

New England Section Newsletter

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1998 Fall Meeting of the New England Sections of the American Physical Society, the Society of Physics Students, and the Seacoast Physics Teachers

University of New Hampshire, October 23 and 24, 1998

The 1998 Joint Fall Meeting of the New England Sections of the American Physical Society, the Society of Physics Students, and the Seacoast Physics Teachers will be held at the University of New Hampshire in Durham, NH, on Friday and Saturday, October 23 and 24, 1998. The topics featured are Advances in Condensed Matter and Nuclear Physics and Issues in Undergraduate Education. Registration begins at noon on Friday in the Memorial Union Building. All scientific sessions will be held in that building near the registration area (upper level - follow signs)

On Friday afternoon undergraduate teaching labs and research labs for Astrophysics, Nuclear Physics and Space Physics will be open for visitors. Maps will be provided for locations. Friday at 2 pm Advances in Condensed Matter Physics will have three talks: Nanostructures, A New Frontier by Richard Siegel of RPI, Small is Different by Uzi Landman of Georgia Tech, and Ultrafast Dynamics of Metal Quantum Dots by Richard Haglund of Vanderbilt. The session on Issues in Undergraduate Education will have two talks beginning 4:30 pm: Active Learning in College Classroom by Bill Gerace and Bill Leonard of UMass, and More than Misconceptions; What Physics Teachers See in Their Students by David Hammer of Tufts. A panel discussion on these issues immediately follows the talks.

A joint social hour (cash bar) and poster session in the Great Bay Room of the New England Center will precede the banquet. The banquet speaker is Daniel Kleppner, the Lester Wolfe Professor of Physics and Associate Director of the Research Laboratory of Electronics at MIT. He will present a talk on Bose-Einstein Condensation, a hot topic on a cool subject.

Saturday at 8 am there will be contributed papers and a poster session. At 9:30 am Advances in Nuclear Physics will have four talks: Measurements of Fundamental Physics with Polarized Neutrons by Mark Leuschner of

UNH, Using Spin to Study the Strong Interaction by Richard Milner of MIT, Parity Violation and Nucleon Structure by Betsy Beise of UMaryland, and Parity Violation and Fundamental Electroweak Physics by Krishna Kumar of Princeton.

The organizing committee welcomes contributed and poster papers. A student presenting a paper will have the registration fee waived. Electronic submission instructions may be received by email to abs-request@aps.org or a visit to the APS home page <http://www.aps.org/>. For more information directly from UNH consult <http://www.unh.edu/nes-aps/> or contact Professor Edward Chupp, NES/APS Local Chair, DeMeritt Hall, UNH, Durham NH 03824; 603-862-1950 or -2750 or -2998 (fax); elc@christa.unh.edu.

Spring 1998 Meeting at Clark University

This joint meeting, with AAPT and SPS sections in New England, took place April 3 and 4 at Clark University in Worcester MA. Half of Friday afternoon was devoted to demonstrations of computer instructional software (Rhapsody, Linux, Macsyma and others) and a tour of the Rare Book Room to see Robert Goddard and Albert Michelson memorabilia. Following these activities, AAPT dealt with Student Preconceptions in Mechanics (John Clement, UMass), and APS heard from Heinrich Jaeger (UChi) on Granular Matter and Jerry Gollub (Haverford and UPenn) on Pattern Formation. Simple materials exhibit complex behavior.

The after-dinner presentation was by John Deutch of MIT reflecting on Government's Role in Research and Development. There has been a fairly abrupt change in government relations with universities and industry. The five-decade period of strong government support on the basis of national security is over. The nation's universities and industries have accommodated well to new circumstances driven by economics. Government has not done so and is not funding excellence so much as pursuing bottom-line justification.

Saturday morning's AAPT sessions dealt with improving physics learning under varied classroom circumstances (Ron Thornton, Tufts), especially of E&M (Ruth Chabay and Bruce Sherwood, Carnegie-Mellon). APS heard about Quantum Antiferromagnetism in Systems of Low Dimension (Daniel Reich, Johns Hopkins) and Magnetic Phases of Exotic Superconductors (Brian Maple, UCal, San Diego). Exotic.

