C3News

Spring 1991
Vol. 16, No. 2

Newsletter of College Chemistry Canada / La Chimie Collégiale au Canada

In the *News*

A couple of things which crossed my desk in the past month point out a strange paradox which we face in chemical education in the colleges.

David Cash sent me the proceedings from the Ontario Colleges Applied Science Programs Conference held last June. I understand that in some Ontario colleges the chemical technology programs have been cancelled and many others are struggling for survival. At about the same time, Natasha Hollbach sent me the draft report of the Committee on the Supply and Demand of Chemical Professionals in Canada. The report warns that unless changes are made, the country appears certain to run short of the chemical professionals it needs to survive the economic conditions of the twenty-first century. Earlier this year I asked the president of our college why, in the light of this predicted shortfall, we are currently offering the same number of classes of chemistry and physics we gave in 1982, in spite of the increased demand (and the fact that the college has doubled in size since that time). The response? It costs half as much to open a section in psychology as it does in a lab science, and we receive funding based on the number of students we have.

Natasha's committee is right, something is going to have to change or we will find ourselves once again trying to import the skilled chemical professionals we need. Under the present structure, the colleges seem unable to change to meet the demand.

Bob Browne, Editor

1991 Conference Host: Champlain Regional College

The 1991 College Chemistry Canada Conference will be hosted by the St. Lawrence Campus of Champlain Regional College.

Champlain Regional College, the fourth English language public college in the Province of Quebec, was established on April 7, 1971. With its head office located in Sherbrooke, the College operates facilities on three different sites. The Lennoxville Campus was opened in September 1971 and is located in Lennoxville on an attractive site which it shares with Bishop's University. The St.Lambert-Longueuil and the St. Lawrence Campuses were opened the following year.

Saint Lawrence College was founded as a private boys' school in Ste-Foy in 1958 by Maurice Cardinal Roy. As a classical college affiliated with Laval University, Saint Lawrence College offered an eight year program, high school and college, leading to a Bachelor of Arts degree. After the Parent Report and the emergence of the present collegial system, the high school and B.A. programs were phased out, and Saint Lawrence, now a CEGEP, was affiliated with College Ste-Foy. Later it joined Vanier College of Montreal, and finally, on July 1, 1972, it became the Saint Lawrence Campus of Champlain Regional College.

In keeping with its objectives of offering its students the best possible English college education, the Saint Lawrence Campus now offers two-year general college programs in pure and applied science and in the humanities. A three year program is offered in business administration. The campus currently serves a student population of about 700 students and has a faculty of 63.

In this issue...

Teaching Tips

By Bob Perkins
Kwantlen College

Quite often we have the situation in our introductory classes where a fair amount of confusion arises in the minds of some of the students concerning the relationships between thermodynamics and kinetics. I have used the decomposition of hydrogen peroxide to try and relieve some of this confusion.

$$H_2O_2 \rightarrow H_2O + 1/2\ O_2$$

For this reaction one can have the students calculate the change in enthalpy, free energy, entropy as well as the equilibrium constant for the process. The calculations show that the process should be spontaneous at room temperature (large negative change in free energy), as well as being exothermic (large negative change in enthalpy), and exoworkic (positive change in entropy), and favouring the products (large value of K).

I then take 2 or 3 mL of hydrogen peroxide solution (30 or 60%) and place it along with 2 or 3 mL of soap solution in the bottoms of three 250 mL graduated cylinders (A, B, and C). Holding up cylinder A, I ask the class why we do not see any evolution of oxygen gas if the decomposition is spontaneous at room temperature (at least according to the free energy calculations). We now can discuss the term stability in terms of thermodynamic as well as kinetic considerations. If there is a barrier to reaction, then only those molecules with sufficient energy to surpass the barrier will undergo the chemical change to liquid water and oxygen gas.

To cylinder A I now place a couple of crystals of potassium iodide. The evolution of oxygen gas commences immediately, as seen by the slow rise in the column of soap bubbles in the graduated cylinder. The base of the cylinder feels slightly warm, evidence for the exothermic nature of the reaction. I then place a small amount of manganese(IV) oxide to cylinder C, and the class is amazed at the speed at which the column of soap bubbles rises up the graduated cylinder. The cylinder also feels very warm to the touch.

