

# C<sub>3</sub> NEWS

Newsletter of  College Chemistry Canada / La Chimie Collégiale au Canada

## SCIENCE HISTORY and the CHEMISTRY CURRICULUM\*

by: *Rintje Raape, Camosun College*

After 22 years of teaching I am still very dissatisfied with the content of my chemistry courses. I continue to ask myself what it is that the students should get out of a chemistry course. Yes, we all agree that at the end of the course they should have acquired a certain amount of knowledge on a variety of the standard topics and they also should have learned some practical skills. But I am becoming more and more convinced that this is not enough, especially since the majority of our students do not intend to continue in chemistry. For too many, chemistry is and remains a dreaded subject, something to struggle through and to get over and done with on the way to a more rewarding educational goal. For how many students does a chemistry course represent an experience that changed their lives, something which opened their eyes to an exciting aspect of human endeavor to which they can relate? For only a precious few I'm afraid! We as teachers would like to make our courses more exciting and relevant, but we all feel we are stuck with a curriculum that we have to work through in a limited amount of time. There is no time to deviate from a restricted curriculum and devote some time to putting things in perspective and deal with such topics as science history or human creativity in general in both the arts and the sciences. And still, I think it is exactly these areas which will excite many of our students and which makes them remember and value our courses. After many years

they will probably have forgotten all the chemistry of our courses, but they may have continued in expanding their interest and knowledge in the "extracurricular" topics that we included in those courses. In this brief talk I like to make a case for the inclusion of certain aspects of science history, especially topics which focus on the creative process, in all our chemistry courses and making it an integral part of the course.

In our present age we suffer from the "out of date" syndrome. Anything which is not recent is by and large considered outdated, unimportant and not worth spending much time on. This is especially true in science and technology. I'm sure that we all have in our labs and storage areas heaps of useless equipment, broken down and irreparable because it has been replaced by something slightly more advanced. This as a result of the rapid "progress" in all areas of science and technology, which is directly coupled to the heavy emphasis on consumerism in our present age. Our whole society has acquired a throwaway mentality. Recycling our newspapers, metal cans and coffee cups in call conservation. Replacing equipment and apparatus with slightly newer versions is called progress. Could we just possibly alter the wasteful attitudes of ourselves and our students by looking at the past? Many science museums around the world contain large collections of scientific

apparatus which have been manufactured by highly respected craftspeople with well-known names such as Fahrenheit, van Leeuwenhoek, Brander and Torricelli. Apparatus that remained in use that long. Exposing our students to some of these pieces of craftsmanship may just give them a slightly different perspective and appreciation of the past and make them a bit more critical of the present.

Allow me to share with you some impressions and images which I gathered from visits to some of Europe's leading science museums. The first museum, and probably the most important one of all times, was the Mouseion of Alexandria, established in 284 B.C. As the name indicates, it was dedicated to the "Muses", the guardians of the arts and the sciences. It was a centre where the philosopher-scientists could pursue their studies. To this end, the Mouseion contained a large collection of scientific instruments, an extensive library, an astronomic observatory in addition to laboratories. One of the very few museums that were established with the ideals of the Mouseion in mind, was the Teyler museum in Haarlem, the Netherlands. It opened in 1784 after the fabric merchant Pieter Teyler van der Hulst left his large fortune for the establishment of an institute to further religion, the arts and the sciences. It was a museum in the Alexandrian tradition with large collections

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\* This paper was presented by Rintje Raape at the 20th C<sub>3</sub> conference, held with 2YC<sub>3</sub> at Rhode Island, June, 1993.

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in both the arts and the sciences, an extensive library and it also became a centre of research. Presently it possesses an important collection of about 2000 mainly 17th century drawings and etchings of Dutch and Italian artists, in addition to a large number of 19th century paintings. The physical science exhibit contains a large mineral collection and physics equipment from the 18th century, e.g. the world's largest static electricity generator from that period. It was capable of generating 5000,000 volts using a battery of Leiden jars and was built by the English instrument maker John Buthbertson, who lived in Amsterdam.