At this meeting I heard some mighty interesting assertions, aside from those of research and pedagogy. I have not checked them. Daniel Reich said that the Johns Hopkins PhD in physics is the only one in the US older than the Clark University PhD in physics. One of the very helpful people assisting at the registration and information desk claimed that Worcester is the largest city not to have proximity to water. I took that to mean at least a pond or stream. As we drove around the city, my wife and I didn't see any, but we forgot to ask what our informant meant. Largest city east of the Mississippi sounds plausible. But largest in the US? I didn't notice any water when I was in Las Vegas although there was a gush of non-aqueous potions. DM

DUCKYBALLS or THIS CHAMPS FOR YOU

Schrodinger's cat is kicking the ball.
A shot upon goal; the goalie stands tall.
Le jour de gloire est arrive.
Peut-etre we'll call him Schrodanget.
With champignons we will all sup.
Champagne to sip will fill each cup.
Our goalie's taller than theirs can get.
Our headers manage to crease their net.
It's bigger than the end of World War Deux.
It's bigger than mon oncle ou mon dieu.
It's bigger than the storming of Bastille,
Mooche beegaire zan ze Ile de Ville.
It strikes swifter than a fer-de-lance,
Reaches deeper than the coeur de France,
Hits you harder than a coup de grace,
And lasts longer than a hit of grass.
Frenchmen celebrate by gazillions.
No joy accrues to the Brazilians.
A highly effective butterfly
Made the ball to flutter by.
In a parallel Universe,
Blessing converts into a curse.
Fizzle finds its way to dazzle.
Bueno, glorio, victorio, Brazil!
(Whoops, error, thank you, please.
I forgot my Portuguese.
But in that U where none are clannish,
Brazil has managed to speak Spanish.)

PDQ

New England Section Advisor Report

The APS Council met November 23, 1997, in San Francisco. Some fifty people attended, among whom were maybe five section advisors, plus two new ones (of new or forming sections).

1. President Bromley reported:

a) October 22, 1997, Unified Statement to Congress endorsed by 106 US societies (physics, chemistry and related disciplines) supporting investment in science and technology -- buzzphrase now is "Decade of Investment" encouraging a doubling of funds for research;

b) a planning meeting on international collaboration of physics

societies; topics included electronic publishing, physics education and public awareness, increasing capacity to do physics in other countries (noting state of physics in Russia and Ukraine).

2. a) Executive Officer Judy Franz reported that membership is currently around 40,000. A survey of members showed outreach activities are valued but not always known about, that Physics Today is considered the best benefit of membership, and that younger members continue to be concerned about careers and employment.

b) The new Four Corners Section (NM, AZ, CO, UT) was approved. A Northwest Section (WA, OR, AK) is being formed.

c) The April 1998 Columbus meeting has a new format with many more plenary talks, including three by Nobel Prize winners.
3. Editor-in-Chief Martin Blume reported that all of Physical Review and Physical Review Letters were on line as of July 1, that institutional subscribers (your university library) to print journals can get on-line versions (your own personal collection), that he is working to put articles on line as they become available, and that CD versions of PRL (1995, 96) and PRC (1996) are available for \$25. All PR articles dating to 1985 are going on line in January with linking possible eventually; this means you may click on a footnoted article or find citations for a present article. RMP will go on line shortly. APS and IOP are discussing mutual linking. A new series of peer-reviewed "niche" journals Physical Review: Special Topics was approved.
4. Treasurer Thomas McIlrath reported that APS was in good financial shape. (My sense is that this is due to attentive handling of investments and careful management of the transition to electronic publishing.) Institutional subscriptions continued their thirty-year decline; 63% are now foreign; fewer than one-third of Carnegie Research 1 and 2 institutions subscribe. Reduction in the number subscribing occurs because libraries (typically and automatically) cancel subscriptions if costs increase more than 10% in one year. Member subscriptions to print journals fell another 11%; on-line subscriptions rose by a greater number.
5. Ramon Lopez gave the APS Education and Outreach Report (aps.org/educ): the Teacher-Scientist Alliance is implementing hands-on experiments. Minority scholarships are providing money, recognition and mentoring. Confidential site visits are being made to help improve the climate for minority and women students and faculty. The high school Teachers' Days held at APS meetings serves about 200 teachers per year. These activities, along with the Forum on Education, mean that the Society is paying more attention to physics education.
6. Planning for the APS Centenary continues. The major celebration will take place March 20-26, 1999, in Atlanta. The gathering will be a general meeting conflating the March and Spring meetings and will include participation of AAPT. Guy Emery is the New England