Class discussion can now take place on the nature and use of catalysts to change the rate at which chemical reactions take place. By providing a different pathway for the hydrogen peroxide molecules to undergo reaction, rapid decomposition may take place at room temperature in the presence of manganese(IV) oxide, and moderate decomposition in the presence of potassium iodide. Without any catalyst, the rate of the reaction at room temperature is extremely slow. The change enthalpy for the reaction is the same in all three cylinders; thermodynamics is concerned with the change in state functions and as such is path independent. It does not however, have anything to say with how fast the **spontaneous process** takes place. Only a consideration of the kinetics of the reaction will give one that information. The faster the reaction, the faster the energy will be released, but the total energy released will not change from cylinder A to B to C.

At the end of the session, the students have a much clearer understanding of the relationship between thermodynamics and kinetics, as well as the differences between thermodynamic and kinetic stability.

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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 floppy disk, IBM format, using WordPerfect, WordStar, Microsoft Word, or any wordprocessor producing ASCII output.

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CSCT Awards

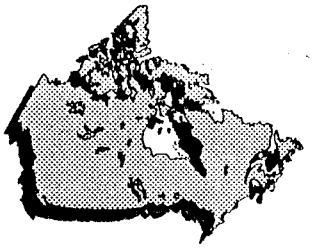
Each year the Canadian Society for Chemical Technology presents two awards to recognize contributions made in the area of Chemical Technology.

1.The Norman and Marion Bright Memorial Award for Chemical Technology is awarded to an individual who has made an outstanding contribution in Canada to the furtherance of chemical technology. The person so honoured may be either a chemical sciences technologist or a person from outside the field who has made a significant and noteworthy contribution to the advancement of chemical technology.

2.The Nova Corporation of Alberta Award for Chemistry Teaching in Community and Technical Colleges. This award is offered each year to an outstanding teacher in the area of chemistry, biochemistry, chemical engineering technology from the staff of any Community College, Technical Institute, or CEGEP in Canada.

Each award includes an honorarium and a commemorative scroll. The deadline for nominations to be received is April 1 of the preceding year. Nominations are valid for three years. Nomination forms and details are available from:

Ms. T. Fearon, Awards Manager
The Chemical Institute of Canada
Suite 550, 130 Slater Street
Ottawa, Ontario
K1P 6E2



News From the Regions

Ontario Colleges Meet

By David Cash
Mohawk College

The Ontario Colleges Applied Science Programs Conference took place June 4 and 5, 1990 at Centennial College in Scarborough, Ontario. The meeting was organized by an ad hoc group from six colleges, and was centred on the theme *Cooperation and Survival.* In attendance were 49 faculty, support staff and administrators, from 12 colleges.

The first day of the conference featured a luncheon speech by Tom Norton, Executive Director, Association of Canadian Community Colleges. This was followed by a panel discussion on the topic "How Will Programs in Applied Science Survive into the Twenty-First Century?" Two sets of concurrent workshops were presented on the second day, on the topics of Funding/Government, Better Recruitment, Linking with Industry, New Program Development, and Retention Strategies. The conference concluded with a general session to consider workshop reports and planning.

At the conclusion of the workshops and the wrap-up session, the participants agreed to support the creation of a steering committee, filled by volunteers among those present. This committee will meet periodically, plan future meetings, undertake to initiate activities suggested in the workshops, and will communicate its actions to as wide an audience as possible.

A copy of the conference proceedings, including a synopsis of workshop discussions can be obtained by writing to David Cash, Mohawk College, P.O. Box 2034, Hamilton Ontario.

From C to C

The Quebec Ministry of Education refers to this as the "Winter Semester" (Hiver - 91), but it is more commonly referred to in these parts as the "Spring Semester". And plans are well under way for the conference in Quebec City, in the spring. Mid-June temperatures average 22 during the day and 13 in the evenings, and this time of year marks the beginning of a summer of celebrations.

I was speaking to Pierre Zubrzycki, conference coordinator, last week. While I told him that it seems to be a tradition for C_3 members to register for the conference only at the last possible moment, he asked that I exhort members to break with tradition, to let him know if you're coming, and not wait for spring. It seems that there are a lot of Quebec City delights that he would like to tempt us with, but he can't tempt us without a good idea of our numbers. So think of spring, think of the beginning of summer, think of coming to a city of old world charm and hospitality. It is truly like no other city in North America. Think of coming to a great conference, and fill out your registration form now!.

See you in Quebec!

Gary Wilson
President, C_3.

New Appointments Announced

By Cynthia Mutch
Regional Director
Mount Royal College

Mount Royal College

Roger Saint Fort has been appointed as a full-time instructor in Chemistry. Roger hails from Montreal. We wish him well in his new post.

