American Association of Physics Teachers

AAPT Ontario Section NEWSLETTER

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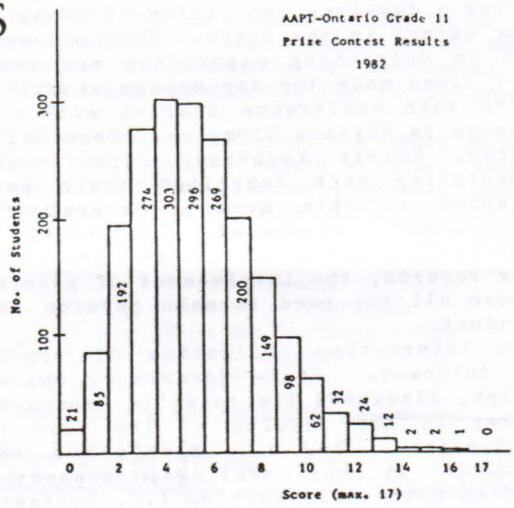
Editor: George F. Kelly

Grade 11 Physics Test Results

This year's Contest was written on May 4, 1982 by 2024 students in 184 schools. This is down a little from last year, probably due to the very necessary price increase. The same number of school participated as last year and the number of students scored was much closer to the number of papers ordered.

The average score was 5.3 out of 17. A histogram of the results is shown below. Processing was done in three almost equal batches. On the result sheets the rank is within the batch but the percent is almost constant from batch to batch with the same score.



A list of provincial winners is shown below. Our congratulations to them and to their teachers. Each student receives a TI-35 calculator and a special gold certificate. Funds for these are provided through the generosity of the physics departments of the following Ontario Universities:

University of Guelph	Trent University
University of Waterloo	Laurentian University
University of Windsor	Carleton University
University of W. Ontario	University of Toronto
University of Ottawa	Laurier University
McMaster University	Brock University

Their support of our endeavours is much appreciated. Please read this list of supporters to your classes.

The idea of the Contest was taken up and a very similar one was run in the Philadelphia area schools on May 18, 1982. The format was very similar to the Ontario Contest and used our bank of questions from the 1981 Contest. It was a successful venture according to James H. Nelson of Harriton High School, Rosemont, P.A. 19010, who ran the contest.

News of the Contest is spreading and we even had students write in Manitoba and British Columbia. We do not restrict ourselves to Ontario and welcome all students at this level to participate.

Next year's Contest will be written on Tuesday, May 3, 1983. We'll be back with changes. The Contest will have more questions, about twenty-five. The Computer Program has already been modified to reduce run time. Results should be in the schools by the end of May at least. Efforts are being made to eliminate the "batch effect" in the printed results.

Doug Fox.

Provincial Winners

Score	Student	School	Teacher
16	M.J. Gold	Malvern CI Toronto	W. Prior
15	T.D. Metzger	Elmira DSS Elmira	D. Ratz
	J.A. Coleman	Upper Canada College Toronto	R. Kuzniak
14	R.R. Ramlochan	Harrow HS Harrow	M. Klinck
	K. Rajagopal	Earl Haig SS Willowdale	G Bourchier
13	M. Baghai	Upper Canada College, Tor.	
	J. Carter	Malvern CI Toronto	
	R. Keates	Rideau DHS Elgin	R. Chahal
	J.A. Summers	Applewoood Heights SS Mississauga	F. Brown
	B.P. Kalicharan	Northern SS Toronto	B. Robb
	J.B. Vankay	Northern SS Toronto	
	B.P. Dickson	Frontenac SS Kingston	J. Young
	B. Brown	Lawrence Pk. CI Toronto	R. Saylor
	O.H. Hall	West Hill CI West Hill	D. Bosy
	G.F. Baumgartner	Woburn CI Scarb.	D. Bell
	G. Bell	Streetsville SS Mississauga	P. Swan
	I.D. Williamson	Colonel By SS Ottawa	W. Hall

1982 Conference Report

The Ontario Section held its Fourth Annual Conference at the University of Western Ontario in London, Ontario, on June 17, 18, and 19, 1982.

Professor Don Woods, chairman of the Department of Chemical Engineering, McMaster University, set the tone for the three-day conference in his pre-conference workshop on "Creativity and Problem Solving in the Classroom." About thirty-five registrants at this workshop turned from skeptics to converts following a day-long exposition of ideas from a leading expert in the field. From all accounts it was an encriching experience and the fast flow of ideas made the day appear short.

The main conference started with a panel discussion on Physics Olympics. Dean Gaily, Ed Gregotsky, Murray Kucherawy, and a student representative each described their personal experiences in this area. Several Olympic items were discussed including the standardization of rules, the necessity of keeping records, the involvement of government, and above all the need to make physics fun for the student.

