

Physics Tempo

The Newsletter of The St. Louis Area Physics Teachers
an affiliate of the American Association of Physics Teachers
September 1991

Vol. 2 No. 1

Notes from the April 1991 Meeting at SIUE.

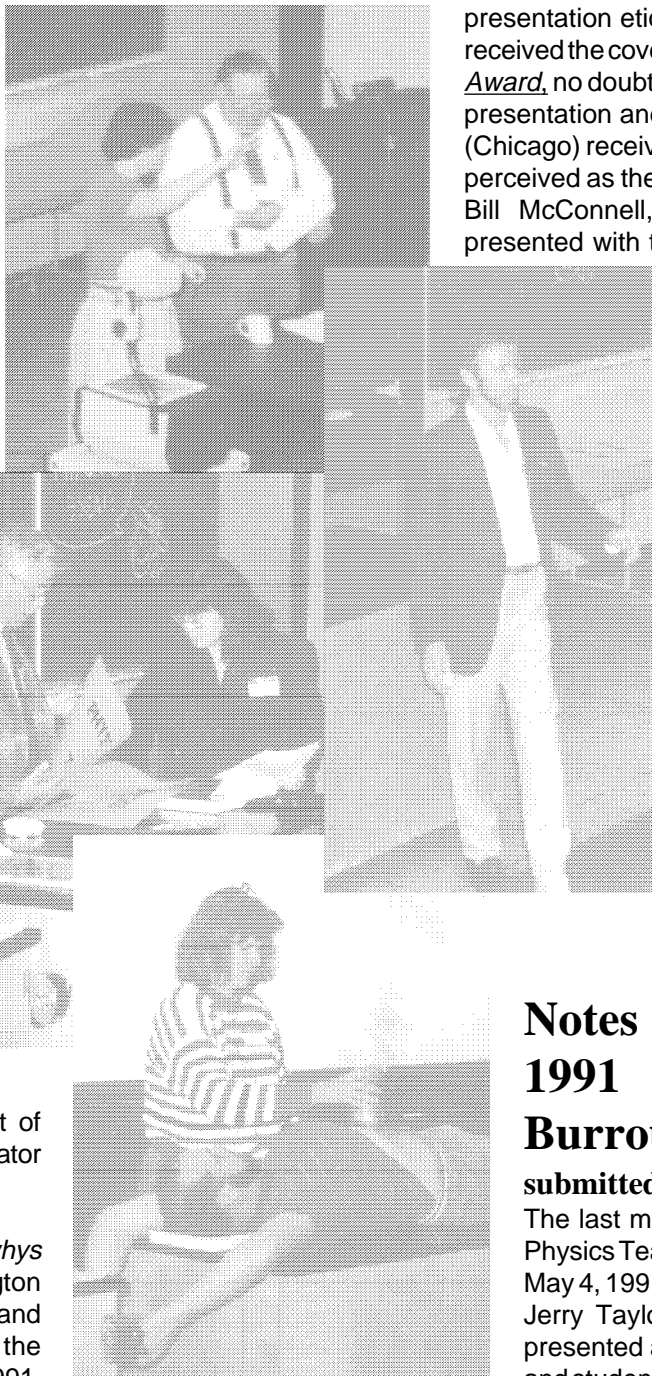
by Paul Discher

On the rainy Saturday Morning of April 20, 1991 the St. Louis Area Physics Teachers and visiting members of the challenged Chicago Section of the AAPT squared off at SIUE to a *Physics Demonstration Competition*. This represented only a part of the excitement that weekend as the St. Louis Area Physics Teachers joined the combined section meeting of the AAPT at SIUE, hosted by SIUE Professor of Physics Dr. Fred Zurheide. The St. Louis Area Physics Teachers additionally were fortunate to have the earlier support of Professor Pat Gibbons at Washington University Dept of Physics. Dr. Gibbons and the Washington University Physics Department cosponsored the visit of the notable author and Physics educator Mr. Paul Hewitt.