Medicine Hat College

Brad Pavelich has been appointed to the Environmental Council of Alberta and is a member of the Pollution Sub-committee. This committee is responsible for bringing public concerns on pollution to the attention of the provincial government. He spent part of the summer working with Dr. A.S. Hinman of the University of Calgary developing an anion assay for porphyrins.

Brian Lloyd has been appointed to a Citizens Environmental Protection Committee with the mandate to ensure protection of the environment in the implementation of "Operation Swiftsure", the destruction of toxic nerve agents at Suffield, Alberta. He has also spent part of the summer doing research with Dr. Peter Lockwood of the Defence Research Establishment, Suffield.

Preliminary Program – C_3 18th annual Conference

"Chemistry and the Environmental Challenge"

To date we have speakers that will present papers or participate in workshops that will deal with the environment and the law, the environment and nutrition, the handling of toxic wastes, the teaching of environmental chemistry to non-science students, and efforts in "trace element speciation" and its application to environmental studies.

SECOND ANNOUNCEMENT AND CALL FOR PAPERS FOR THE C_3 CONFERENCE.

"CHEMISTRY AND ENVIRONMENTAL CHALLENGE" is the theme of the 18th College Chemistry Canada (C_3) Conference, to be held June 13-15,1991,at the St. Lawrence Campus of Champlain Regional College in historic Québec City.
Papers or workshops for presentation at the conference are welcome. They should deal with some aspect of the relationship between chemistry and the environment. Possible topics could include the environment and the college curriculum, the environment and risk: perception and analysis, the environment and the law, wastewater treatment, toxic waste disposal etc...Presentations may be made either in English or French. Poster presentations are also welcome.

Please send an outline or abstract of the proposed paper or workshop by April 15, 1991 to :

Pierre Zubrzycki
Chemistry Department
St. Lawrence Campus
Champlain Regional College
790 Nerée tremblay
Ste-Foy, Québec
G1V 4K2
Fax (418) 656-6925

To be placed on the mailing list for further information and/or to receive application forms, please write to Constance Crossland at the same address.

Regn. $40
Banquet $50-

Preliminary Program - 18th annual C_3 Conference

Chemistry and the Environmental Challenge

Provisional Program Structure

	Morning		Afternoon		Evening
June 12			Executive and Board business meetings		Registration, Wine and Cheese reception
June 13	Papers Workshops		Papers Workshops		Banquet
June 14	Fun Run	Papers Workshops	Papers Workshops	Panel General Meeting	Social Events
June 15	Day Trips & Group Outings				

ACCOMMODATIONS

Advance reservations are strongly recommended. Our Conference is held during the high season and in order to avoid difficulties, make your reservations as early as possible.

Laval University
We have a number of rooms made available to C3 members at Laval University . These rooms are available from June 12 through to June 15 .
Rates: single occupancy, with breakfast, is **30$** . Beds are made every morning and sheets changed every other day. Each room has a wash basin; washrooms are shared. It's only a few minutes walk from the St. Lawrence Campus. You are also only about 20 minutes (by bus) away from old Québec.
Send reservations to: M. Michel L'Ecuyer
Superviseur du logement d'été
Pavillon A.- M Parent
Cité Universitaire
Québec, Canada
G1K 7P4
Tel: (418) 656-2921, Fax: (418) 656-2801. Visa and MasterCard accepted.

Motel Universel
Comfortable motel, only 2 minutes walking distance away from our campus.
At the present time there are only 10 rooms left for June 12 & 13 .
Rates: single 65$ + tax; double 75$ + tax
Tel: (418) 653-5250; Toll Free No: 1-800-463-4495

Hotel des Gouverneurs
Only a few kilometers away from St. Lawrence. Conveniently placed for those driving to Québec.
Rates: single or double occupancy 92$ + tax
Tel: (418) 647-1717; Toll Free No: 1-800-463-2820

Hotel Loews Le Concorde
Situated close to the walls of the Old Town and the Plains of Abraham, on the Grande Allée, where restaurants, bars and sidewalk cafés abound... A spectacular view of Québec can be appreciated from its rotating rooftop restaurant. Approximately 30 minutes by bus, taxi, ... from St. Lawrence.
Rates: single occupancy 115$ - 165$ + tax ; double occupancy 125$ - 185$ + tax
Tel: (418) 647-2222; Toll Free No: 1-800-463-5256

