



American Association of Physics Teachers

AAPT Ontario Section NEWSLETTER

Vol IV No 2 Jan 1983

Editor: George F. Kelly

AAPT-ONTARIO members on National Committees

Several members of AAPT Ontario have responsibilities in the national AAPT parent organization and at my request have taken the time to write of these activities. We commend them in their tasks and reaffirm our support of them and other National AAPT activities.

AAPT Apparatus Committee

Ernie McFarland

I've been on the AAPT Apparatus Committee since Jan. 1981, and have been chairman of it since Jan. 1982 (my term as committee member and chairman both will run out in Jan. 1984).

The major goals of this committee are to encourage the development of apparatus which will aid the teaching of physics and to expedite the dissemination of information about such apparatus.

To achieve these goals, three main methods are used:

(a) biennial apparatus competition-- this competition, held in conjunction with an AAPT summer or winter meeting, offers substantial cash prizes to teachers who develop new apparatus, or who use existing apparatus in a new way.

(b) events sponsored at meetings-- the committee sponsors talks, etc., at AAPT meetings; for example, at the 1983 winter meeting in New York, the committee is sponsoring a three-hour demonstration extravaganza in which John Johnson (a committee member) and Bob Neff, two high school teachers, will present a "zillion" demonstrations useful in teaching physics.

(c) publications-- the committee offers support to the editor of the sections "Apparatus Notes" in the American Journal of Physics, and has a long involvement with the sections "Apparatus for Teaching Physics" and "String and Sticky-tape Experiments" in "The Physics Teacher". As well, the committee encourages people to publish articles or books related to apparatus.

As Chairman of the Apparatus Committee, I am automatically a member of the Programs Committee, which assists the Vice-President (Program Chairman) in setting up programs for the AAPT winter and summer meetings.

AAPT ONTARIO PHYSICS TEACHERS SADDENED BY DEATH OF PROF. DONALD S. AINSLIE, Ph.D.

Physics education in Ontario lost one of its foremost supporters and entrepreneurs in the passing on December 14 of Dr. Donald S. AINSLIE in his 90th year. AAPT Ontario will feel the loss deeply as Prof. AINSLIE had been a regular contributor to its Conference sessions. His presentations were always well presented, well received and challenging. His thorough knowledge of the field of Physics, primarily electrostatics, was apparent to all who viewed his "home brew" apparatus that demonstrated electrostatic and other principles clearly and effectively. It is hoped to have a more descriptive resume of the work of Dr. Ainslie in a future newsletter.

AAPT Nominating Committee

Dean Gaily

Since June 1982 I have been serving on the nominating committee for national offices of AAPT. This important committee (5 members) has the responsibility of bringing forward to the general membership nominees for vacant positions in the AAPT Executive.

In New York at the Winter meeting in January, 1983 nominations will be made for the office of Vice President, Treasurer and Member of the Executive board representing High School teachers. In addition, the committee will put forward one name for each of the 12 area committees of AAPT.

By being a part of the nominating process I am trying to include members of our section as potential nominees at all levels of the national organization.

This opportunity to let the rest of North America see how effective we are at the administration of our organization and its relation to all of physics teaching is a unique one and we should all consider participation.

If you or any of your colleagues are interested in serving in the administration of AAPT at any level, please contact me (address elsewhere in this newsletter)

(Note: You must be a member of the national AAPT to be an officer - not just a member of AAPT Ontario.)

Here are the area committees: Apparatus; Physics in Two-Year Colleges; Computers in Physics Education; Professional Concerns; Instructional Media; Research in Physics Education; International Education; Science Education for the Public; Physics in the High Schools; Women in Physics; Physics in Minority Education; Physics in Higher Education.

AAPT Committee on International Education

Twice a year at the national meeting this area committee of AAPT meets and considers matters relating to Physics Education on an international level.

Because of budget limitations, visits by physics educators from abroad to national AAPT meetings are no longer funded through this committee but an emphasis on communication between physics educators in foreign countries is now the main goal of the committee.

One of the most visible committee activities is the publication in the AAPT Announcer of details regarding forthcoming international meetings devoted to physics or science education.