An interesting collection of ten-minute papers followed. Ernie McFarland, University of Guelph, discussed the possible causes of the anomalies in the results of the 1968 Mexico City Olympics. Dr. D.S. Ainslie, a regular contributor at our meetings, presented "A Simplified Method of Teaching A.C. Suitable for High School Courses." Bill Prior addressed the problem of "The Use of Calculus in Grade 13 Physics"; besides providing enrichment, the author was convinced that this was the best way to teach calculus. By transforming his classroom into a photography studio four weeks out of a year. Rob Orrett showed how he uses "Photography as a Motivator" to teach a unit on optics to his general level students.

"Have Telescope, Will Travel" - with this innocent title, Steve Dodson practically stole the show. With his 22" reflector on a trailer behind his car he travelled 350 miles from North Bay to make this presentation and to set up his telescope for viewing the night before. Many got their first magnificent look at Jupiter and Saturn. Steve described his trials and joys in the construction of this telescope. "The motivation to build the instrument came from the AAPT Ontario Section meetings," he said, paying generous tribute to those present. Dr. Don Wood expanded on his pre-conference workshop in his invited paper on "Building Creativity in Our Students."

Short papers followed:
"A Lab Tutor called Superbrain," J. Law, F.R. Hallet and S. Bird, University of Guelph; "Using computers in the Physics Lab," Alan Hirsch; "Method for Collecting and Analysing Data in Study of Normal Modes," P. Rochon and N. Gauthier of Royal Military College; and "Computer-Aided Testing in Freshman Physics Laboratories at U.W.O. - the Second Year," by Donald R. Hay.

The day ended with a banquet-barbecue at which Dr. Eric Rogers of Princeton University was the keynote speaker. About 83 attended the banquet and were well rewarded by Dr. Rogers' lively, humorous, and educational talk on "Examinations...A Powerful Influence for Good or Harm in Developing New Teaching." Dr. Rogers' enthusiasm and bounce were admired by all. He had enough energy after the banquet speech to conduct what he called a "shredder," a method, overtly at least, of producing good examination questions.

On the second day of the Conference we heard the amusing Dr. Brian Kaye of Laurentian University in his "Delightful Discoveries of Physics in Unexpected Places." Short papers that followed were: "Poetic Imagery in Astronomy," by Doug Cunningham; "Physics and Society," a unit by Dr. Eknath V. Marathe; "A Statics Unit for Grade 13," by Robert H. Squires; and "Milli-Microsecond Lab Timing with a Microcomputer," by Peter Spencer.

120 or so registrants went home after a most successful Conference. There were many memorable occasions and rarely a dull moment. It was also a time for renewing old friendships and for making new ones.

Our next meeting will be held on June 16, 17 and 18, 1983 at the University of Waterloo, Waterloo, Ontario, Canada.

F.N. Pereira, Section Representative.

Permanent Editor for Newsletter

The Newsletter needs a permanent editor!

Ever since Ernie McFarland sent out the first newsletter there have been different people edit this copy, one each year. While it is not onerous in itself (as long as the members generate articles for printing) there is a "breaking in" period each year for the new editor. He must learn to do many things which are completely new to him (her). I feel it is time to consolidate this operation under the direction of an interested (talented) member of our section. Look around in your area for someone you think might do this job, or maybe consider this yourself, as something that you would like to do! It has fallen to the President of the Section to make up, print, and send out this Newsletter hence there has not been a chance to develop much continuity (Doug Cunningham's Star Gazing column excepted) or even to present some editorial comment as each has had to learn his (her) job. I would be interested to hear from you about this proposal one way or the other so it can be presented to the annual meeting at our Conference in June at University of Waterloo. Send any correspondence to G. Kelly, Lester B. Pearson C.I., 150 Tapscott Road, Agincourt, Ontario, M1B 2L2.

Members only ? – Your executive has decided that we cannot continue to send Newsletters to non-members because of the increased cost for printing and postage!! Send your $3.00 membership fee to John Hylnialuk, Wiarton District High School, Box 580, Wiarton, Ont. N0H 2T0.

Ontario Assessment Instrument Pool. Physics

by Elgin Wolfe

It is about a year since the English version of the first package of the Ontario Assessment Instrument Pool: Physics containing 446 multiple choice instruments was distributed to schools and physics teachers throughout the Province of Ontario. The French translation is presently being distributed. Teachers have found the instruments challenging for students, valid to the curriculum and easy to use both for teaching and testing. However the Physics Pool is far from complete. Additional instruments are needed to assist teachers in evaluating the progress of students in different levels of programs toward the attainment of the numerous goals and objectives of physics. The Pool as it develops should include a variety of instruments: objective instruments, including short answer, true-false, matching, and multiple choice; subjective instruments, including numerical problems; situation incidents, including lab exercises; and ways of making the teacher's observations more objective, including checklists and rating scales.