Le Chateau Frontenac
A spectacular and beautiful hotel overlooking the St. Lawrence River. The C3 banquet will be held here. Situated within the walls of Old Québec, surrounded by sidewalk cafés and friendly boutiques, it's about 30 minutes (by bus or taxi) from the conference.
Rates: double occupancy 170$ - 215$ + tax (At the present time there are about 25 rooms still available.)
Tel: (418) 692-3861; Toll Free No: (Ont. and Que.)1-800-268-9420; other Provinces: 1-800-268-9275

Hilton International Québec
Situated in the heart of Québec City.
Tel: (418) 647-2411; Toll Free No: 1-800-268-9275

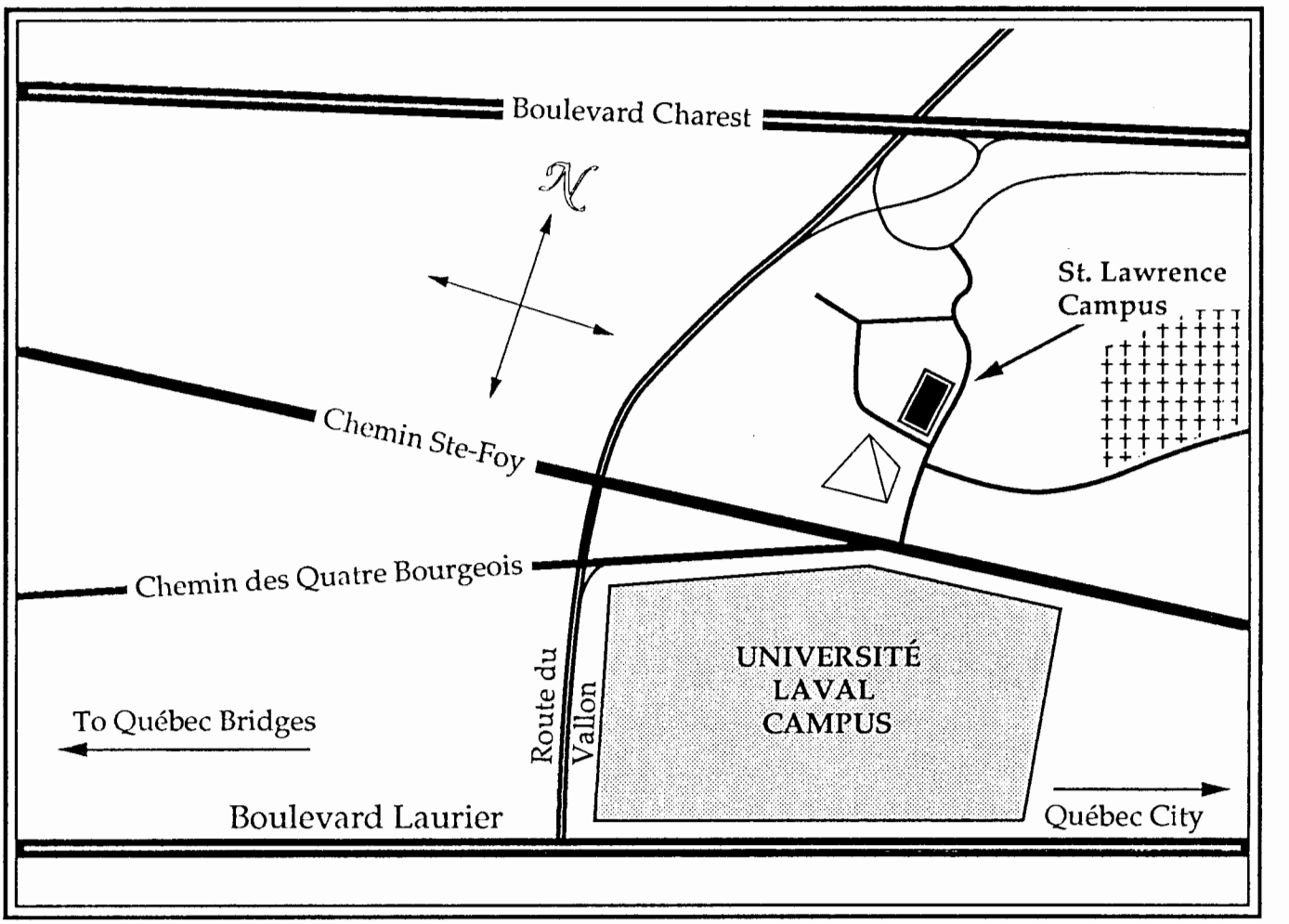
Holiday Inn
Tel: (418) 647-2611; Toll Free No: 1-800-465-4329

Chateau Bonne Entente
Only minutes away by car, in a quiet, beautiful, country-like setting. Great dining.
Tel: (418) 653-5221; Toll Free No: 1-800-463-4390

Québec Tourist Bureau
Tel: (418) 692-2471

C_3 – 91 Conference Site

St. Lawrence Campus
790 Nérée-Tremblay
Ste-Foy, Québec



June 13 and 14

CONFERENCE ACTIVITIES

We would like to have a sense of your interest in participating in any of the following events. Please complete and return this with your inscription. This will not commit you in any way; it only helps us to plan activities.