Mr. Hewitt spoke on *The what and whys of Conceptual Physics* at Washington University on Friday April 19, 1991 and again for the combined section of the AAPT at SIUE, Saturday April 20, 1991.

Paul Hewitt's book *Conceptual Physics, 6th edition, Scott, Foresman and Company*, has been selected as Physics textbook within a number of area school districts. The St. Louis Area Physics Teachers were pleased to have Paul Hewitt visit and speak as well act as a judge for our Demonstration Competition.

The demonstration competition concluded with an awards ceremony for various aspects of the participant's topic and



presentation etiquette. Larry Aluf, (Chicago) received the coveted *Gold Fourier Transformer Award*, no doubt for using the most math in his presentation and demonstration. Jim Sissle, (Chicago) received a *Candy Bar* for what was perceived as the most "tasteful" presentation. Bill McConnell, (Webster University) was presented with the *Light Bulb Award* for his

"illuminating presentation". Paul Discher, *Tempo* editor, received the *Non-Functional Watch Award* (originally called "dead watch award" but I thought the other title sounded better) for his "timely" presentation of "cardboard physics". Val Michaels was presented with the *Dust Award* ...you know the kind that just collects dust after you receive it, for her entry. In honor of his visit Bill Brinkhorst and Val Michaels presented Paul Hewitt with a Physics T-shirt and a trip up in the Gateway Arch.

Notes from The May 1991 Meeting- John Burroughs School

submitted by Jerry Taylor

The last meeting of the St. Louis Area Physics Teachers was held on Saturday, May 4, 1991, at John Burroughs School. Jerry Taylor hosted this meeting and presented a number of demonstrations and student centered activities that were

appropriate for physical science and astronomy classes. Some of the demonstration dealt with optics and applications of optics to astronomy.

Jerry also conducted an equipment trading/selling/ give-away session which benefited both John Burroughs School and a number of others represented by attending teachers. The marked success of this session suggests that it should be done again this academic year.

Message from the officers

Rex & Debbie Rice

It's that time of year again. We hope that everyone had a great summer. Debbie saw Bill Brinkhorst, Val Michael, and Jim Harpel at the AAPT Summer meeting in Vancouver all having a great time. Rex saw Bill Weiler and Fred Zurheide at SIUE, since he was working on his Masters instead of Woodrow Wilsoning this summer.

Paul Discher also reports seeing Linda Kralina attending the Woodrow Wilson Summer Chemistry Institute at Washington University this July. Rumor has it the Becky Scherer did a lot of wallpapering this summer too. There is also a possibility that Rex & Debbie will be doing something soon about the *Physics of Garage Building*.

What did you do this summer? If you want to share your adventures, and/or new ideas, maybe you would consider hosting a meeting like Jerry Taylor did last spring, or you could contribute an article to the *Physics Tempo* c/o Paul Discher.

September 1991 Meeting

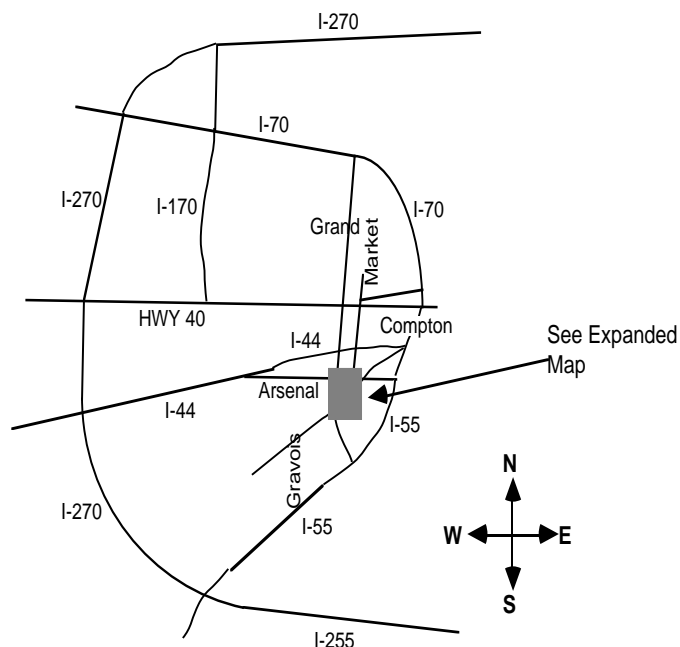
Date: Saturday, September 21

Time: 8:30 A.M.