Section liaison to the Centenary Committee. (In connection with this historic observance, various Sections are including sessions marking the Centenary in their own meetings in 1999. NES will meet at Yale April 9 and 10, joining APS, AAPT and SPS, during which one topic treated will be History of Physics in New England.) There is a Centenary web page you can access via the APS home page. Each physics department will receive a commemorative set of posters.

7. The APS Council approved a change in the number of personally contributed papers allowed at a meeting, that is as sole or first author listed. The revision permits an attendee to present one technical (invited or contributed) and one non-technical paper at a session organized by a Forum or an APS Committee, with both papers listed on the regular program.
8. APS continues its concern with proposed legislation and treaties that would impose, through copyrighting of data bases (generated using public funds), severe restrictions on the fair use of scientific data.
9. Michael Lubell reported that it has been quite a year in Washington, a "sea change." A year earlier the prognosis was flat funding or continuing cuts. Recent events included a call by Congressional Republicans for a doubling of research investments over a ten-year period. The Unified Statement (see item 1 above) was one of several public announcements. Others were from an NSF study, a May NY Times editorial, a Gergin US News and World Report editorial ("the 7% solution," the percent per year which would double funding in ten years), a letter signed by 22 mayors (initiated by the mayor of San Jose), and more.

(This completes the report of John Pribram of Bates College, the NES Advisor to the APS for about three years. George Rawitscher, University of Connecticut, is Interim Advisor for 1998. There are two meetings per year, generally in places you'd like to be. It is an important role to play on behalf of the Section. Your editor mentions this because we are supposed to have an election of a Section Advisor for a three-year term and that suggests we need nominees.)

News from the UConn

(Lots more news is in the Department Newsletter. Phone for your copy.)

Applications from a number of highly-qualified candidates marked the inaugural University of Connecticut Excellence in High School Physics Teaching Award. The six judges, two each from industry, from the Connecticut Association of Physics Teachers, and from the UConn Physics Department, had a hard time narrowing the field to two candidates. Then it got much harder. At home analyzing and evaluating quantitative data, the physicists were less accustomed to judging nuances in the subjective landscape of "excellence." Not a deadlock between groups, it was uncertainty within each individual. (A particle interfering with itself, very quantum mechanical, when we thought measurement would become classical.) Entreaty was made to Department Head Bill

Stwalley, who agreed to fund two awards in inaugural year 1998. The awards were made to Alan Haught of Weaver High School in Hartford and Fred Myers of Farmington High School. Both teachers excel in the classroom, perform many services to their school science programs, and contribute generously to high school physics teaching in the state. Each award consists of \$500 and a plaque, with a gift certificate from PASCO or the UConn Co-op. In a time of low science literacy in the population, the awards are made partly to recognize common values shared by physicists in high schools, industry and universities, ones we seek to impart to our students and our non-physics colleagues.

Philip Best, Chair of the Undergraduate Affairs Committee of the UConn Physics Department, served as head judge (Chief Justice). He wrote the announcement, which here suffers minor editing from DM.

News and Comment from Eric Mazur, Harvard University

(Eric has been on sabbatical this year, working full time on a text book. He welcomes email correspondence on the subject of his communication to me (DM). He refers to my spring 97 Newsletter article (on-line), which contained a review of his book Peer Instruction. He clarifies and corrects some of my points. The rising importance of effective physics education prompts me to include his remarks in his own words. I think some of his methods show great promise.