The annual C_3 Conference "Fun Run". On the morning after the banquet, a walk or run on the Plains of Abraham which overlook the St. Lawrence River could be refreshing.

I plan to be there (run, walk, other...)..... ☐

Dining on the town. For Friday evening (June 14) groups will be arranged for those wanting to take advantage of the fine restaurants that Quebec has to offer. If you would like to participate in an evening of an epicurean nature don't miss this occasion. Most restaurants, sidewalk cafés, bars, etc., don't close until 3:00 A.M.
Sign-up sheets will be available at the conference.

I plan to attend..... ☐

Saturday Activities (June 15) Here are some activities that you may want to consider. If there is interest, informal arrangements can be made for groups or for individuals.

Walking tour of Old Québec..... ☐

Tour de l'Île d'Orléans (Island of Orleans) by bus..... ☐

Visit of the Musée de Civilisation..... ☐

Boat tour of the Island of Orleans. A relaxing way to spend a few hours..... ☐

Day trip to Tadoussac. Visit picturesque Charlesvoix, where the Laurentians along the St. Lawrence inspire the many artists that go there to paint..... ☐

Beluga whale watching on the St. Lawrence..... ☐

Other (suggestions are welcome) ----------

Name:----------

Organization: ----------

N.B. The free services of a tourist information agent will be available at the conference to help individuals and small groups to plan any outings and sightseeing needs.

College Chemistry Canada – 18th Annual Conference
June 13 – June 14

"Chemistry and the Environmental Challenge"

Name.....
(Last) (First)

Institution.....

Address..... City.....

Province/State..... Postal/Zip code.....

Telephone: ( ) .....

1991 Membership

C_3..... 2YC3..... H.S. Teacher.....

ACS..... C.I.C..... Other.....

Fees	**Amount**
Registration fees (complete conference), for members are 40$ and 60$ for non-members. Non-members automatically become members upon payment of complete conference registration fees. Registration for complete conference (evening June 12 to June 14)	_____
Registration for one day (30$ for non-members; 10$ for students)	_____
Annual Banquet ; 50$ – Thursday evening at the Chateau Frontenac	_____
Total Fees	_____

NOTE: The receipt will indicate the Total Fees received. Also, an itemized statement will accompany the receipt. All fees include the GST and provincial sales taxes.

Please send the completed form with cheque payable to:

College Chemistry Canada – 91
St. Lawrence Campus
790 Nerée-Tremblay
Ste-Foy, QC, Canada
G1V 4K2

La Chimie Collegiale (Canada) – 18e Congrès Annuel 13 et 14 juin 1991

"La Chimie et Le Défi Environnemental"

Nom.....
(famille) (prénom)

Institution.....

Addresse..... Ville.....

Province/État..... Code Postal .....

Téléphone: ( ) .....

Affiliation 1991

C_3..... 2YC3..... Enseignant au sécondaire .....

ACS..... C.I.C..... Autre.....

Frais **Montant**

Les frais d'inscription sont de 40$ pour les membres et de 60$ pour les non-membres. Les non-membres deviennent automatiquement membres en payant leurs frais d'inscription pour la conférence au complèt.
Inscription pour la conférence au complèt (soir 12 au 14 juin) _____

Inscription d'un jour (30$ pour non-membres; 10$ pour étudiants) _____

Banquet annuel ; 50$ – jeudi soir au Chateau Frontenac _____

Montant Total des Frais _____

NOTE: Un reçu sera émis pour le montant total des frais. Un compte rendu detaillé accompagnera le reçu. La TPS et autres taxes sont inclus dans les frais.

Veuillez completer et envoyer ce formulaire accompagné d'un cheque payable à

La Chimie Collégiale (Canada) – 91
St. Lawrence Campus
790 Nerée-Tremblay
Ste-Foy, QC, Canada
G1V 4K2

Hot From The Presses!