One of the oldest and most beautiful collection of scientific apparatus is displayed in the "Museo di Storia della Scienza" in Florence. The museum as it is now was established in 1929 and is housed in one of the oldest buildings in the city, the former Palazzo Castellani. Most of the items were collected by the Grand Dukes of the Medici family, who were warm supporters of the arts and the sciences, and were originally conserved in the Uffizi galleries after their foundation in 1583. The collection was started by Cosimo I (1389-1464), who wanted to orient culture towards science and mathematics. When the Medici line ended in 1737, the succeeding Lorena family continued to support the natural sciences. It was especially Ferdinando II, Grand Duke of Tuscany from 1621 until 1670 who contributed greatly to the sciences. He was an enthusiastic experimenter himself and like his father Cosimo II, a student and strong supporter of Galileo. The very first scientific society, the "Accademia del Cimento" was sponsored by him and his brother Leopoldo. The "Accademia del Cimento" only lasted 10 years, from 1657 to 1667, but has a profound influence on science in Europe and was the model for the Royal Society in London and the Academie des Sciences of Paris, who were established a decade later. The Cimento actively designed and improved measuring instruments and established standards for their use. Amongst others it developed the thermometer as a precision tool. Many of these glass thermometers are preserved, some are straight, others are spiral shape to make them less fragile but preserve the advantage of a large stem. Some have more than 500 gradations. Some examples of the many other instruments on display:

- a collection of Renaissance mathematical instruments
- a collection of armillary spheres (Copernican, with the earth at the centre) and globes, mostly from the 17th century.
- some original instruments of Galileo
- many sundials, e.g. a Rousseau clock
- vacuum pumps

The museum in Florence also has an extensive library of ancient books of the Medici and Lorena families and its Institute researches and publishes in the field of science history.

In France, already in the 17th century did Descartes express the need to preserve equipment used by craftsmen and scientists. His ideas materialized when soon after the revolution the Convention decided in 1794 to establish such a museum: the Conservatoire des Arts et Metiers, since 1799 housed in the ancient former monastery Saint-Martin des Champs. It contains a very large collection of apparatus and machinery from all areas of science and technology, mainly technology. From the chemist's point of view, most interesting are Lavoisier's equipment and a collection of various measuring devices. The metrification of measuring devices was initiated by the Conservatoire.

The industrial and science revolution of the 19th and 20th centuries prompted the establishment of science and technology museums in many cities. The "Conservatoire des Arts et Metiers" served as a model for the national museums in many countries, e.g. the Science Museum in London (1851), the Deutsches Museum in Munich (1903) and the National Museum of Science and Technology Leonardo da Vinci in Milan (1953). The size of the Deutsches Museum is quite overwhelming and seeing everything would require a few days and a lot of energy. It contains reconstructed versions of alchemy labs, pharmacies and Liebig's laboratory. In the physics area separate rooms are devoted to the instrument makers Georg Friedrich Brander (1713-1784) and Joseph von Fraunhofer (1787-1826). Both made excellent instruments of all kinds. The latter is also the discoverer of the spectroscope.

Italy's national science and technology museum was inaugurated in 1953 with an exhibition dedicated to the world's greatest artist-scientist Leonardo da Vinci (1452-1519), who lived most of his life in Flor-



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ence and Milan. The exhibition is still the highlight of the museum. It consists of displays with wooden models of about 80 of Leonardo's technical and scientific ideas in various areas: anatomy, botany, astronomy, aviation, optics, architecture etc. All through the museum much art is presented in the form of oil paintings, frescos and architecture.

There are many museums devoted to a single scientist, such as the Pasteur museum in Paris, the Liebig museum in Giessen and the Volta museum in Como. The Pasteur museum is in the original dwelling of Louis Pasteur and his family. In one of the rooms upstairs his laboratory equipment and chemicals are arranged chronologically: his work on optical isomers, fermentation, silk worm disease and immunization (which culminated in finding a vaccine against rabies in 1885). In the basement an elaborately designed mausoleum has been built in which Pasteur and his wife are buried.