1. Multiple choice questions. I concur with your dislike of multiple choice questions, but in all fairness multiple choice questions are really the only way to get quick feedback in a large class. We are currently developing most of our multiple choice questions based on answers previously given by students on open-ended questions. This leads to much higher quality multiple choice questions, because the detractors are answers that the students are likely to think of. In addition, I often make multiple choice questions "on the spot": I ask students to sketch, say, position as a function of distance for some sort of situation and while they are working on their answers, I walk around to see what the most common graphs look like. Then, while they talk to one another, I quickly make a transparency that contains these most common graphs so they can cast their votes for immediate feedback to me.
2. Your statement that I do my testing at Harvard is false. As you may know, I received several grants from the NSF and the PEW Foundation and I knew no one would be interested in the performance of Harvard students alone. So from the start I have involved other schools in this program and in the testing. The first school to work with us was UMass Lowell, a fourth tier school with a very different student body and very different teaching resources. Many schools across the spectrum have found that interaction (of which Peer Instruction is just one form) improves student performance (as measured by a variety of standards, ranging from Hestenes' Force Concept Inventory to traditional problems). You can read some of this in Dick Hake's recent AJP article. Even with shortcomings of multiple choice questions and the shortcomings of

students (and teachers), I think there is no question that active participation of the students in lecture is preferable to passive listening.

3. Teaching assistants. I don't know what video you have looked at; I certainly don't know of any that shows TAs in the lecture hall. While it is true that we have TAs to teach our tutorials, few of them show up in lecture and even if they do show up, I have to kick them out of their seats to get them to walk around. I have "guest lectured" in physics classes across the country and always done it without TA assistance (although usually the official instructor for the class helped out). I don't think the method depends on resources and I certainly don't advocate computer use. It seems to me you are confusing different issues here. After all, the students come equipped with all they need for Peer Instruction: their brains and a pair of arms (one will do as long as they can raise it). Many many schools across the country use PI with flashcards, which cost next to nothing.
4. Textbook. Right on the mark. Current books are not very helpful. In fact this has led me to write a text book. The manuscript has been class-tested at a few places and more widespread class-testing will follow next year. So far the results look very promising, but it is too early to tell. In any case, I couldn't agree more with that part of your article.

(The editor will publish any reader's remarks made in response to the points made here. If you have experience using Peer Instruction or an alternative teaching strategy, share it with others. Let us know particularly what you feel works or does not work.)

Two Books, One Play and A Movie

Kepler is a novel by John Banville and winner of the 1981 Guardian Prize for Fiction in Great Britain. In a spare 192 pages it evokes a fascinating time and place. Kepler owned one solid pair of the shoulders on which Newton stood to see farther than anyone else of his era. He was a product of the breakdown of late medieval Europe that produced the Renaissance. In part he was a contributor to the breakdown. (I see it as a self-consistent field of causes and effects.) His break with prior thinking was huge and daring, even dangerous. He was the only one to give up a prejudice for circles as planetary orbits, the step which gave him the ellipse with the sun at a focus.

The characters are sharply drawn: insufferable Tycho, perplexed Johannes, their hangers-on and nemeses, their loves and otherwise, a panoply of well-crafted ... (Sorry, it's beginning to read like a book jacket.) The writing is beautiful on every page. "The summer evening hesitated in the doorway, and in a big mirror a parallelogram of sunlit wall leaned at a breathless tilt, with a paler patch in it where a picture had been removed." (The English Patient, requiring English patience, should have been written this well.) We see that wall the way Kepler saw an orbit, in its geometric and godly clarity. Here's my advice. Tell your spouse or other you are working through the night, and read this book instead. Lie, promise, evade, but read it.

Journalists have been dropping like insects in the cold because they have used others' material without attribution. (In later articles I will assume the personae of some well-known comedians, but I won't tell you who.) In reviewing a biography of the man himself, the one and only Newton, Mario Szichman of the Associated Press wrote "A reader who expects a biography of an eminent scientist to be boring will find Michael White's Isaac Newton: **The Last Sorcerer** (Helix/Addison-Wesley, \$27) a pleasant surprise." I am merely mimicking Szichman when I agree with White's replacement of the forbiddingly remote embodiment of pure intellect by a human vessel, ambitious, vindictive, manipulative, and mystical. We all know of the rivalry of Newton and Hooke, which caused them to be secretive and even paranoid.