With this in mind, the effort during the 1981-1982 year was devoted to preparing for screening in May of 1982 objective instruments suitable for use in evaluation at the grade 11 general and advanced levels. A total of 1240 multiple choice and true-false instruments were selected, edited, and organized into sixty-two different test booklets. Each booklet was screened by students in both general and advanced level programs with the intent that the resulting data would help the Subject Advisory Group judge the validity of each instrument for both target populations. The student data was processed using a computer in early June of 1982. The results from the computer, and the feedback instruments completed by teachers were used by a measurement and a subject specialist during the revision of the instruments. Recommendations were prepared for consideration by the Subject Advisory Group in the fall of 1982. The Subject Advisory Group considered 1296 instruments; 56 instruments were spinoffs from the original 1240 instruments. 1157 instruments survived for publication. During the period 1978-1980 the project also generated a sample of instruments other than multiple choice and alternate response. Matching exercises, completions, short answers, essay questions and problems have been edited and detailed marking schemes have been prepared. The Subject Advisory Group will validate these instruments at its next meeting. Plans are to send out to teachers early in 1983 a package containing well over 1300 subjective and objective instruments.

Several activities are planned for the 1982-1983 year. 540 multiple choice instruments suitable for grade 13 have been edited and organized into 18 test booklets for screening in January of 1983. Field trials of the published instruments will take place in May of 1983. Whereas the purpose of screening trials is to identify defective instruments before publication, the purpose of a field trial is to obtain statistics on a representative sample of published instruments so that teachers can be provided with performance values. These performance values will assist teachers to select instruments appropriate to a particular population and to make comparisons between their students and the sample of students used to standardize the instruments. Plans are to field trial approximately 1500 physics instruments.

I hope this report answers a number of questions that you may have about the Ontario Assessment Instrument Pool: Physics. If you have further questions, comments or suggestions, do not hesitate to forward them to

OAIP: Physics Project
Research Branch
Ministry of Education
Mowat Block, Queen's Park
Toronto, Ontario
M7A 1L2

Fee Changes Approved

In the May Newsletter was a ballot to be completed and returned to Gord Mckye regarding the proposed change to the Constitution pertaining to the yearly fee. In the business meeting at the June Conference Gord announced that the poll approved the fee change for the years 1982-83 (fee $3.00) and 1983-84 (fee $5.00). This change has been helpful in meeting our increased mailing and printing costs for the Newsletter and the Conference program. It is rewarding to see that our members are aware of extra costs and are doing something about them. G. Kelly.

1983 Conference at Waterloo

EXECUTIVE CONFIRMS WATERLOO CONFERENCE DATES
JUNE 15, 16 and 17, 1983.

Last week-end your Executive confirmed the dates for the FIFTH ANNUAL CONFERENCE of the Ontario section of the AAPT. This Conference will be held in the 'exam weeks' of June 16th, 17th and 18th. The Conference will keep its traditional Friday-Saturday format with the possibility of a Workshop arranged for Thursday, June 15th. We are pleased that the University of Waterloo has agreed to host our Conference. Our Vice President, Dean Gaily, will be our Conference convenor for 1983. He can be contacted at the Physics Department, University of Western Ontario, London, Ontario N6A 3K7. - G. Kelly

AAPT Ontario Executive

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Past President: Gordon McKye, Etobicoke Board of Education, 1 Civic Centre Court, Etobicoke, Ontario, M9C 2B3, 416-626-4360.

Vice President: Dean Gaily, Physics Department, University of Western Ontario, London, Ontario, N6A 3K7, 519-679-2568.

Secretary-Treasurer: John Hlynialuk, Wiarton, District High School, Box 580, Wiarton, Ontario, NOH 2TO, 519-534-1900.

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416-293-4137

Member-at-Large: Ken Woolner, Physics Department, University of Waterloo, Waterloo, Ontario, N2L 3G1

Star Gazing by Doug Cunningham

The aroma of the bar-b-que mingled with the background chatter of our guests, while overhead, in the clear skies for which the Bruce Peninsula is famous, the full moon moved eastward toward an encounter with the earth's shadow. It was Monday night, July 5, 1982 and the drama of this lunar eclipse had been eagerly anticipated by amateur astronomers for some time. A combination of circumstances suggested that this eclipse would be unusual. Firstly, the fact that the path of the moon would take it through the central part of the umbra promised a dark eclipse; secondly, the recent March eruption of El Chichon in Southern Mexico had ejected considerable dust and ash high into the stratosphere and this promised not only a darker, redder eclipse, but the possibility of an asymmetric shading at totality; and finally, the opportunity to view a totally eclipsed moon against the grandeur of the Sagittarius star clouds of our Milky Way was an opportunity not to be missed. It was with these promises in mind that a number of friends and students gathered at our home for an eclipse party. We hadn't long to wait for the drama to unfold.