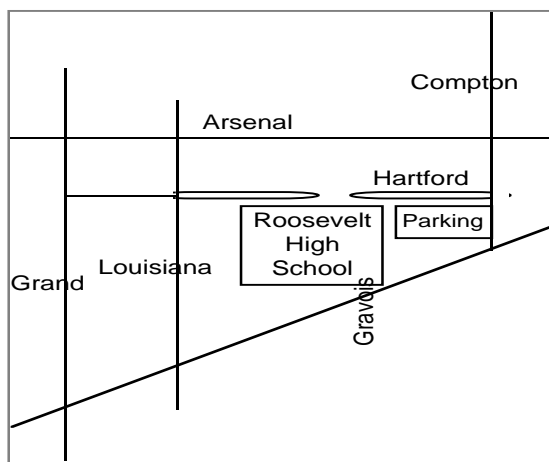
**Place: Roosevelt High School
3230 Hartford**

Host: Debbie Rice

Our first meeting this year will be at Roosevelt High School, 3230 Hartford, September 21, 8:30 A.M. This will be an organizational meeting, but that doesn't mean we can't have a little fun, so bring something to share with us! The meeting will be in Room 112, which is on the first floor on the east end of the building. Just enter the building by the front door (north side) and turn left.



Detail Map Roosevelt High School



**ROOSEVELT HIGH SCHOOL
3230 HARTFORD
ST. LOUIS, MO**

Mission Statement

Physics Tempo is the free newsletter of and by the St. Louis Area Physics Teachers, an affiliate of the American Association of Physics Teachers (AAPT), and is intended as an organizational support group for the betterment of Physics and Physical Science teachers throughout St. Louis and Illinois.

Physics Tempo is dedicated to report achievements and announce the activities of the St. Louis Area Physics Teachers. In addition, *Physics Tempo* is intended to help disseminate useful and innovative information for teaching Physics and Physical Science. *Physics Tempo* is your newsletter. Editorial contributions are encouraged and welcomed. No idea is too small. Send articles, ideas, and subscription requests/address changes to: *Physics Tempo*: Editor / Paul Discher, Washington University-Electrical Engineering, Campus Box 1127, St. Louis, Missouri 63130-4899. FAX articles or Ideas to Washington University-Electrical Engineering Fax Line: 314-935-4842. Please mark your fax mail to the attention of the *Tempo* Newsletter Editor, Paul Discher.

October 1991 Meeting

Date: Saturday, October 12

Time: 8:30 A.M.

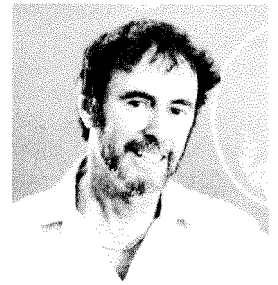
**Place: Six Flags over Mid-America Park
Eureka, Missouri**

**Host: Dennis G Woerner
General Sales Manager**

The second meeting of the St. Louis Area Physics Teachers is intended as an introduction to Six Flag's Physics Day 1992. The meeting planned for Saturday, October 12, 8:30 A.M. is hosted by Six Flags. Free parking, lunch and entry into the park will be provided for registered physics attendees only. If you want to bring your family or friends, they will have to pay regular admission to the park. This is an excellent opportunity to test some of the Woodrow Wilson Amusement

Park Physics gizmos as well as a conduct a pre-planning session for your Six Flags Physics Day 1992.