The Liebig museum is the original laboratory of Justus von Liebig (1803-1873), who was professor of chemistry at the University of Giessen from 1824 until 1852. Much of Liebig's original apparatus and glassware is present. He was one of the first chemists to actually establish a teaching laboratory. Some of Liebig's many accomplishments:

- he established the existence of isomers (with Wohler)
- he developed an accurate method for CH analysis and his CO<sub>2</sub> measurement apparatus is now the emblem of the American Chemical Society.
- he developed a theory of minerals which formed the basis of agricultural chemistry.
- contributed greatly to our knowledge of nutrition
- he invented bouillon (meat extract), baking soda and the silver mirror.

The Volta Museum, or the Temple of Volta, on the shore of Lake Como, Italy, is devoted to Alessandro Volta of Como, professor of physics at the University of Pavia and whose main claim to fame is the discovery of the electrochemical cell and battery in 1799. In addition to many of Volta's instruments had personal things, the museum also contains two oil paintings depicting him demonstrating his "voltaic pile" to Napoleon. Characteristic of 19th century adoration is Volta's preserved skull in a glass case.

Two national pharmacy museums are also worth mentioning: the German pharmacy

museum in the castle of Heidelberg and the Swiss national pharmacy museum in Basel. The Heidelberg museum contains a number of reconstructed pharmacies of the 17th and 19th centuries. It also has reconstructed the former pharmacy laboratory of the castle. It has a large collection of old medicinals, pharmacopoeia and other pharmacy books. Especially interesting are a 15th century wood sculpture of Maria Magdelene, the patron saint of pharmacists, and an oil painting depicting Christ as a pharmacist. The former court pharmacy in the city of Heidelberg has fittingly for our age been given a new function as a MacDonald restaurant.

The setting of the Swiss pharmacy museum, established in 1924, is not quite as spectacular as the one in Heidelberg, but it is housed in a historic building: the former dwelling of the well-known printer Johannes Froben, who moved in in 1507. The physician Paracelsus treated both Froben and his friend Erasmus of Rotterdam here. Only the house chapel on the first floor remains of the Froben period. This has now been converted into a 16th and 17th century alchemist laboratory. In its 10 exhibition rooms there is housed one of the most interesting and varied collections:

- a large collection of obsolete drugs and amulets
- early Swiss pharmacopoeias
- various blood-letting devices
- reconstructed court pharmacy of Innsbruck (17/18th century)
- reconstructed Empire pharmacy (18th/19th century)
- laboratory apparatus: scales weights, jars and microscopes
- laboratory glassware, Greek and Roman medicinal vessels
- many mortars and pestles from different periods
- paintings, e.g. 17th century oil painting depicting Christ as the pharmacist
- a beautiful ceramic collection

One of the best organized museums is in Leiden, the Netherlands: the Rijks museum for the history of the sciences and medicine, called the Boerhave Museum, named after the 17/18th century physician, botanist and alchemist Herman Boerhave (1668-1738) who taught at the University of Leiden and who had a profound influence on the teaching and practise of medicine all over Europe. The museum dates from 1928 and has long been housed in Boerhave's former laboratory.

Since early 1992 it is in a restored building that at one time was a hospital in which Boerhave practised. The exhibits are arranged so that one can walk through more than twenty different spaces and traverse five centuries of progress in Dutch science and medicine. Four paintings from the early 17th century depict the physician through the eyes of the patient; as God when the patient is very ill, as an angel when the patient is recovering, as a normal human being when the patient is fully recovered and finally as a devil when the patient is presented with the bill. Some of the other exhibits:

- three of Antoni van Leeuwenhoek's original microscopes (only 10 of the almost 400 microscopes made by van Leeuwenhoek are left).
- the oldest preserved pendulum clock (1657), invented by Christiaan Huygens and made by Salomon Coster.
- a compound microscope made by Gerrit Cramer (about 1750)
- a hydrostatic balance by Jan van Musschenbroek (about 1730), also called "Gravensande's bucket", used to demonstrate Archimedes' principle.
- barometers and thermometers made by Daniel Gabriel Fahrenheit (1686-1736), a friend of Boerhave who introduced the latter to the use of his thermometers with patients.
- a collection of pharmacy jars of Delft's blue
- sets of weights
- vacuum pumps, a large static electricity generator (made by Cuthbertson and used to break water down into hydrogen and oxygen in support of Lavoisier's theory of combustion) and Leiden jars (invented by Petrus van Musschenbroek for the storage of static electricity), the original helium liquefaction apparatus of Kamerlingh Onnes (1908) etc.

Let me finish this talk with two prints both from the 18th century and both of which I saw in the Deutsches Museum. The first one shows Charles and his assistant filling one of his large balloons with hydrogen which is generated by reacting zinc with hydrochloric acid. The other one is called "the electric kiss" and shows the popularity of games played with an electrostatic generator. The poor guy in this copper etching is about to receive the shock of his life from his charged-up girl friend.

## College Chemistry Canada – Members in good standing as of November 1st, 1993

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Rani	Iyengar	Dawson College	Eva	Szende	Langara College
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Arthur	Last	University College of the Fraser	Harry	Wilson	John Abbott College
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Cathy	Linowski	Medicine Hat College	Martha Ann	Woodworth	Eastern College of Applied Arts/Tech
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## College Chemistry Canada – Memberships outstanding as of November 1st, 1993

Don	Cameron	Northern Lights College	Ed	Hong	Malaspina College
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John	Crow	C.N.C.	Dundappa	Kerur	Lambton College
Ken	Cummings	Mount Royal College	Peter	Knoess	Okanagan University College
Dr. R.	Currie	N.A.I.T.	Earl	Levi	Seneca College
Terry	Davison	Sheridan College	Tom	Marshall	Okanagan University College
Ron	Dimenna	St. Clair College	Rex	Martin	Algonquin College
Evelina	Dortok	Durham College	Ian	McMaster	Marine Institute
Don	Douglas	St. Lawrence College	Paula	Michalik	Univ. College of C.B.
David	Fisher	Stevenson Secondary School	Mervyn	Mitchell	North Island College
Z.	Haider	Labrador Community College	Bernie	Moir	Capilano College
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Laura	Halfyard	Marine Institute	Craig	Montgomery	Trinity Western University
Melodie	Hewer	Durham College			

## College Chemistry Canada – Memberships outstanding as of November 1st, 1993 (cont.)

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Ken	Taylor		Christian	Gallet	CEGEP Rimouski
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Patrick	Chan	Centennial College	Larry	Husbands	Vanier College
Pierre	de Champlain	Algonquin College	Aleksandra	Hutt	E.C.S. School Inc.
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Hilary	Dzikowski	Centennial College	Jane	Jordan	Queen of Angels Academy
Dr. G.	Erskine	John Abbott College	Bernice	Kalisky	Trafalgar School for Girls
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Joanne	McCalla	Champlain Regional College	Brenda	Louie	Columbia College
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Harold	Brender	Dawson College	Paul	Rhodes	Beaconsfield High School
Fran	Brooke	Centennial Regional High	Eva	Rosenfield	Vanier College
Graham	Bruce	Okanagan University College	Danielle	Rousseau	CEGEP de Maisonneuve
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Thuy	Bui	Vanier College	Roger	Sandwick	State University of NY
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Richard	Chalifoux	Vanier College	Lei	Teng	Vanier College
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Huong	Doan	Vanier College	Malcolm	Zander	Algonquin College
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Gerard	Dube	La Cite Collegiale	Isaac	Zia	Champlain Regional College
Fernando	Dufour	CEGEP Ahuntsic	Pierre	Zubrzycki	Champlain Regional College

## A Rhode Island Diary

by Bob Browne

The twentieth annual C3 conference was held jointly with our sister organization to the south, 2YC3, at the Community College of Rhode Island (CCRI). It will go into the books as the first conference to be held outside Canada, but that may not be its only history-making feature. At the urging of my colleagues, I kept a diary of events. What follows is a summary of the highlights.

