NEWSLETTER

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McOAPT

OAPT Annual Meeting Report

McMaster University, Hamilton June, 2000

I hope I can speak for the attendees of this year's annual OAPT meeting in reporting that it was a resounding success. The Departments of Science and Engineering, of McMaster University kindly hosted us and the hospitality provided was outstanding.

As per usual, the meeting started out with the Thursday night workshops. We added several sessions for elementary school teachers and I believe all were well attended and informative. For those who attended my Videopoint workshop, I neglected to mention that the creators of the software are offering an advanced workshop at the AAPT summer meeting at Guelph. They will be showing us techniques such as working with panned and zoomed clips that I briefly outlined in my session. This workshop will be a half-day session and coming right from the source, I know it will be worthwhile.

Sandra Witelson with Terry Price and Bob Loree

Martin High, President of Applied Physics Specialties, started off the session Friday morning. APS manufactures specialized optical systems and he explained techniques used for obtaining aspherical lenses and reflectors as well as the processes for applying reflective coating. We were exposed to some direct applications of the optics studied currently in high school courses.

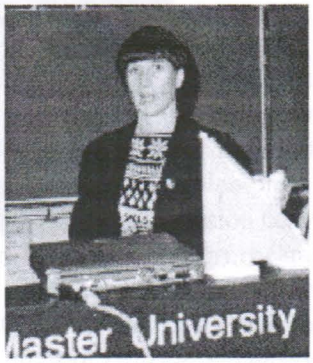
Al Hirsch followed with an account of his recent experience at the NASA conference in Houston. We all envied the opportunity he has as a recent retiree. Information on this conference for next year can be obtained from Susan Tortorici, suetort@spacecenter.org.

After a fantastic buffet dinner, we had a truly special opportunity to listen to Dr. Sandra Witelson enlighten us about her research on the physical structure of the brain and whether there is a correlation with the personality traits of the individual.

Dr. Witelson and her colleagues maintain one of the only brain banks in the world, which do studies on the brains of so called "normal" individuals. Some of her discoveries include the correlation between sexuality and anatomical differences in the brain and the relationship between handedness and the parts of the brain used for various tasks.

The McMaster University brain bank through Sandra has acquired a piece of Einstein's brain and have concluded several ways in which Einstein's brain was physically different from all of the other brains in their collection. Does this physical difference account for his extraordinary intelligence and creativity? A list of Dr. Witelson's publications can be found on her web site www.fhs.mcmaster.ca/psychiatryneuroscience/faculty/witelson/.

Several industry tours were offered. I attended the tour of McMaster Health Centre. Dr. Jerry Gill guided us through the Radiology department where we learned about the new digital X-Rays and CAT scans. Dr. Collin Webber who took us through the Nuclear Medicine department led



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OAPT Meeting (cont. from p. 1)

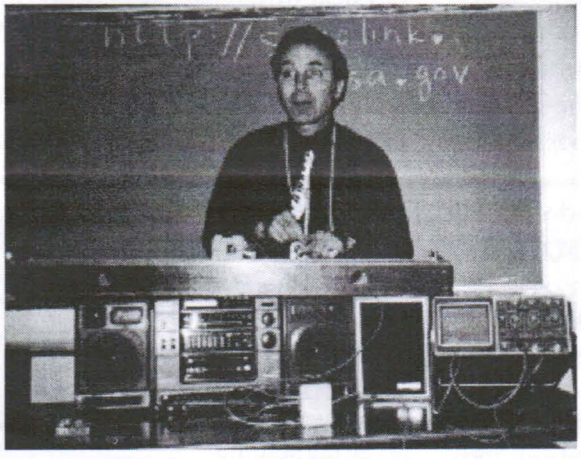
the second half of the tour. We saw the full range from PET scans to MRI. Both guides were enthusiastic leaders and we really appreciated the time these highly qualified professionals took from their days to meet with us. Although I only attended one of the tours, I heard that the CRS Robotics, Defasco, the Undergraduate Lab Tours and the Demo session were also excellent options.

Saturday's program featured new topics that have been added to the new grade 10 curriculum. Two speakers from Environment Canada got us thinking about the Weather. David Phillips discussed whether the climate is actually changing as drastically as we seem to think or if it is merely a function of the increased reporting of the weather. Are we now just made more aware of the events happening around the world than we were in the past?

Mike Leduc, a tornado expert showed us amazing pictures and videos including one where the photographer, seemingly unconcerned, risked his own life to film a tornado as it destroyed the buildings nearby. Mike was an enthusiastic speaker from whom we might hear more in the Future.

Many grade 10 teachers have indicated a concern for the addition of the motion unit to the curriculum. John Earnshaw of Trent University shared some techniques used in his program designed for elementary teachers with little or no science background. He discussed how he uses motion sensors to introduce basic motion concepts. His course is very 'discovery based' and follows the AAPT 'PIPS' program. He provides more information about his course on his web site www.TrentU.ca/physics/jearnshaw.

Peter Scovil demonstrated an electromagnetic guitar pickup using a coil, a standard horseshoe magnet and a Radio Shack amplifier speaker. He uses this to show nodes and antinodes for different harmonics on the string. The magnet created magnetic fields in the steel guitar strings that then induced current in the coil as the strings vibrated back and forth. Very Cool!



