the street, which is hooked into an Edmonton server, the messages are routed through somewhere in northern California. Contact with a friend in Acadia University shows Nova Scotia to be only 6 hours away through a whole page of route listings, so eat your heart out, Canada Post: those of you out there that have access to the Internet system may find E-mail the way to exchange messages. (Now, if only they'd fix the line between my office and the server to the VAX . . .)

### College Chemistry Canada Inc. Executive and Board of Directors 1992-93 93-94

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##### President

Bob Browne  
Douglas College  
P.O. Box 2503  
New Westminster, BC  
V3L 5B2

##### President-Elect

Sudhir Abhyankar  
Sir Wilfred Grenfell College  
University Drive  
Corner Brook, NF  
A2H 6P9

##### Secretary

Bob Perkins  
Kwantlen College  
P.O. Box 9030  
Surrey, BC  
V3T 5H8

##### Treasurer

Phyllis Lake  
Mount Royal College  
4825 Richard Road S.W.  
Calgary, AB  
T3E 6K6

##### Editor/Conference Coordinator

Alan Davis  
Open Learning Agency  
4355 Mathissi Place  
Burnaby, BC  
V5G 4S8

##### CIC Liaison

Leroy Pazdernik  
Université. du Québec  
C.P. 500  
Trois-Rivières, PQ  
G9A 5H7

##### 2YC3 Liaison

Shahid Jalil  
John Abbott College  
21275 Lakeshore Road  
St. Anne de Bellevue, PQ  
H9X 3L9

##### CSCT Liaison

Murray Morello  
Seneca College  
1750 Finch Avenue East  
North York, ON  
M2J 2X5

#### Directors:

##### Atlantic Provinces

Geoff Rayner-Canham  
Sir Wilfred Grenfell College  
University Drive  
Corner Brook, NF  
A2H 6P9

##### Québec

Rod Restivo  
Heritage College  
205 rue Laurier  
Hull, PQ  
J8X 3Y8

Harry Wilson  
John Abbott College  
21275 Lakeshore Road  
St. Anne de Bellevue, PQ  
H9X 3L9

##### Ontario

Dick Kroeger  
Algonquin College  
200 Lees Avenue  
Ottawa, ON  
K1S 0C5

##### MB, SK, AB and NT

William Blann  
Keyano College  
8115 Franklin Avenue  
Fort Murray, AB  
T9H 2H7

Brad Pavelich  
Medicine Hat College  
299 College Avenue  
Medicine Hat, AB  
T1A 3Y6

##### BC, YT

Suzanne Gardner  
Kwantlen College  
P.O. Box 9030  
Surrey, BC  
V3T 5H8

Margaret Heldman  
Langara College  
100 West 49th Avenue  
Vancouver, BC  
V5Y 2Z6

### C3 News

Alan Davis, Editor  
Open Learning Agency  
4355 Mathissi Place  
Burnaby, BC  
V5G 4S8

