



AAPT Ontario Section NEWSLETTER

VIII No. 4

FROM THE PRESIDENT:

How fast time flies when you're having fun (or is it just middle age)? As I finish my term, some thanks to some special people - to Alden McEachern for a tireless and uncomplaining year as Newsletter Editor; to Ross Hallett for organizing yet another super conference; to Bob Bassett for keeping us "in the black" (I hope!); to Ernie McFarland for handling all the membership renewals and obscure footnotes I send him, and to you, the membership for supporting the section. I've enjoyed the chance to work with all of you, and look forward to next year as "Past President" - as soon as I know what that entails!

The Membership of AAPT - Ontario extends its sincere sympathy to treasurer Bob Bassett on the recent loss of his father.

CONFERENCE UPDATE

There's still time to make it! If you want to register "at the door" use the map below to find the registration desk location for Thursday night and Friday morning - poster sessions, exhibitors, invited and contributed papers, receptions and a banquet - its all there at Guelph - can you be there too?

Guess what no map but a lot of instructions! Registration Thursday night is at Lennox-Adington Hall and on Friday morning Physics building. (Just follow the LARGE brown signs.)

Relativity in a Minute?????

The length of a minute depends on what side of the bathroom door you are on •

Physics Department

Physical Constants

Magnitude of electronic charge, e 1.602×10^{-19} C
 Mass of electron, m_e 9.110×10^{-31} kg
 Mass of proton, m_p 1.673×10^{-27} kg
 Speed of light in a vacuum, c 2.998×10^8 m/s
 Planck's constant, h 6.626×10^{-34} J s
 Gravitation constant, G 6.672×10^{-11} N m²/kg²
 Avogadro's number, N_A 6.022×10^{23} mol⁻¹
 Coulomb constant, $k = \frac{1}{4\pi\epsilon_0}$ 8.988×10^9 N m²/C²

Molar gas constant, R 8.314 J mol⁻¹ K⁻¹
 Boltzmann's constant, $k = R/N_A$ 1.381×10^{-23} J/K
 Atomic mass unit, μ 1.661×10^{-27} kg

Some Physical Data

Radius of earth (avg.) 6.37×10^6 m
 Mass of earth 5.98×10^{24} kg
 Speed of sound (in dry air at 20°C and 1 atm) 343 m/s
 Earth-sun distance (avg.) 1.49×10^{11} m

SI Prefixes

Factor	Prefix	Symbol
10 ¹⁸	exa	E
10 ¹⁵	peta	P
10 ¹²	tera	T
10 ⁹	giga	G
10 ⁶	mega	M
10 ³	kilo	k
10 ²	hecto	h
10 ¹	deca	da
10 ⁻¹	deci	d
10 ⁻²	centi	c
10 ⁻³	milli	m
10 ⁻⁶	micro	μ
10 ⁻⁹	nano	n
10 ⁻¹²	pico	p
10 ⁻¹⁵	femto	f
10 ⁻¹⁸	atto	a

... and from Alan Hirsch (Section Representative)

AAPT/APS Joint Winter Meeting, 1986

The 1986 AAPT/APS Joint Winter Meeting was held in Atlanta, Georgia, from January 26 to January 30. Two red-blooded Canadians, Ernie McFarland and myself, left Ontario clad in our finest spring outfits, anticipating a warm reception in the deep south. To our dismay, we arrived concurrently with the coldest weather Atlanta has experienced in recent history. Despite windchill equivalent temperatures as low as -30°C , we enjoyed a stimulating and rewarding conference at the Downtown Marriott Hotel.

In attending the committee meetings and open house receptions as Ontario's section representative, I was impressed by the professionalism and complexity of the AAPT. The association is deeply concerned about the quality and quantity of physics education in the Western Hemisphere, and it is my opinion that Ontario's physics educators can benefit from as well as contribute to the efforts of the AAPT.

In attending the contributed and invited presentations and the commercial displays at the conference, I noticed the following general trends in physics education.

- The use of television videotapes is becoming more common, and teachers are able to attend workshops on how to produce their own videotapes.
- Video laser discs, which can be interfaced to microcomputers, are in the earliest development stages, but efforts to make them accessible and affordable are progressing.
- Physics educators are sharing their interest in the history of the development of physics and their concern about the equality of opportunity in physics for women and minority groups.
- Computers continue to be important as more uses are developed for curriculum instruction and laboratory investigation.
- Much research is being carried out into "chaos" in physical systems. (I think we'll be hearing more about chaotic systems in the near future.)
- In trying to make physics come alive, teachers are relating physics to the day-to-day activities and career possibilities of their students.
- Equipment and textbook prices continue to rise rather dramatically.