For most centuries, even those we call the Enlightenment, science/alchemy and astronomy/astrology were two sided-coins. For most people the present century is no exception, and the next one does not look promising in this regard. Just as humankind was seeking knowledge, so the knowledge gained was benefiting humanity. Alchemy was designed as much to purify the baseness of its practitioner as to purify a base metal into gold. White argues that the scientist would not have achieved success without the discipline of the alchemist, two urges in the same mind. Newton's own words to his contemporaries claim as much. Another side of the same historic figure was his practicality. He made himself welcome at Court and elevated the Royal Mint. He defended the purity of English currency against counterfeiters by leading investigations and prosecutions of malefactors. Szichman's laudatory review should inspire us all to read the book.

According to a notice in a periodical of the performing arts, a new play still playing in London was also performed at the Long Wharf Theatre in New Haven, Connecticut, for only a week of this summer. The play is **Copenhagen** by Michael Frayn, a bright playwright, whose themes and theatrical devices remind me of Tom Stoppard, a brilliant playwright. In 1941 Europe is in flames, and we know that the flames will spread to most of the world. Werner Heisenberg visits Niels Bohr. Both these men are well aware of the power inherent in the heavy unstable atomic nucleus and both suspect it can be harnessed in weapons that could determine the outcome of the war. They are on opposite sides, Heisenberg electing to stay in Germany for the duration. Bohr will soon have to escape from Denmark as Germany takes most of Europe. There is plenty of conflict and plenty of sharp intelligence trying to work through the conflict.

I confess that other activities kept me from seeing the play at this time, but it's on my must list. Some friends who saw it at the Long Wharf were very impressed with the production. They said it was one of the best displays of the ways the liveliest minds originate and secure their ideas. Bohr and Heisenberg thought in entirely different ways, yet each was stimulated to fashion his own ideas by arguing through the ideas of the other. It's what we call "brainstorming" and the storms in the best brains can change the world. We should continue to feel most fortunate that the United States made the bomb first. Its use by us might have been a misfortune but its use against us or our allies in World War II would have been the mother of all misfortunes.

I saw the movie **Contact** on HBO one Saturday night. It is a Carl Sagan story, partly also due to Ann Druyan. It is a prime Jodie Foster vehicle, a role in which she (for a few minutes, literally) shines. The premise is that a research group doing SETI (the Search for ExtraTerrestrial Intelligence) finally receives an unmistakable confirmatory set of signals from outside the Solar System, just as the group is losing its financial support. It's the winning homerun in the last of the ninth; there's nothing like it. The signals include the sequence of primes, the reflection of a sixty-year old TV broadcast from Earth, and a 3-d sketch of a spaceship, all coming to us from Vega, brightest star in the constellation Lyra.

In so many movies the scientist is the caricature among realer people. Here it's the opposite and I loved it. Foster is warm, courageous, honest, unsparring of herself if she feels she could work harder or longer. The contact brings in the US military in the person of James Woods (the guy you hated since he played the cop-killer in "The Onion Field"). He complains that whoever is out there is using unfamiliar math instead of straightforward English; why is that? Matthew McConaughey (I'll never spell that name right.) is an almost priest, one of the many that SETI attracts like beef exposed to the dogs of the neighborhood. He tells Foster he couldn't cope with the celibacy thing. (Okay, bachelors, remember that clever line.) A few minutes later Matt and Jodie are in her bed. (If Hinckley had known she was that easy, he wouldn't have had to shoot President Reagan.) Foster gets up in the middle of the night, before the fellow is done, to go to work. She's late. She received his signal but she really wants the ExtraTerrestrial. "*Did I miss something?*" says he. "*Yes, you lucky idiot,*" I shouted at my TV, scaring my dog, "*you missed she's a scientist.*"

This movie has almost every hope and fear of today's America. Foster's father dies when she's a kid, apparently giving rise to her quest for life outside of Earth. A religious fanatic turns terrorist and blows up a spaceship along with personnel and himself. The Director of Scientific Research (NSF? I couldn't tell.) peremptorally terminates Foster's group. Then when the group makes contact, he tries to take all the credit. The movie is rich with cliches and stereotypes. Some of them are very touching. For example, a lambently blind SETI scientist is the first to find a pattern in the noise from Vega. He hears the rhythm in the sounds before the sighted others find any structure in the wiggles on the screen. I know I'm showing my extreme prejudice when I say that everyone in Foster's group is a decent human being and the religious opposition is farther out to space than Vega. The movie is billed as presenting a balanced battle between science and religion. Sure, and the Yankees and their opponents start every game even.

