



NEWSLETTER

ONTARIO ASSOCIATION OF PHYSICS TEACHERS

(an affiliate of the American Association of Physics Teachers)

Volume XVIII, Number 2

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EDITORIAL:

Mixing Education and Politics

At least they're letting us choose which arm to cut off

I had no illusions that the January 13 march by 35,000 teachers (myself included) and parents from every corner of Ontario would cause any immediate visible change as the Conservative government begins its attempt to dismantle public education in Ontario. I heard some talk that it was too early to begin to protest the government's announcement that it is cutting \$400 million from the education budget, but I don't think that is true. This is only the beginning.

The assignment of Snobelen as Minister of Education—a man who has proven his financial ingenuity by making millions in the trucking business after dropping out of high school—shows that the government has only one priority, and has only one item on its agenda...money. While no one can deny the need to keep an eye on the financial side of all public spending, when cost is the only consideration, and is not weighed against the needs of the individual student, education will be hurt, no matter what Snobelen says.

In my mind, using a business model to define education is very limiting. I have, on occasion, visited the local fast food restaurant, but I do not think it would be very healthy to eat there everyday, and I don't think Snobelen's views on education have moved us onto a healthier path. After reading about his videotaped comments that he wanted to invent a crisis in education to make it easier for him to impose the Conservative economic philosophy, everything he says in explanation of his views comes across as insincere and facetious. Remarks by Snobelen about putting a computer on every student's desk, while at the same time talking about massive cuts, are either ignorant and unthinking, or are deliberate attacks on the Ontario teaching profession. In either case, we need to stand up so that the government realizes we are concerned and should be listened to.

Let's try for 100,000 at the next rally.

Make plans to attend the

1996 OAPT Conference

YORK UNIVERSITY

Thursday, June 20 to Saturday, June 22, 1996

Look for a mailing to your school in February.

We are interested in teacher submissions. See the "Call for Papers" insert.

1996 OAPT Physics Contest

by Diana Hall

Now that the year has rolled over its time to start thinking about the OAPT Contest for grade 12 students. This year's exam promises to be every bit as much fun and as challenging as in previous years. I would like to encourage more participation in the contest by better publicizing the cash scholarships and calculator prizes which increased significantly in 1995. Look for more details with the first mailing in March. The contest date has been set for **Tuesday, May 14**, so mark it on your calendars and let your students know.

Please note that I am taking over the administration of the contest from Fred Hainsworth who has held the position of Contest Convenor for the last 2 years. Thank you Fred, you have done a super job. I hope that I can be as effective as you have been. Any questions or correspondence should be addressed to me at the address below. Bill Prior continues as Contest Coordinator. Contest question submissions should be sent directly to Bill at the address below.

All the best for 1996.

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For a free review issue of *The Physics Teacher*, a journal specifically written to the introductory physics educator, contact the AAPT Member and Subscriber Services Department at (301) 209-3333.

PHYSICS NEWS UPDATE

The American Institute of Physics Bulletin of Physics News
by Phillip F. Schewe and Ben Stein

A PLANET ORBITING A NEARBY STAR has been discovered. Astronomers with the Geneva Observatory in Switzerland reported the finding at a recent meeting in Florence, Italy. Planets around pulsars have been detected before, but in the present case the star (51 Pegasus, 40 light years away) is similar to our own sun. The planet is estimated to have a mass at least half that of Jupiter. Its orbit, only about 5% of the earth-sun distance, places it uncomfortably within the star's corona. Following up the announcement in Florence, astronomers at the Lick Observatory in California have confirmed the presence of the planet. At the Florence meeting the possible sighting of another planet was also announced. The star is GL229 (about 30 light years from Earth) while the orbiting object has a mass about 20 times that of Jupiter. An alternative interpretation is that the object is a brown dwarf. (Science News, 21 October 1995.)

ISOTOPE EFFECTS IN SONOLUMINESCENCE have been observed by Seth Putterman and Robert Hiller at UCLA. Sonoluminescence (SL) is a mysterious phenomenon in which acoustic energy is transduced into light energy; high frequency sound waves are absorbed by tiny bubbles in water. The bubbles, oscillating wildly, re-emit the energy in the form of tiny, focused light bursts. Many things about SL are still unknown, such as the nature of the light-emitting process or why the light pulses are so short. The UCLA work has established one new fact: substituting heavy water (D₂O) for ordinary water (H₂O) as the liquid medium causes the SL spectrum to dramatically shift from ultraviolet toward red wavelengths. This result seems to represent yet a new mystery. According to the researchers, "The shift is remarkably large, especially in view of the small difference in chemical and elastic properties between light and heavy water."

GALILEO ARRIVES AT JUPITER TODAY after a 6-year, 2.3-billion mile journey. At this hour the craft is proceeding normally (at a relative speed of more than 22,000 mph) toward its rendezvous. The spacecraft's first job will be to receive data from a small detachable probe sent on ahead and now parachuting into Jove's atmosphere. Data will later be relayed back to Earth (radio waves take 52 minutes to span the distance) at a rate of only 10 bits per second, a constraint which comes about because of the defective main antenna. Launched in 1989, Galileo's 2-year mission at Jupiter will include repeated close-up flybys of several moons. The latest information on Galileo can be found at the following World Wide Web address: <http://www.jpl.nasa.gov/galileo>.