Although the first portion of the earth's shadow, the penumbra, produced little, if any, detectable shading of the moon, the notch produced by contact with the umbra at 5:32 UT was quite obvious - even without optical aids. As the eclipse progressed numerous Northern horizon stars made their appearance, defining constellation details and revealing some Messier objects. By mid-totality, at 7:31 UT, the eclipsed moon was splendidly framed against the star clouds of Sagittarius and the Milky Way was visible as a bright band connecting the Northern and Southern horizons. And what of the asymmetric shading -? We certainly were not disappointed. The moon's Northern hemisphere was coloured a dark grey with little detail visible in even the largest telescopes, and the Southern portion of the moon appeared a deep coppery red colour. The dust of El Chichon had made its impact by affecting the sunlight refracted by our atmosphere into the Northern half of the earth's shadow.

Through the telescope the eclipsed moon acquired a 3-D quality due to the many background stars sprinkled around the lunar limb. Physics teacher, John Hlynialuk of Shallow Lake, observing with his homemade 12 1/2" reflector, remarked on the "dynamic" quality of this eclipse. As the leading edge of the eastward moving eclipsed moon passed in front of the numerous background stars the sudden and dramatic stellar disappearances produced a show to rival the eclipse itself. Finally, at 8:24 UT, the moon, now low in the West, left the umbra with an event which paralleled the famous diamond ring effect of solar eclipses. Although the brightening of the eastern lunar limb lacked the brilliance and suddenness of the solar eclipse diamond ring, the phenomenon was impressive none the less. For this writer, and many other amateur astronomers, the lunar eclipse of July 6, 1982 was the best yet!

For those interested, hardy souls there will be another lunar eclipse in 1982 - one which can be observed in the cold early morning hours of December 30. This eclipse cannot be observed in its entirety from Ontario; however, the eclipse events leading up to the end of totality can be observed until approximately 7:30 am when moonset will occur. The details of this eclipse, along with other key celestial events, are given in the monthly summaries which follow. Clear skies and good observing!

November

Mon. Nov. 1	Mercury 0.7° S of Saturn Full Moon - "The Hunter's Moon"
Mon. Nov. 8	Last Quarter Moon
Sat. Nov. 13	Saturn 3° S of the Moon
Mon. Nov. 15	New Moon
Wed. Nov. 17	Leonid Meteors (15 Meteors per hour - best observed during the early morning hours of Nov. 17)
Fri. Nov. 19	Mars 0.5° S of the Moon
Tues. Nov. 23	First Quarter Moon

Note: Among the naked eye planets only Mercury, Saturn and Mars can be seen this month, but only with difficulty due to their proximity to the sun.

December

Wed. Dec. 1	Full Moon - "The Long Night Moon"
Tues. Dec. 7	Last Quarter Moon
Sat. Dec. 11	Saturn 3° S of the Moon
Mon. Dec. 13	Jupiter 2° S of the Moon
Tues. Dec. 14	Geminid Meteors (50 meteors per hour - best observed during the morning hours of Dec. 14)
Wed. Dec. 15	New Moon
Sun. Dec. 19	Mars 1.6° N of the Moon
Wed. Dec. 22	Winter solstice - winter begins 39 UT) (meteors per hour best observed in the morning hours of Dec. 22)
Thurs. Dec. 23	First Quarter Moon
Thurs. Dec. 30	Full Moon - Lunar Eclipse

Lunar Eclipse Details

Moon Enters Penumbra	8h 52m UT
" " Umbra	9h 50m UT
Total Eclipse Begins	10h 58m UT
Middle of Eclipse	11h 29m UT
Total Eclipse Ends	11h 59m UT
Moon Leaves Umbra	13h 07m UT
Moon Leaves Penumbra	14h 06m UT

Note: Moon Set 7:30 EST

Thurs. Dec. 30 Mercury at Greatest East Elongation

Note: Of the naked eye planets Saturn, Mars and Mercury can be seen easily - Mercury and Mars in the S.W. at sunset and Saturn in the east before sunrise. Toward the end of December, Jupiter can be glimpsed low in the south-east at sunrise.