By Bob Perkins
Kwantlen College

Solid C_{60} has been a recent topic of detailed investigation. The compound, which has been given the trivial name of buckminsterfullerene (buckeyball), can easily be prepared by simply evaporating graphite into a helium atmosphere at a pressure of 100 torr. The molecule shows great promise for a variety of applications: lubricating agent, container for radioisotopes, drug delivery agent. Nature p354-357 (September 27, 1990), Science p1340 (December 7 1990), Science p1641 (December 21, 1990), and The Sciences p22-28 (March/April, 1991).

Selective oxidation of organic carbon using low-temperature low-pressure oxygen plasma has recently been used to radioactively date prehistoric rock paintings. Nature p710-711 (December 20 1990).

Tired of using dull old colour changes to determine the end point of a titration? Try out that wonderful biochemical spectrometer the nose! Olfactory indicators are described: J. Chem. Ed. p795-796 (September 1990).

While we're on the topic of indicators, you can also use your other spectrometer (the Spec-20) to determine the distribution coefficient for methyl red (in both acid and base solution) in several organic solvents. Journal of College Science Teaching p121-123 (November 1990).

The Spec-20 can also be used to determine the concentration of vanillin in vanilla extract. J. Chem. Ed. p1070-1071 (December 1990).

If your thoughts of organic chemistry turn to poetry, you may enjoy the limmericks presented to keep track of the multitude of name reactions. J. Chem. Ed. p1009-1010 (December 1990).

The smallest map of the Western Hemisphere has recently been prepared using a scanning tunneling microscope. Science News p310-311 (November 17, 1990).

Hazardous silver compounds could be lurking in your test tubes! J. Chem. Ed. pA6-A8 (January 1991).

Carbene addition to alkenes has recently been performed by the use of fabric softeners acting as phase transfer catalysts. J. Chem. Ed. p69-70 (January 1991).

Worried about falling behind in the race to put out publications? Don't be, as a recent paper suggests that 80% of all papers published in the hard sciences between 1981 to 1985 have never been cited more than once, and 55% of the papers have never been cited. The suggestion is that the majority of scientific papers make neglible contributions to knowledge. Science p1331-1332 (December 7, 1991).

College Commentary

On Teaching People To Ski

By Gary Wilson
John Abbott College

The Canadian Ski Instructors' Alliance certifies individuals to teach others to ski. There are four levels of certification. Most of the ski school at your favourite mountain have been certified at level I. Students will take more advanced lessons from a level II instructor. Levels III and IV instructors certify those at the lower levels. They coach ski teams, run ski schools and upgrade ski schools' teaching programs. Their skiing is a wonder to watch.

What does this have to do with Chemistry? Not much, unless you happen to teach it.

The C.S.I.A. publishes manuals for each of its levels. I wish to note, for your consideration, some of the instructional information presented to prospective ski instructors. This information is from "Ski Teaching, An Introduction, Level I Manual". An individual can take the level I course at sixteen, although classes may have a few old folk in them as well.

On the role of the instructor:

Until the instructor understands and masters the human concerns of his or her job, he or she is doomed to frustration and failure.

The teaching of skiing is much more than skiing, in fact it has less to do with skiing than many people think.

On a good lesson:

Learn your student's names and use them.

The students will expect to have *their* needs met, not necessarily yours.

It takes more patience to be a student than to be a teacher.

The most congenial instructor will have limited success if he doesn't know what he is doing.

If somebody isn't learning, somebody isn't teaching.

Every lesson can be a learning experience for both the teacher and the student.

On feedback to the student:

The effectiveness of the instructor's feedback depends basically on two things: what is said; how it is said.

Be understandable. Be specific. Be informative. Be positive. Be brief.

Dr. Richard Farson from the University of Southern California is quoted in the C.S.I.A. manual with a list of his "Ten Instructional Paradoxes":

1. People learn most when they are talking, not when they are listening.
2. More of certain types of learning can take place when one does not try to teach.
3. Some things are learnable but not teachable.
4. Everything we try works.
5. What is true for children is probably true for adults too.
6. We think we learn from our failures and other people's success, but it is the other way around.
7. We grow from calamities, not from virtues.
8. Don't try to improve people, try to improve a situation.
9. Students can learn more from each other than from the teacher.
10. We learn to ski in the summer and learn to swim in the winter.

I know that what I have quoted can be debated. The Editor of C3 News would gladly receive your comments. I have given you a smorgasbord of appetizers. What is the state of your digestive system?

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