Peter Scovil

Speaking of electromagnets, we found a bonus physics problem in the residence security system. The front door of the residence is opened by

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Anybody Out There?

Don't forget that I'm always interested in hearing your comments, criticisms, etc.

You can reach me—the editor—by e-mail:

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or, if the mood strikes you, by mailing a letter to:

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OAPT Web Site

Guleph University is host to the OAPT site.

Get info on executive members (including a great picture of me, your humble newsletter editor), the upcoming OAPT Conference, links to other physics web sites, and much, much more!
The URL is:

www.physics.uoguelph.ca/OAPT/index.html

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.

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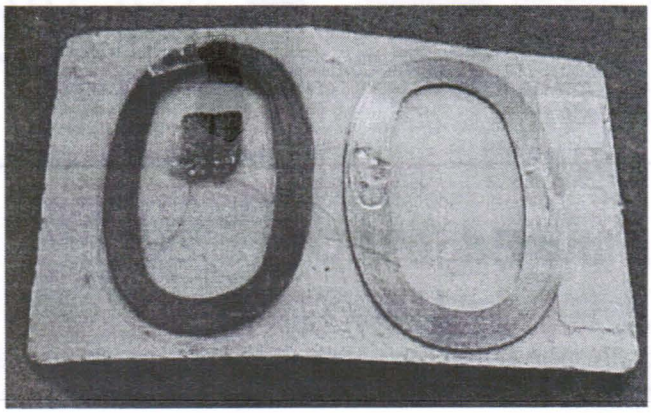
Send to: Ernie McFarland, Dept. of Physics, University of Guelph, Guelph, Ontario N1G 2W1; Email: elm@physics.uoguelph.ca

OAPT Meeting (cont. from p. 2)

holding a wallet with a thick 'credit type' card inside, up in front of a small light. This unlocks the door. Glen Wagner was the only one who proposed a solution. I managed to get a hold of the



'guts' of one of these cards and show it here. Was this what you were thinking Glen? Perhaps it will get the rest of you thinking about it. You never know what you will discover when you get let out into the world!

Thank you to Kim Maynard, Anita Drossis and Kevin Soltes for sharing their enthusiastic Independent Study Ideas. I guess we should be very careful if ever driving by Kevin's school (Scarlett Heights CI). I also would like to thank John McMillan-Jones and Daria Filip for their electrifying demos. The idea of using Xmas lights for circuit labs is great... I tried it yesterday. We had fun drawing diagrams, predicting the relative brightness of the bulbs and then testing it. Thanks! Now we have a use for those strings that no longer work.

I would like to extend a personal thank you on behalf of OAPT to Bob Loree, Director of Engineering and Kate Pow who works with the McMaster Engineering touring Fireball show for their hard work in organizing the conference. The support provided by the team at McMaster was fantastic.

The group shown above was so energized by the sessions of the day that they continued their discussions downtown Friday night. What's their secret?

For those who attended, I hope you took home lots of motivating new ideas and for those who weren't able to make it we hope perhaps you will attend next year which will be held at Trent University, May 24-26, 2001. If you have any comments regarding the change of dates or if you have ideas for workshops or sessions you would like to see or give, I invite you to send them to me at diana_hall@ocdsb.edu.on.ca. Don't wait to be invited step up to the plate! We want your ideas.

Don't forget about the exciting and unique opportunity that we have this summer. Ernie McFarland, Jim Hunt, the rest of the gang at Guelph along with the OAPT are hosting the AAPT summer meeting this at the University of Guelph, July 29-August 3. You won't want to miss it, it's sure to be great. Note that the Early Bird discount deadline has been extended for Ontario Members to June 10. Thanks AAPT!

That's all for now. See you in Guelph!

Jim and Ernie

Physics News

INTENSITY MODULATED RADIOTHERAPY (IMRT) is an up-and-coming radiation therapy technique for cancer. Instead of employing radiation beams of uniform intensity, IMRT enables physicians to modify the intensity of each radiation beam in a sophisticated fashion. Firing non-uniform beams from several angles can allow physicians to deliver a higher dose of radiation to all parts of the three-dimensional volume of a tumor while sending less radiation to healthy surrounding tissue.

"Balancing on the Edge" and "Inexpensive Accelerometers"

by

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"Balancing on the Edge"

Many of you will know you can find the centre of mass of a metre stick (for example) by supporting the stick on your two index fingers and moving your fingers together. They will naturally meet at the centre of mass. I hadn't seen this variation on the idea. Did you know you can balance a coin on the edge of a dollar bill?

Fold the bill in half and open it so that it forms a V. Place the coin on the V-shaped edge. Now carefully open the bill until the coin is balanced on the single straight edge of the dollar bill. It works! COOL!

"Inexpensive Accelerometers"

This is a cheap version of the commercial liquid-filled plexiglass accelerometers. A qualitative accelerometer can be made using a ziplock bag, 4 bendable straws, 4 thin dowels (that fit into the straws) and a large elastic band.

Make a frame that fits inside the bag using the bendable straws at the four corners with the dowels along the sides. The dowels should be the correct length to frame the bag. Fill the bag up to about 2 inches with coloured water. Elastic bands can be used around the outside of the bag at the level of the water to mark the horizontal (which shows zero acceleration).

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