The absolute low point for me is the hearing before all interested parties where Foster, alone, tries to justify her request to be the one to man (sorry) the one-person ship (remember the ship?) to Vega. She speaks the language of the Vegans. She is fearless. She wants to go. Then Matthew (remember Matthew?) asks her whether she believes in God. She should have had her attorney (Kelly McGillis or Susan Sarandon) present to voice objection. She answers honestly that she hasn't decided that tough question and that dooms her. On grounds that only a believer can

represent humans to another culture, she is turned down. But don't fret. A multi-billionaire who spends his life aloft, perhaps fearing the microbes or the morons he would encounter on the ground, has financed the construction of an identical ship. He sends her up. That's when she turns luminous, as the machine finds a wormhole to its destination, quite a shortcut. Faster than you can eat a big mac, she is with the ETs. And whom do you think she finds there? Her DOD. I mean her Dear Old Dad. He has been answering her prayers and that's how long it took. (I'm not making this up, you know.)

I must extol one more character in the movie, who as I write this is testifying to the dimmest Starr in the firmament. When the US sees its national interest affected, the President of the US plays a part, and this part is played by (not Michael Douglas, not Kevin Kline) President Clinton in a stellar performance. He is believable in that role. I say he is presidential. I did whisper to Jodie, when he wasn't listening, not to let herself be alone with him. I know I am confounding the actress with the character and the movie with life, but I believe you are who you pretend to be.
DM

What I Did on My Summer Vacation

Retired but not retiring, I have been taking courses, and occasionally even giving them, in the Center for Learning in Retirement (CLIR), which meets in a cottage on a campus of UConn near Storrs. You can take almost anything you've always wanted to. Scientific offerings are non-mathematical, so how would you like Russian literature, art history, historical documents? I took a course on the Middle Ages, the thousand-year interval between classical and modern times, from the fall of the Roman Empire to the onset of the Renaissance. I learned that they were probably not Dark Ages and the people were no dopes. It's reassuring. Literacy was low, but some of the arts thrived, particularly architecture. Some of the cathedrals were engineered to minimize the maximum stress they would bear, as present-day engineers have found, with some of the arches looking a lot like the wondrous St Louis arch. The acoustics in some are rich and clear and reach their best when the cathedral is fully occupied. The voice of a full-throated orator (Orson Welles, for example) would sound like an emissary from God. Now how did they know to do that? The association of science and the magical arts was at its height. The same people did both. Experimental science (what we think of today as science) appeared in rudimentary form in the twelfth century. Robert Grosseteste (Bighead) based his approach on observation followed by explanation on the basis of what was then known (from Aristotle). In the thirteenth century Albert the Great (Albertus Magnus, like the college in New Haven) used the word *experimentum* to mean observation, although he did not mean controlled experiments. These were very religious men, whose explanations eventually carried them back to a causality of God's intent. It was a much later century that decided to dispense with that stage of the theory. Albertus is one of the unusual people of whom it was said he knew everything known of his time. He has been characterized as Faustian, which I guess means he was supposed to have made some trade of his soul

for knowledge. Wow! What would you do with an offer like that? In the Late Middle Ages science slowly became differentiated from magic, a process still continuing. Both concern natural phenomena and the hope of understanding them. Math evolved to provide a deductive path for science and aided the separation. There are many good historians of the Middle Ages. I acknowledge the articles of Frank Catania, Loyola University of Chicago.

DM

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A PHYSICS HOME COMPANION

It's been a slow year in Lab Woebegun. Oh Hell Week effectively terminated last year. You know that period of time when the Nobel Prizes in the sciences are awarded and a collective voice mutters Oh Hell. It's all those people who, like RedSox fans, realize their season is over.