### June 2, 8:15 pm

This was not to be an ordinary conference. My first premonition came as I stood in an empty departure lounge in Hartford waiting for my connecting flight to Providence. Noticing smoke curling out from behind a pillar, I went to investigate and found a stewardess puffing on a cigarette.

"We aren't supposed to smoke in front of passengers. You won't tell anyone will you?" she pleaded.

I don't know who she thought I'd tell, the place looked like someone had called a fire drill and neglected to tell me. She butted her cigarette, and I followed her out onto the tarmac to the waiting twin engine turboprop.

"I guess I don't need anything like a boarding pass," I asked, feeling somewhat foolish.

"Naw, you can sit anywhere you want," came the reply.

She wasn't kidding. As I peered into the dimly lit aircraft I realized I was the only passenger on the flight. I took a window seat and looked out just in time to see the baggage train snaking across the runway carrying one lonely bag, fortunately mine. A muffled crunch confirmed that the three baggage handlers had managed to put the bag into the luggage bay, and the port engine whined into life.

Staring distractedly past me down the aisle, the stewardess started the safety demo, "...and for those passengers sitting in row eight we request that you read the emergency exit card in your seat pocket...". I was nowhere near row eight, but I suppose the D.O.T. doesn't encourage ad libbing. I had a brief flash-back to a graduate course I and two other poor souls took, where week after week the professor droned his lectures over our heads to some imaginary audience filling the lecture theatre behind us.

The plane taxied out onto the runway and immediately took off, rising so sharply that I was pinned against the back of my seat. At about 1500 feet the aircraft suddenly banked 90° to the right, as if pursuing some enemy aircraft just above the horizon. Come to think of it, that might explain the machine gun noises coming from the flight deck. I consumed as many "complimentary Buds" as the stewardess would give me, and gave a quiet thanks as the wheels hit the runway in Providence.

### June 3, 10:30 am

A few Board members and I decided that it would be a good idea to go to the Knight campus of the College of Rhode Island and check out the facilities before our Board meeting, scheduled for 2:00 pm that afternoon. We were a little surprised to find no signs, nor indeed any evidence that a major international chemistry conference was being held at the campus. Our only clue was a small table in the foyer with a 2YC3 banner on it, and a note taped to the top. "If you are reading this, you are early. Come to room 3052" were the instructions. The room turned out to be the chemistry/biology area and we soon found Tom Whitfield, the conference coordinator, who greeted us and conducted us on a quick tour of the labs. The labs at the Knight campus are all completely open to a central corridor and secured by those barred gates you find in shopping malls which drop from the ceiling. Then the bomb dropped. "Oh by the way," Tom said casually, "the conference has been moved to the Providence campus, about six miles up the interstate". My god, I thought, where was our Board meeting to be held? How were we going to inform the delegates? Where was the reception/social hour going to be held? I felt sick.

### 12:00 pm

I booked a meeting room in the hotel for our Board meeting at 2:00, and then we set about to inform the thirty or so C3 members who had preregistered, about the change in conference location. Did you ever wonder what ponderous undertakings and weighty decisions your directors routinely toss off in the course of a conference? Well picture this: your executive and half the board of directors sitting around a table in the lobby, hand writing notices to each of the Canadian delegates. "Welcome C3 delegates. there have been changes in the Conference Plans. Get

the latest at the Reception tonight at the Johnson and Wales Airport Hotel". We then walked to all of the hotels in the area trying to deliver them. We managed to find about half of our members who had pre-registered. What about the others? I was starting to get a headache.

### 6:00 pm

How did people find the location of the Reception? Geoff Raynor-Canham reported going to the wrong campus where he and his wife "found a little table in the middle of nowhere with a note taped to it saying 'Registration Tomorrow at the Providence Campus'". I was afraid to ask him how he found the reception.