The committee also supervises the distribution of the American Journal of Physics and The Physics Teacher to certain individuals and institutions in the underdeveloped third world countries. The committee is in the process of developing a limited directory of contact people who are active in physics education throughout the world.

This is one of twelve active area committees of the national AAPT organization, if you are interested in serving on such a committee or have a contribution to make to such an activity, please contact me.

T. Dean Gaily
Department of Physics
The University of Western Ontario
London, Ontario
N6A 3K7 (519-679-2568)

MICROS IN PHYSICS

by Nevis Pereira

As the availability of micro-computers becomes more and more widespread, the need to share ideas on the use of micros becomes more urgent.

Anyone who has had any experience with micros soon realizes that there is so much to learn. One of the better ways of doing this is to share your ideas with others.

This column is intended to serve such a purpose. If you discover or come across an idea, no matter how simple, that may be of use to a Physics teacher, please drop me a line and we will have it published in our newsletter. Please include your name, address and phone number.

To start the ball rolling here are two ideas from me.

IDEA 1

I have used the 'MECC' (Minnesota Educational Computing Consortium) program called 'nucsim' (Apple) in my Grade 12 Physics class as a lab experiment. It effectively demonstrates a practical method of finding the half-life of a radioactive isotope. The MECC program 'RADIOACTIVE' is a good simulation of the decay process and was effective as a demonstration program. - Neves Pereira Aqincourt C.I. 2621 Midland Ave, Aqincourt, Ont. 293-4137

IDEA 2

We have copied and improved upon a data reducing program we call 'Curve-fit' (Apple). We use this program in conjunction with all Grade 13 Labs. It will take an ordered set of data and fit them to a straight line using the least square method. The program then gives you the slope of the line and the sum of the squares of the deviations. Besides fitting Y vs X it will also handle Y vs $1/X$; Y vs X^2 ; Y vs $1/X^2$ and will graph the straight line. N Pereira and F Picard of Aqincourt C.I. (see address above)

If you have been successful in using the computer in your classroom, then Dr. Phil Eastman of the University of Waterloo is looking for you. One of the topics to be discussed at the Waterloo Saturday Science Seminar (April 23) is "Computers in the Classroom". Share your success with other teachers! Contact Phil at 519-885-1211-Ext-2237 or write to him care of the University of Waterloo Physics Department. (See coming events for address!)

CALL FOR PAPERS...

Now is the time to prepare your presentation for our annual June conference at University of Waterloo on Friday-Saturday June 17-18, 1983. The program consists of invited papers, contributed papers, and of course the popular "My Favourite Demonstration"!!

Organize your abstract for that particular topic or idea you do so well and share it with your colleagues as a presentation in the contributed paper section. If you have not given a paper and are uncertain about it, just indicate this when you send in your abstract and we will send you a copy of an article from the Physics Teacher on "How to present a paper!!".

Send your abstract to:

Dr Dean Gaily,
Physics Department,
University of Western Ontario,
London, Ontario N6A 5K7

It is essential that you respond soon as the program must be prepared for early distribution. Thus the DEADLINE IS APRIL 8th for the submission of abstracts.

1982 CONFERENCE TREASURER'S REPORT

by John Hynialuk

The financial status of AAPT-Ontario appears very solid now that the bills have been paid from last June's conference. A profit (including fees paid at the Conference) of \$1582.09 was realized even though expenses which included accommodation, meals, printing, speakers, etc. reached a total of \$6325.31. Last year's conference cost about half this amount-inflation strikes again.

There were 125 registrants at the conference with participants from Sudbury to Connecticut and Montreal to Alberta! All of the feedback we have received so far indicates that we are doing things right. If you missed this conference, you missed a good one!

Our present bank balance stands at \$1679.03 with no outstanding bills exclusive of the Grade 11 Physics Contest which is self-supporting.

AAPT Ontario is developing ongoing projects consistent with the goals of our organization (see goals elsewhere in the newsletter).

One of these involves setting up an archives of documents, photos, etc. relating to the history of AAPT Ontario. Doug Cunningham, who has been with the organization since its start, has agreed to handle this and is looking for suitable materials-especially photos from the past conferences to add to our collection. Hopefully some of these interesting items will be on display at our next conference at Waterloo, June 17-18.