We had an onsite visit from our contract monitor. He said our ratings are down and our reputation is suffering. I told him ratings are overrated and, as for reputation, believe me it's not what it's reputed to be. Our grant is in Limbo, which I understand is halfway to Vega and is bypassed by the trans-MilkyWay Wormhole. Then we were invaded by a troupe of actors

intending to use our lab for the movie Event Horizon. It seems our research space with all its cubicles and corridors is a match for their spaceship. Laurence Fishburne, fresh from playing Othello, is the captain who intones immortal lines like "Listen up, we've got a job to do." and "You can't have more time; that's what we're running out of." This was the biggest comedown since Richard Nixon. Half the crew smokes around the oxygen equipment. One character shouts "Keep your b.s. physics, I know what I saw." That ended my venture into the movies. Say what you want about me, but talk clean when you say Physics.

The APS Centennial has an arrangement with Disney Productions. This prompted a spokesman for the Religious Right, who already had it in for Disney, to place a curse on Atlanta to take effect next March. You'll recall that Jerry Fellhell put a curse on Orlando for the same reason. You can tell how potent his curses are when you note that when most of Florida was on fire during the hot drought of a few months ago, Orlando was one of the few places spared. Perhaps that's because it is made entirely of plastic. I thought we had separation of Shrinkwrapped Mind and Intelligent Life when Galileo was forgiven his trespasses by the One True Church (OTC). That Church has been reasonable lately but not so the Other True Church (OTC). It's that OTC that's been levying curses on ungodly behavior. A while ago one of them held a meeting just outside our door. What are you doing here? I asked. We're here to help you, they announced. They call themselves Fundamentalists of Fizzicks and they told me their program. They require all lab assistants to obey without question the professor in charge. The way they explained it, the relation of an RA to a PI is as the relation of the PI to the lab. It's in everyone's best interest to make sure we can tell a server from the one served. I told them it might not work here.

Then we had a scene from a local group called Pheminists phor Physics. They demanded that our lab be made more compatible with women and other minorities. I realize that 51% of most minorities are women (52% on a good day) but I didn't know what to do about this demand. You see, physics is tough on everyone. You just can't make it more agreeable than it is. Consider that case where the mother of a high school senior sued her son's guidance counselor for letting him take physics when she should have known how that would wreck his academic record. If we do it to the guys, we have to do it to the girls; it's only fair. Wasn't it the deep thinker Glorio Steiner who said Physics needs feminism like a fish needs a bicycle?

Then we had a walk-in from President Clinton. I said Mr President, what are you doing here? He told me he came to apologize. He was apologizing to everyone and he wanted us to feel included. He said the US was historically slow to support physics and he was going to right this wrong by doubling the support of our lab. I thought Oh oh, just when our support might be zero. Then he admitted there was another reason for him to apologize. First he had avoided physics in college and then when he was put into it, he didn't study. I said, you mean...? He nodded, Yes, it was inappropriate physical behavior. Apparently it was a compulsion with him. Like the horse who won't drink the water, what's the metaphor I'm looking for? You can make a man light up, but you can't make him

inhale.

Schrodinger's cat is here or there now and then. No longer Austrian, you know, the cat became French. Most cats say Me Me Me, but Schrodinger's, being a two classical-state system, says We We We. There's an asymmetry in the states, which you discover upon many successive measurements. You may get, in fact some day you must get, Alive, Alive, Alive, Dead. But you will never get Dead, Dead, Dead, Alive. Not in our lifetime anyway. Alive or dead and well or ill, he or she is living or dying in Paris or Lyon. The cat told me he has taken to using a charge card. He boasts that it was Shakespeare's favorite: Visa, it's everywhere you want to be or not to be. The show has been brought to you by Ralph's Pretty Good Stockroom. Remember, if Ralph's doesn't stock it, you can probably get along without it.

And that's the news from Lab Woebegun, where all the lab assistants obey their professors, all the professors make exciting discoveries, all the grad students pass prelims, and all the TAs speak English.

DM

More on science and magic in the Middle Ages

A handbook of the time, the *Libellus de Alchimia*, lists precepts for the practitioner. See how much you think times have changed in almost a millenium.