### 8:00 pm

Following the reception, a few of us decided to set out in search of the actual city of Providence. We were surprised at how cosmopolitan the downtown area appeared, although the spaghetti roads and impatient locals made the driving a bit of an adventure. We ate at a very nice seafood restaurant called Hemenway's, and after a few oysters, some boston blue scrod done cajun style and some wine, I was feeling a bit better about the day. Finding our way back onto the freeway and home provided another example of how spontaneous processes are not reversible, but we eventually found the hotel and walked into the bar where they had the Stanley Cup on TV. We arrived just in time to see the fateful stick measure called by Jacques Demers of the Montreal Canadiens and the subsequent victory in 52 seconds of overtime. I went to bed knowing that all at least in the outside world everything was unfolding as it should.

### June 4, 8:00 am

I was not ready for the Providence campus of CCRI. A two-storey brick fortress was visible through a 12 foot high chain link fence complete with padlocked gates. This was a real inner-city campus. We were told that we were lucky to be there at all...the previous day a house had collapsed onto the street leading to the campus and they had just completed the cleanup. And finally, the elusive registration desk, with nobody behind it. Anne Marie Kubanek stepped in and did the registration for the Canadian delegates, but I never did find out when the Americans were able to register. I wanted to attend the Advisory Board Meeting of the COCTYC

since it was open to anyone interested. Someone had neglected to book a room, and President David Klein presided over the shortest meeting in their history, in the hallway.

#### 9:00 am

After the chaos of the last day and a half, I must admit to being a little apprehensive about the presentations. However, the morning session started on time with the usual welcome speeches. The principal of the Providence Campus assured us that although this was indeed a rough neighbourhood, he had come from a school where they wore their guns to school. The session continued with some interesting talks about a technology course given by CCRI on site at a local industry.

#### 5:00 pm

AGM time. This is usually the time that members find they have something really pressing to do. The fact that we scheduled it on the first day of the conference helped, and we had an unusually good turnout. The business part of the meeting went smoothly; reports were given, the auditor approved, and we arrived at the elections. Phyllis Lake and Bob Perkins agreed to serve another term as treasurer and secretary respectively and were elected by acclamation. I was pleased. Phyllis and Bob have done a great job in the past two years, and made my work a lot easier. We spent the greater part of the meeting deciding how C3 was going to pay for the dinner on Saturday night. Just as I was about to adjourn the meeting, I realized, to my horror, that I had forgotten one agenda item, the election of the President Elect. I called for nominations...no response. Two nominations were declined. Silence. Our constitutional expert, Gary Wilson, suggested that there were very few options open to us. Then I saw Geoff Rayner-Canham talking to Sudhir Abhyankar, and Sudhir was not shaking his head. I had a feeling our troubles were over. Sudhir subsequently accepted the nomination. Whew! Meeting adjourned.

#### 12:00 pm

There was an area set aside for exhibitors at the conference. I heard that there were about 15 exhibitors expected. For one reason or another, only three showed up. One of these was Steve Lower who writes the Chem One tutorial computer software. He had been corresponding with the Exhibits Coordinator

for about nine months to make sure that the equipment he needed to show his software was provided. Yes, he was assured, everything would be in place. Well, it turned out that all he had was his Powerbook portable computer. He even had to go to a hardware store to get an extension cord. Needless to say, he was steaming. As we were talking, I noticed that people behind us were moving tables in the area, and before long the exhibitors' tables started disappearing. The college was preparing for the grad dinner to be held that night. Someone distracted Steve, and I tiptoed away.