If you can contribute any material for copying, please send it to

Doug Cunningham
P.O. Box 35
Lion's Head, Ontario
N0H 1W0

The aims of A.A.P.T. Ontario

To work to improve Physics education at all levels in Ontario.

To be the focal point for the sharing of information.

To bring together people with common interests.

To act as an agent for interface dialogue (high school/university, educators/public, educators/Ministry, etc.)

To promote the national resources that are available through AAPT: TPT, workshops, conferences, resource booklets, high school certificates, etc.

To aid the teacher in keeping abreast of current knowledge.

To expand the breadth of the teachers' knowledge in applications of physics to music, medicine, engineering, etc.

To work hard to remove the myth that physics is an impossible subject but instead show how it is related to everyday life.

To encourage our colleagues to publish their ideas, worksheets, projects, approaches, equipment, evaluation tools, etc. in appropriate journals.

AAPT ONTARIO NOMINATIONS

Nominations are requested for the following executive positions on the AAPT Ontario executive: Vice-President, Member-at-large presently held by Dean Gaily and Ken Woolner respectively. Any member of AAPT Ontario can make a nomination. Please send all nominations, by March 11th, to:

George Kelly
Lester B Pearson C.I.
150 Tapscott Rd.
Aqincourt, Ontario M1B 2L2

NEW SCIENCE GUIDELINES

by George Kelly

Jack Bell and Don Garratt of the Ministry of Education have actively generated discussions and feedback on certain suggested changes to the existing Secondary Science program in the schools of Ontario (grades 7-13). The discussion papers which were distributed to small groups of Science teachers, have been circulated and responses (in writing) have been submitted.

While nothing is firm on this matter, Jack Bell outlined the expectations of the review committee for the future.

As a result of this first wave of responses, a framework for the Guideline will be proposed by about mid-February followed by further validation exercises across the province.

There will, of course, be continued sampling of opinion. Written submissions with input will be accepted throughout the remainder of the year. These will may alter the nature of the final presentation.

AAPT Ontario will be part of this ongoing analysis as it expects to participate in this evaluation process!

Here are some of the questions being posed related to the Grade 13 Program. As you will see these are important questions.

"It is proposed that revised courses in Biology, Chemistry and Physics be developed for Grade 13. Certain characteristics of such courses should be determined clearly in advance of their development."

- a) While these are advanced-level courses, should they be more rigorous than present courses?
- b) should there be greater specificity in stating what is taught?
- c) Should the courses be more practical, that is, relate more to technology, engineering, medicine, etc., and contain references to more practical applications?
- d) Must such courses be closely keyed to a "story-line"? Or can we create courses whose topics can be inter-related by "big ideas" or some other means to demonstrate coherency?
- e) How should high technology influence Grade 13 courses? --- Should some units(s) relate closely to computer usage?
- f) Can we obtain the right kind of help from the universities to form "lists of enabling knowledge" to prepare students for University? This has been done in Chemistry. Should we do this?
- g) What proportions should be core and optional?
- h) Should the courses attempt to cater both to the University bound student and to the University-non-science-bound student? If so, how? Perhaps, by means of options?
- i) How should preparation for entry into the CAATs influence the development of Grade 13 courses?
- j) How should industry and business influence the development of senior science courses?

Your responses to the above question will interest Messers Bell and Garratt on the 17th floor of the Mowat Block, Queen's Park, Toronto, M7A 1L2.

Should you wish to respond through AAPT Ontario, please feel free to write to Geo Kelly, 150 Tapscott Road, Ancourt, Ontario, M1B 2L2

GRADE 11 PHYSICS PRIZE TEST

The Grade 11 Prize Test will be written on Tuesday, May 3rd, 1983. The procedure will be much the same as last year's contest. Mailings will be sent out to the High Schools by mid-February. Again Certificates will be given to the top two competitors in each school. Usually each school provides a prize for its top student. Last year the top 17 students were awarded a TI-35 calculator and a special gold certificate. We are grateful for the support of the Universities of Ontario who provide some of the funds. It is expected that the cost per entry will remain at one dollar. The only change is that the time period has been reduced to ONE HOUR.