The specific details of the conference would occupy several pages. Because of space limitations here, I will comment on only a few of the details.

- Two names familiar to Ontario AAPT members appeared on the presentation list. Ernie McFarland of Guelph University gave a talk titled Curing Calculatoritis, and T. Dean Gaily, currently at the University of Washington in Seattle while on leave from the University of Western Ontario in London, reported on an investigation of the abilities of students to apply concepts taught in physics to actual physical systems.
- Another Canadian, P.F. Hinrichsen of Quebec, gave two papers, one on measuring the weight distribution of a sailboat and the other on the design of a photogate for air track experiments.
- I attended some excellent presentations on "amusement-park physics", but the enthusiasm and examples of successful field trips to parks did not dispell my fear of safety problems associated with such trips.
- Several interesting papers on the application of physics to music, medical practice, and sports were given.
- Howard Head, who developed the famous metal skies, gave a delightful speech about the practical nature of physics in his own life. He shared the story of the development of his second major contribution to the world of sports - the Prince tennis racket.
- An Inter-American Conference on Physics Education is being planned for 1987. It will take place in Mexico.
- Plans are under way to try to get students from the United States involved in the International Physics Olympiad. We in Canada should be proud that our high school students already have the opportunity to be involved, thanks to the efforts of a few teachers.
- The next Joint Winter Meeting will be held in San Francisco in January, 1987. The meteorologist has forcast warmer weather than we experienced in

TORONTO FRENCH SCHOOL SPEARHEADS CANADA'S INVOLVEMENT IN THE INTERNATIONAL PHYSICS OLYMPIAD

In Alan's article on the AAPT National Winter meeting he noted that the U.S. is working towards involvement in the International Physics Olympics.

We in Canada are ahead of that point, thanks mainly to the efforts of Harry Giles of the Toronto French School. Over the past several years, Harry has developed a series of Saturday lectures at the school to help bridge the gap between our physics curriculum and the material covered in the physics olympiad (our curriculum is only about 25% of what the kids need - according to Harry, the level of difficulty at the olympiad is about that of 2nd year University).

This year the lectures, given by John Wylie of the University of Toronto, involved some 50 students from 35 schools in the Toronto area. Through some testing, Harry will select the best 5 (the maximum allowed) and take them to England for this years olympiad, from the 13th to the 20th of July. Here the students (who must be no more than 19 years of age and finishing a "pre-university" year) will write two five hour exams - one theoretical and one practical.

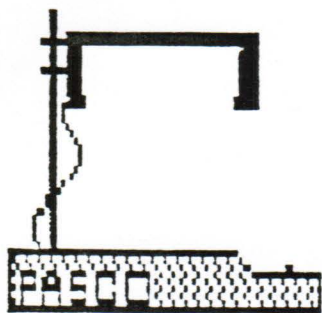
The cost, a significant one, is borne entirely by the Toronto French School - a substantial contribution to the development of future physicists. Harry is hoping to improve on last years 16th place finish in Yugoslavia.

Not content with these achievements, Harry has established another olympiad preparation center at UBC and is working on one at Ottawa.

Where do we fit in?

1. Harry hopes to have a booth at our Guelph meeting - if you're there, stop by for a chat and say thanks for all he's done.
2. We will be providing him with the names and schools of our top finishers in the Grade 11 contests in hopes that they may become involved.
3. If you teach in Metro Toronto, make sure your top students are aware of this opportunity and encourage them to get involved...
4. If you're in another part of the province, is it possible to set up other preparation centers? Bring the matter up at your local subject council or with your co-ordinator. I'm sure Harry has materials on what's needed.
5. The executive will be discussing whether we can make at least some small contribution to this years trip.

Suppliers



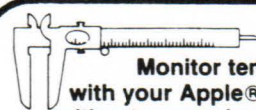
FREE DRAW!

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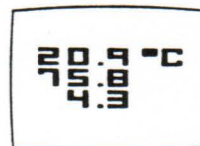
congratulates

the Ontario Chapter of the American Association
of Physics Teachers for 7 years of service
dedicated to excellence in teaching physics.
We invite all members to visit our display and
register to win a Pasco Photogate timer at the
summer AAPT meeting.

SEE YOU IN GUELPH!



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From the Editor

Have a great summer and IF you come across any phunny fizzicks
articles etc. please pass them on to

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Many thanks!