



Ontario Association of Physics Teachers

NEWSLETTER

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Member-at-Large: This position remains unfilled. If you have
suggestions please contact any executive member.

Newsletter Editor: Sincere thanks are expressed to Alden McEachern for his devotion in editing and mailing the OAPT Newsletter in the recent past. We are looking for a volunteer to replace Alden. In the interim, I will act as temporary editor/mailer. Please let me know if you are interested in this role. (A. Hirsch)

Membership Dues: PLEASE look at the address label - the expiry date as of this mailing is shown in the lower right-hand corner. If the date is June 88 and you want to renew your membership for this year, please send \$5.00 to the address below. If the date is June 87, this is a final reminder in the hope you will join again. If the date is June 89 or later, please pass the membership application on to a colleague who may be interested in joining the OAPT.

Membership Application and/or Renewal

NAME _____

ADDRESS _____

Please send to: Prof. Ernie McFarland, Department of Physics,
(\$5.00/year) University of Guelph, Guelph, Ontario N1G 2W1

SECTION NEWS

Annual Meeting: The annual meeting of the OAPT was held on June 26 to 28, 1988, at the Scarborough Campus of the University of Toronto. Some of the highlights of the meeting were:

- a tour of the nuclear power plant at Darlington
- demonstrations of applications of computers in physics teaching
- a talk by Thomas Timusk of McMaster University on "High Temperature Superconductivity"
- a presentation by Ian Shelton and John Percy of the University of Toronto on "Supernova Shelton 1987A"

- the annual banquet with special guest speaker Geraldine Kenny-Wallace, currently Chairperson of the Science Council of Canada
- a lecture on "The Chemistry and Physics of Archaeology" by Ron Hancock, Director of the Slowpoke Nuclear Reactor, U. of T.
- several contributed talks and "my favorite demonstrations"
- poster sessions and displays by publishers and scientific supply companies
- barbeque lunches in a picturesque outdoor setting

All who attended agreed that the meeting was stimulating. A special thank you is extended to Stuart Quick, chairperson of the conference.

Michigan Meeting: Ontario Section members within driving distance of Sault Ste. Marie, Michigan, were invited to attend the fall meeting of the Michigan Section of AAPT at Lake Superior State College on Saturday, Oct. 8/88. The executive members of OAPT hope that this type of interaction can continue and perhaps grow.

Summer Meeting, June, 1989: Plans for the next annual meeting of the OAPT are well under way. Dean Gaily and Bill Konrad have promised a super conference. See the advertisement attached and watch for more information in subsequent issues of this newsletter.

PHYSICS AND CHEMISTRY OLYMPIADS

(Following is a condensed version of a report from Dr. John Wylie.)

In the summer of 1988 Canada sent 9 high school students overseas to take part in the International Physics and Chemistry Olympiads held in Austria and Finland, respectively. The week-long events included two days of theoretical and practical exams as well as social, sightseeing, and cultural activities. Thirty-one countries participated in the Olympiads and Canada was proud to win four bronze metals.

This year marked the fourth year that Canada has joined in the Physics Olympiad. Hundreds of students from across Canada competed to try to join the physics team. Winners were from B.C., Ontario, New Brunswick, and Saskatchewan.

Next year's Physics and Chemistry Olympiads will be held in Poland and East Germany, respectively. Students aiming to be part of either team must take part in training programs at a participating university in their province or at the Toronto French School. All programs will culminate with the writing of exams next May, and selected students will attend a one-week Olympiad training camp.

The rewards of these students' efforts are many. Besides the honor of representing Canada at an international event, the students may win scholarships and they gain by interacting with scientists and other top students.

The Canadian teams receive assistance from participating universities and Ministries of Education, and financial support from various companies. For further information, please contact:
 Dr. John Wylie, The Canadian Physics and Chemistry Olympiads, Toronto French School, 306 Lawrence Avenue East, Toronto, Ont. M4N 1T7 (phone 416-484-6533, extension 249)

CONFERENCE

PLAN **NOW** FOR THE ANNUAL
AAPT-ONTARIO CONFERENCE
TO BE HELD IN LONDON AT UWO
ON JUNE 25, 26 & 27, 1989.
(THAT'S SUN., MON. AND TUES.)