If your school has not received your mailing by APRIL 1, then contact Doug Fox in Belle River at 519-728-1212 or write to him. (see coming events for address)

Free booklet available George Kelly

From time to time complaints are heard that scientists are unable to communicate information about science in a way that is understandable by a lay person. Helping to dispel such complaints are the authors of a publication to be had by writing to Ernie McFarland at the University of Guelph.

The authors, Jim Hunt, a physicist, and Nigel Bunce, a chemist have been writing a weekly science column "The Science Corner", in the newspaper "The Guelph Daily Mercury", since 1977. The articles in this book are selections from their column.

This book contains articles which relate physics and chemistry to astronomy and earth sciences. The topics are varied, from the exotic ("Black Holes") to the mundane ("Structure of Coal"), and all provide an interesting look at science today. The article about Haley's Comet is particularly interesting as it updates our understanding in preparation for the spectacle soon to grace our night sky.

The articles have proven to be immensely popular among interested elementary and secondary teachers and students, as well as among interested laypersons. This book is just the thing to stimulate projects and experiments at your school.

This book is free for the asking!

Send your request to:

E.L. McFarland
Coordinator of Student Relations
Department of Physics
University of Guelph
Ontario, Canada, N1G 2W1

Editorial Error Corrected

In the process of preparing the report from the Conference '82, I omitted a paragraph describing the sessions on the Saturday and especially describing the presentation by Dr. John Vanderkooy. I extend my apology to Dr. Vanderkooy and to Dr. Tom Stewart who chaired the "My Favourite Demonstration" session. Please find the "omitted" paragraph below!!

(continuing the description of day 2 of the conference)

Up and about again was Dr. Eric Rogers, who laced his seminar on "Why Not Explain by Demons" with personal anecdotes about Einstein, Rutherford, and Chadwick. Professor John Vanderkooy of University of Waterloo followed with "Using Computers in the Measurement and Design of Loud Speaker Systems." The Conference ended with the ever-popular "My Favourite Demonstration." We could have used double the time that was allotted to this item. Maybe next year. - (end) - G Kelly

STAR GAZING

by Douq Cunningham

The aperture revolution! Amateur astronomers have never had it so good. A glance through the many advertisements in Sky and Telescope magazine will reveal a variety of telescope designs and apertures that were unthinkable just 10 years ago. In the mid 1960's the standard size amateur telescope was the 6" Newtonian reflector.... rarely would one find an aperture of 8" and certainly a 12.5" aperture was something only dreamed about. Now one can purchase a 16" Newtonian reflector from Crown Optics for only \$1185 U.S., and Coulter Optical offers a 29" Dobsonian style Newtonian reflector for about \$3500 U.S. Why such an emphasis on telescope aperture? Quite simply, the telescope is a "light bucket".. the light gathering performance and resolving capability are determined by the aperture.

I remember a conversation with Roy Bishop, now editor of the RASC's Observer's Handbook, just after Coulter Optical had offered a 17.5" mirror for sale to the public. What would he do as an astronomer with such an aperture?... his reply.. to observe and sketch the faint detail in galaxies...detail that is often lost when photographers overexpose the central parts in order to reveal the detail in outer regions.

On August 3, 1764 Charles Messier described a nebula located near the belt of the constellation Andromeda under the unimposing title of M31.. "a spindle..it has a resemblance to two cones of light facing each other at their bases..". I experienced the thrill of working with a large aperture telescope a year ago when I observed that same nebula, now known as the Andromeda galaxy, through a 14" Celestron Schmidt-Cassegrain telescope. The galaxy was positioned near the meridian and the seeing conditions were excellent. The view was splendid..much brighter and crisper than that obtained with the 6" reflector...the detail visible included the bright nucleus, the companion galaxy M32 and M110, the spiral arms with two distinct dust lanes and the open cluster NGC 206 embedded in the south west part of the spiral arms. Encouraged by the detail visible and, with the aid of a finder chart published in the Nov. 1979 issue of Sky & Telescope, I continued my search for additional detail and was rewarded by the identification of a globular cluster in a galaxy that was 2.2 million light years distant. In my mind's eye I superimposed on this sight the view of the great globular cluster M13 in Hercules which is a mere 21 000 light years distant and took one more step towards appreciating the scale of the universe. It's too bad that Messier couldn't have seen this detail in his spindle shaped nebula that amateur astronomers now regularly observe with their large aperture telescopes.