PHYSICS NEWS UPDATE MAILING LIST: You can add or subtract yourself automatically by sending a message to listserv@aip.org. In the body of the message specify either "add physnews" or "delete physnews."

RECOGNIZING CONTRIBUTIONS

Have you made a contribution to OAPT in the past, through working on a committee or on the executive? If you have, and would like a letter of recognition to keep on file, contact OAPT's president, Diana Hall, at the address listed on page 2. In your message give the details of your involvement.

INTERNET INTEREST

There is now a Workshop Physics Discussion Forum on the Web. It can be reached via:

<http://physics.dickinson.edu>

The official statement of its purpose is:

The Workshop Physics Discussion Forum is strictly a place for the discussion of topics directly related to the use and adaptation of the Workshop Physics Curriculum. The forum participants should be college faculty, instructors and administrators from schools, colleges or universities where all or part of Workshop Physics have been implemented or are under very serious consideration for implementation.

Note: Postings that are deemed to be outside the scope of the above guidelines will be removed from the forum.

Even those of you who are not already using components of Workshop Physics might be interested in following the dialog between those who are.

Yahoo! Science Web Sites
<http://www.yahoo.com/science/>

WHY WAIT UNTIL IT'S TOO LATE?

The date on your address label is the expiry date for your membership. You may use the coupon below (or a facsimile) to renew it, or to indicate a change of address (or both) by checking the appropriate box. And, hey, what the heck, why not renew it for two (or more!) years; it will save you the hassle of renewing over and over again.

Membership Application

Renewal Change of Address

Name _____

Address _____

\$8.00 / year x _____ years = \$ _____, payable to the OAPT

Send to: Ernie McFarland, Department of Physics,
University of Guelph, Guelph, Ontario N1G 2W1;
Email: elm@physics.uoguelph.ca

Bernoulli Lost His Marbles

by

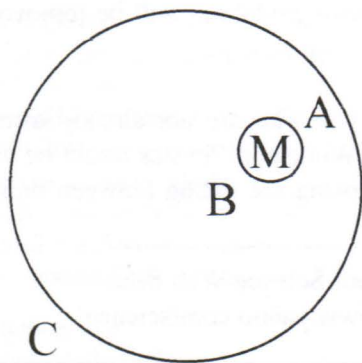
Al Bartlett

University of Colorado
Boulder, Colorado, USA 80309

Fill a one-litre graduated cylinder with water; the cylinder should be about 5 to 8 cm in diameter and 30 to 40 cm tall. Take an ordinary glass marble and try to drop the marble into the water in such a way that the marble will fall all the way to the bottom without first hitting the side of the cylinder. The marble makes an audible click every time it hits the glass wall.

The marble is always drawn to the wall it bounces off and then hits the opposite wall. I have never seen one go down without first hitting the wall.

I believe the explanation is this. If C is a horizontal cross-section of the cylinder and M is the marble, then an observer on the marble will see water flowing upward all around the horizontal equator of the marble. But, because of the proximity of the wall, the upward flow velocity at A will be greater than at B. By the Bernoulli principle, the pressure at A is less than at B, and the ball is moved to the nearest wall. As the gap narrows, the force increases and the marble strikes in an approximately



elastic collision, and bounces away from the wall with sufficient velocity to cause it to move out.

In principle, one should be able to drop the marble exactly on centre just as you should be able to make a sharpened pencil stand on its point. In practice, of course, this is impossible.

I first saw this demonstration performed by William B. Pietenpol of the University of Colorado (Boulder).

Column Ed. Note: Al Bartlett sends his best wishes to all his friends in the OAPT. He still goes out on the road giving his exponential-growth talk, which he presented 62 times last year.

Column Editor: Ernie McFarland, Physics Dept., University of Guelph, Guelph, Ontario, N1G 2W1; Email: elm@physics.uoguelph.ca

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

PHYSICS DEMOS FROM THE WOODROW WILSON PHYSICS INSTITUTE

compiled by Pat Cannan

Physics Institute: Woodrow Wilson National
Fellowship Foundation
Box 642
Princeton, NJ 08542

Shifting to Doppler:

Get a code oscillator circuit (e.g. Radio Shack #20-115), a 5cm speaker, a small switch and a 9 volt battery clip. With a sharp knife slice into a Nerf ball and imbed all parts inside. Turn on the switch and throw the ball to students in the class. Pitch will change noticeably depending on whether the ball is approaching or receding. (Total cost is about \$9).

Splitting Hairs:

A human hair held in the laser beam will produce a single-slit interference pattern. (The hair forms a single thin barrier.) The width of the hair can be determined by measuring the spacing of the secondary maxima and using the single-slit equation.

Learning the Ropes:

A convincing session in vectors:

Have two burley guys pull a rope between them as tight as they can. Then have your smallest kid pull sideways in the center of the rope. He will have no trouble pulling the burleys toward each other.

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