“Figuring Physics” by Paul Hewitt



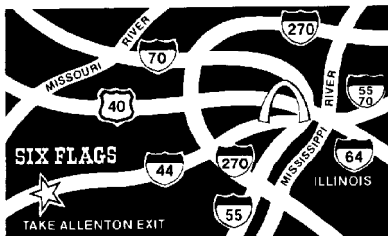
Air temperature normally increases when a cloudy day turns into a rainy day. We say this is because vapor “releases energy” when it condenses to become rain.

All attending teachers will be required to make a reservation for this meeting.

SIX FLAGS

OVER MID-AMERICA
ST. LOUIS

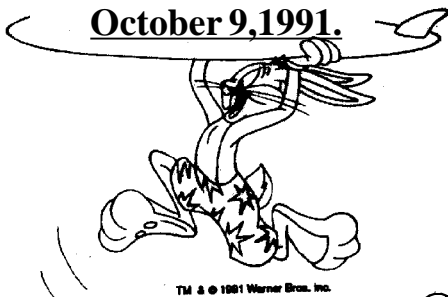
On I-44 Just West of St. Louis



The list of authorized participants must be left with security to ensure your entry into the employees parking lot. To get to the employees parking lot continue past the regular park entrance and proceed towards the security guard shack. The guard will direct you where to park.

Call Rex and Debbie to make Six Flags reservations at 862-2845 before

October 9, 1991.



Physics Day 92

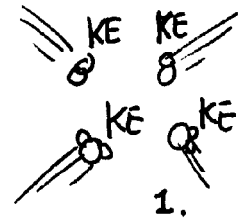


Molecules of H_2O primarily release this energy:

- (a) by radiation to the surrounding air.
- (b) by conversion of potential energy to kinetic energy.
- (c) during their last collision in the gaseous state.

The correct answer is c:

Molecules in air continually transfer KE as they collide with one another. Some speed up while others slow down, in such a way that the total KE score stays the same.



Consider two pairs of molecules, say with equal KEs before collision as in figure 1. After collision, individual KEs may be quite unequal, for molecules that transfer much of their KE to



others are left with corresponding less KE of their own (figure 2). So far, there is no change in the air's total KE score. But if the slower molecules happen to be H_2O , they are candidates for condensation if their next

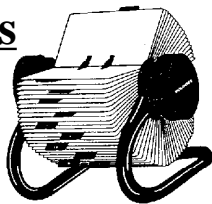
collisions are with other H_2O s that have similarly just given most of their KE to neighboring molecules (figure 3). Upon condensation of the slow-moving H_2O s, molecules left in the air have an increase in average KE. So we see that H_2O molecules transfer KE to the surrounding air during their last collision while in the gaseous state—the collision that immediately precedes condensation.



The energy gained by the air is the well-known heat of vaporization — about 540 calories per gram or 2.26 megajoules per kilogram of condensed H_2O for an ambient temperature of $100^\circ C$. Its more for lower temperatures (molecules bopped to high speeds in a low-speed environment gain more energy than molecules bopped to the same high speeds in higher speed environments).

All things being equal, a rainy day is really warmer than a cloudy day.

The Physics Teacher's Rolodex



As you know the rolodex is where you keep your names and addresses handy. This column of the newsletter will be dedicated to listing sources for useful Physics teaching equipment and services.

SCHOOLMASTERS SCIENCE
745 STATE CIRCLE
BOX 1941745 STATE CIRCLE
ANN ARBOR MI 48106

**BUDGET PRICED SUPPLIES FOR TEACHING
COMPONENTS, SPEAKERS, AMPLIFIERS.**

PROJECTOR RECORDER BELT CO
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**RUBBER BELTS AND DRIVE WHEELS OF ALL SIZES
LOTS FOR AV-APPLICATIONS PROJECTORS ETC.**

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DAYTON OH 45402

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COMPONENTS, SPEAKERS, AMPLIFIERS.**

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1-800-848-8001

**ELECTRONICS FOR SCIENCE AND INDUSTRY
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HERRING SCIENTIFIC REPAIR
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CHAROLETTE NC 28211
704-379-5926

**LENOARD HERRING
REPAIRS SCIENTIFIC EQUIPMENT.**

Schools ' Open Again
Please Drive Carefully



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