#### 6:30 pm

In the registration package, the conference banquet was advertised as a "Shore Dinner/Clam Bake". I've always wondered how they organize a clam bake. Do they actually bake clams? I was looking forward to the event. My curiosity will have to remain unsatiated, because the event was changed to a buffet dinner with a surprise speaker. I must say that the food was good and the atmosphere warm and there was a good turnout. Sitting at our table was the chair of the Chemistry department at CCRI, and the faculty member who had presented a paper in the morning session. He had gone to a local industry (Millipore-Waters, makers of chromatography columns) and taught a ten hour-per-week chemical technology course on-site for their employees. When discovered that he had taught this as an overload to his regular teaching duties, I joked to his boss that instructors at CCRI must either be highly motivated, or highly under-paid. He didn't laugh. In fact, he told me that many faculty teach up to five sections (at \$2000 per section) as an overload. Apparently seven full-time faculty members in his department qualified for food stamps last year. I made a mental note to hang onto my job. Tom Whitfield rose to make an announcement that the surprise speaker was, in fact, no speaker. The biggest laugh of the evening followed Bob Perkins raising his hand and asking Tom where the conference would be held the following day.

#### 1:00 pm

The talks on the use of computers in general chemistry were scratched for lack of equipment. Bob Perkins gave his usual enthusiastic and thought-provoking talk on "how I do it". The day ended with a surreal presentation on microscale chemistry which provided

a fitting end to a rather bizarre conference. With Bob Perkins acting as his helper, LeRoy Pazdernik had equipment flying through the audience, huge vet syringes, soxalot extractors, etc all the while explaining it with overheads captioned in french. A fitting end to the conference.

#### 7:00 pm

The Canadian delegates met at the Monterey Restaurant for a lobster dinner on the final night of the conference. One last chance to talk to people until next year, and a way for the executive to show appreciation for the members who made the trip to Rhode Island.

#### Postscript

How do you summarize a conference like this one. Well, there is no denying that every day was an adventure, and I've been to some very well organized, and very boring, conferences. In spite of everything else, the sessions were all well-presented and well worth attending, and they confirmed for me that there is no replacement for hearing people present their ideas in person. Among the many presentations, I especially remember Harry Wilson describing his unique approach to teaching at John Abbott College. Papers like his, presented with such enthusiasm and commitment, really make you question your own approach to teaching chemistry.

Regular conference goers will agree with me that many of the real benefits are obtained outside of the formal sessions and functions. There is simply no replacement for talking far into the night, arguing about principles, and debating issues with like-minded professionals. And Shahid Jalil, who has attended every C3 conference since the beginning, provides the perfect venue for these sessions by turning his room into a hospitality suite every year.

But now for the real reason I'm glad I was in Rhode Island. A number of years ago, Sir Wilfred Grenfell College in Cornerbrook Newfoundland hosted the C3 conference, and for some reason I didn't go. It was so successful that people have been talking about it ever since, and quite frankly, I'm tired of hearing about it. I'm betting that the Rhode Island Conference will replace it as the one to remember, only this time, I was there.

## C<sub>3</sub> Student Scholarship

### Objective:

The C<sub>3</sub> Student Scholarship is designed to help a student pursue studies at a Canadian College in science, and to raise the profile of College Chemistry Canada. To reflect the diversity of programmes and objectives of colleges in Canada, the criteria for awarding this will be left to the college which hosts the annual C<sub>3</sub> conference (when the conference is located in Canada). For example, the scholarship could be awarded to a high school student entering a college, or to a first year student going into second year. It

could be given for the most creative entry in a science fair, or to the student showing the most improvement during first year. It is hoped that the awarding of the scholarship will be publicized.

### Selection of Candidates:

- (a) The selection of the recipient of the scholarship will be made by the college which is hosting the annual C<sub>3</sub> conference in those years when conference is held in Canada.
- (b) The host college will set the criteria for deciding a winner. The winner should, however, be:

- (i) a Canadian citizen or landed immigrant, and
- (ii) intending to pursue science studies (including chemistry) at the host college in the year following the presentation of the award.
- (c) The scholarship will be presented to the winner during the annual conference.
- (d) The host college will inform the secretary of C<sub>3</sub> of the name of the successful candidate by May 1.
- (e) The winner of the scholarship will be given \$400 and a certificate.

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