PLAN **A**HEAD

- CLASSROOM DEMOS BY TEACHERS
- FEATURED SPEAKERS
- COMPUTER SOFTWARE FOR PHYSICS
- WORKSHOP
- MEET TEACHERS FROM MICHIGAN,
OHIO AND NEW YORK.

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THE DEMONSTRATION CORNER

The Electrostatic Precipitator

by Roland Meisel,
Ridgeway-Crystal Beach High School
Ridgeway, Ontario

Introduction:

An electrostatic precipitator can be assembled in less than half an hour using parts commonly found around the science department in a high school. I have used it as a demonstration in classes ranging from grade 10 general science to grade 13 physics. In addition, it has spawned several senior science projects using it as an investigative tool.

The precipitator uses a strong electrical field to remove particles from air. I use it to "condense" cigarette smoke.

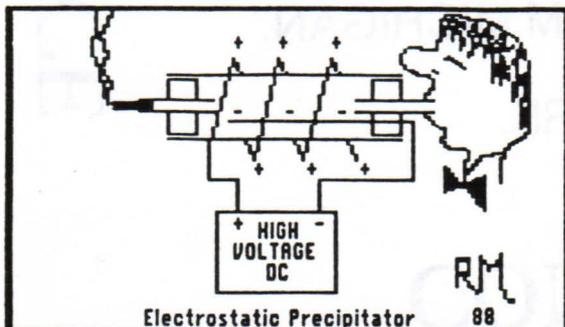
Construction:

I used a glass tube about 4 cm in diameter and about 30 cm long. If you can't find one, cut the bottom off a graduated cylinder of suitable size and use that.

Each end of the tube was fitted with a one-hole rubber stopper. I inserted a short glass tube into each stopper, and added a piece of rubber hose to one end sufficient to hold a cigarette. I also used a length of rubber hose on the "student" end to keep my "volunteer" a safe distance from the high voltage wires.

I used stiff single-conductor wire, about #16 gauge or thicker, to connect the high voltage. One wire went through the hole in one stopper, and stayed inside the glass tube. The other wire was wrapped around the outside of the tube. I used about ten turns. Note that the wires are NOT connected to each other. The inner wire ends inside the tube, while the outer wire ends outside the tube.

The power supply can be any DC, or quasi-DC, high voltage source. I use an old induction coil from CENCO. The higher the voltage, the stronger the effect. However, too high a voltage can cause arcing.



Operation:

I solicit both a cigarette and a volunteer from the class. The cigarette is lit, and the volunteer puffs until the glass tube is full of smoke. The high voltage is turned on, and the smoke "disappears". I usually leave the voltage on, and encourage the volunteer to puff away. The tube receives a noticeable deposit of brown tar on both the glass and the wire in the centre.

This usually generates some discussion, and provides an excellent opportunity to develop some of the curriculum emphases that are mandated in Part I of the new Science Guidelines. I usually work in a little chemistry as to some of the compounds to be found in cigarette smoke, and also a little biology as to the effects of smoke on those who breathe it in.

Notes:

Since you are working with a high voltage source, care must be taken to keep students (and yourself!) away from possible shocks.

When I first came upon this demonstration a number of years ago, I had no trouble finding a volunteer to smoke the cigarette for me. However, in the past couple of years, there have been several occasions on which no one in the class would admit to using tobacco. In order to complete the demonstration, I was forced to do it myself. A way around this is to use an inexpensive air pump, like the kind used to inflate air mattresses.

Column Editor: Ernie McFarland, Physics Dept., University of Guelph, Guelph, Ontario, N1G 2W1

Submissions describing demonstrations will be gladly received by the column editor.