1. The alchemist/scientist should work silently and secretly; if many know what he is doing, the secret will not be kept and when it is divulged, it will be repeated with error.
2. The scientist should have a laboratory -- a special house away from the sight of others in which to carry out his procedures.
3. The scientist must observe the time and the seasons.
4. The scientist must be sedulous, persevering, untiring -- a constant worker; if he begins and does not persevere, he will lose both materials and time.
5. In all procedures the scientist must have and follow a protocol.
6. All vessels should be made of glass.
7. The scientist should stay away from administrators; if you are committed to your work, they will bother you with questions about how you are coming and when you will be finished, and if you take too long they will regard your work as trifling and you will experience great dissatisfaction. Of course, if you do not succeed, you will be humiliated. If you do succeed, they will give you something else to do.
8. Finally, the scientist should have plenty of money.

These eight commandments were obtained from the Latin by Frank Catania, Loyola of Chicago.

Wordplay

Physics comparipuns: Our circuit has more conductors than the Philharmonic. Our conduction band has more holes than a train of faulty logic. Our junctions have more tunnels than a prairie dog colony. Our wave packets encounter more barriers than a request to the dean. This requires more physics than a blocked intestine. (Some of these are not puns; they are flawed.)

Combowords: Heisenberg's "phenomenal way" (May 98 Physics Today). These are words like "bodacious" or Lewis Carroll's "slithy," putting pieces of two other words together.

Apronyms: These would be like a physicist named Meter or a chemist named Beaker. Edward Albee had a character named Butler, the butler. Baseball had Vic Power. And your name is...?

THE LAST BANG or the xx files

A few months back, on the back page of APS News, a page imaginatively called THE BACK PAGE, Priscilla Auchincloss aired an article called "Physics and Feminism." Following that, there was a THE BACK PAGE of "Reader Responses to 'Physics and Feminism'..." The mistake all these readers made was to take her the way she intended, that is seriously. I'm not going to make that mistake.

I don't want to rant and rave, but listen Priscilla, give us credit for the same things you ask credit for yourself. In your article you point out that feminism is many things, but you take physics as one. A lot of ideas mean many things, like paradigm, which you like to use, and Catch 22, which maybe you don't. Physics has a lot in common with other rich pastimes, like baseball and country music. It is a philosophy, a history, a set of principles or rules, a methodology, a retreat from the otherwise world, a metaphor, a profession, a community of interests. And oh yes, it is not pinched whining; it is broad fun. My grandmother had a name for columns like "Physics and Feminism." She called them kvetch articles. That's a technical term, which stands for What you are not doing for me. THE BACK PAGE alternates this type of article with its logical reverse, What I am doing for you. Well, I'm doing this for me.

The APS welcomes women of all generations to all levels, from President to peon, same as men. What's the complaint? Do you want us to move the bases closer together and bring the fences in so you can hit home runs? Or what? Physics is what it is. If you want an easier time, join the marines. A few physicists could improve, I'll grant you, but physics is not the same as physicists. Look, a good physicist is as hard to find as a good man. Let me ask you, how many feminists does it take to change a physicist? I don't know, e or π or the square root of 11. It's well known that when a man and a woman marry, the woman hopes the man will change, the man hopes the woman will not change, and both are inevitably disappointed. Can physics be that different from real life? Should it be?

As long as making use of my first amendment rights is not an impeachable offense, I will continue to speak my mind. The word processor is more potent than the nuclear bomb for riling people. But if anyone objects, you may start proceedings against me. Be warned that my mandate says that the only person who can fire me is the one replacing me as Editor of this Newsletter. So is it you? I'll be willing to serve as Executive Secretary to help you get started. Less work for you. You won't even have to invent a new office for me, like Executive Officer.

While I'm excoriating the pusillanimous, let me hop onto the case of the APS Meeting Announcements. Here is the First Announcement of the APS Centennial Meeting, where it says "The President of the United States has been invited to deliver the address at the opening session on Monday." That's it? The President of the United States, whoever he may be? Not President Clinton? Who is writing your material, the Congressional Republicans? In the heartland of America, there's a river called the North Platte where billows of birds spend their happiest times. That's because the river is a mile wide and an inch deep, like the Republican philosophy of government.

Listen, if you folks had sent me news of your workstation, I wouldn't have room to put my articles into this Newsletter. So anything you don't like here is your fault. But that's just my opinion. I could be wrong. And I'm out of here.

DM

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