A brief summary of the main celestial events occurring during the first four months of 1983 is given below. Of particular interest are the close approaches of the moon to the planets culminating in a daylight occultation of Jupiter on April 2.

Clear skies and good observing!

JANUARY - Sat. 22nd: First quarter moon.
Fri. 28th: Full moon.

FEBRUARY- Thu. 3rd: Saturn 2 degrees South of the moon.
Fri. 4th: Last quarter moon.
Sun. 6th: Jupiter 1.5 deg. South of the moon.
Tues. 8th: Mercury at greatest West

Elongation.

Thu. 10th: Mercury 2 deg North of the moon.
Sun. 13th: New Moon.
Tue. 15th: Venus 4 deg, Mars 5 deg North of the

Moon.

Thu. 17th: Jupiter 0.8 deg North of Uranus.
Fri. 18th: Venus 0.5 deg South of Mars.
Sun. 20th: First quarter Moon.
Sun. 27th: Full Moon.

IMPORTANT DATES COMING UP!

Univ. Guelph open Science Seminar
Tuesday Feb 15th at 4.0 p.m.
"Canada in Space" by Brian Fuller of
Spar Aerospace (canadarm fame!)
Physics Science Bldg. Rm 113
University of Guelph

Waterloo Saturday Seminar
April 23, 1983 both a.m. and p.m.
Topics: Glass blowing; mineral foundations;
DNA; Computers in Classes
for more info contact Phil Eastman or
Jerry Toogood at Waterloo

Grade 11 Prize Contest
Tuesday May 3rd, 1983
For info contact Douq Fox, Belle River District High School,
Belle River, Ontario N0R 1A0.

Sir Isaac Newton (SIN) Test
Thursday May 5th, 1983
For info contact P.C. Eastman, Dept. of Physics,
Univ. of Waterloo, Waterloo, Ontario N2Z 3G1.

National AAPT SUMMER MEETING
June 15-17, 1983,
Memphis Tennessee
Abstract deadline: March 20, 1983.

AAPT ONTARIO Section meeting
June 17-18, 1983, at Univ. of Waterloo, Waterloo, Ontario N2Z 3G1.
Abstract Deadline: April 8th
Send to Dean Gaily, Physics Dept. Univ. of Western Ontario,
London, Ont. N6A 3K7.

PHYSICS for TEACHERS
June 27th to July 8th
Short course on Physics Demonstrations and outdoor activities,
at the Royal Military College in Kingston, Ontario
for info contact Geo. Vanderkuur at
The Ontario Science Centre 770 Don Mills,
Ontario M3C 1T3

S.T.A.O. Region 7 & 8 (Toronto and Area)
Computer Conference
November 5, 1983
At Upper Canada College.

Event of the decade!!

National AAPT WINTER CONFERENCE
JANUARY 1985 AT
ROYAL YORK HOTEL, TORONTO!

MARCH - Thu. 3rd: Saturn 1.7 deg South of the Moon.
Sun. 6th: Jupiter 1 deg South of the last
quarter moon.
Mon. 14th: New moon.
Wed. 16th: Mars 5 deg North of the Moon.
Thu. 17th: Venus 5 deg North of the Moon.
Mon. 14th: Vernal Equinox..Spring begins.
Tue. 22nd: First Quarter Moon.
Mon. 28th: Full Moon.
Wed. 30th: Saturn 1.5 deg South of the Moon.

APRIL - Sat. 2nd: Occultation of Jupiter by the moon,
visible from North America at 8:00 Universal Time.
Tue. 5th: Last Quarter Moon.
Sat. 9th: Mercury 1.4 deg North of Mars.
Wed. 13th: New Moon.
Wed. 20th: First quarter moon.
Thu. 21st: Mercury at Greatest Eastern

Elongation.

Fri. 23rd: Lyrid Meteor Shower (15 meteors
per hour best observed during the early morning hours of
the 23rd).
Tue. 26th: Saturn 1.6 deg South of the moon.
Wed. 27th: Full Moon.
Fri. 29th: Jupiter 0.6 deg South of the moon.