

"All the v's
That's fit to Print"

ΦYAST ΦLYER

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Dick Henry, Editor

NSF HEAD VISITS DEPARTMENT

Neal F. Lane (PHYS PhD, 1964) Distinguished scientist, leader, and OU alumnus, received a Doctor of Humane Letters from OU during graduation ceremonies on May 13. Neal is one of 22 people in the history of the institution to be so honored.

As director of the National Science Foundation, Neal oversees federal support for research and education in science, mathematics, and engineering---a role that will influence scientific progress throughout the world for generations to come. His position as NSF director recognizes his accomplishments as an educator; a highly visible, productive researcher in theoretical atomic and molecular physics; and his influential leadership in the academic and national scientific communities.

During Friday and Saturday of Neal's visit he was involved in activities relating to his award: a Presidential Reception Friday night, a pre-Commencement luncheon on Saturday, and, of course, Commencement.

On Monday he visited with various groups on the OU campus, his visit culminating at afternoon tea in our Department followed by meetings and/or lab tours with each of the four major groups and a reception at the home of Ryan and Mary Ellen Doezema.

His other activities on Monday included a tour of the Center for the Analysis and Prediction of Storms (CAPS) by Kelvin Droegemeier (Director), an informal meeting with a small group of faculty from science and engineering departments to engage in a dialog concerning science policy and funding in the US., lunch with with Interim Provost Nancy Mergler, Vice President for Research Administration Eddie Smith, and Deans David Young (Arts & Sciences), Billy Crynes (Engineering) and John Snow (Geosciences), a meeting with a small group of graduate students from science and engineering Departments and senior undergraduates who are actively involved in research, and a tour of laboratories in the Department of Chemistry conducted by Roger Frech.

The whole visit was a marvelous affair, a tribute to Neal and, I suppose, to OU for training him so well. In any case, he seemed to greatly enjoy the entire visit.

Mike Morrison

THE LIN GRADUATE RESEARCH FELLOWSHIP

Hopes of establishing a new one-year graduate fellowship are rising. The award, to be given annually to one of our students, is named in honor of Professor Chun Lin, a former member of the Department who now teaches at the University of Wisconsin. Currently, the endowment for the Lin Graduate Research Fellowship stands in excess of \$10K, as we move toward our ultimate goal of around \$60-100K. More details on this Fellowship will be given in the fall newsletter.

LIBRARY NEWS



By next fall you will probably notice a few changes in the Physics/Astronomy Library:

Plans are underway to change the way we check-out books. Over the summer we will install a new computer workstation and the accompanying equipment to allow us to use the magnetic strip on the back of OU ID's. This should eliminate the need for us to attach OCR numbers to the back of the ID. Hopefully service will not suffer too much in order to improve technologically.

We also have hopes of getting a PC which will offer public access to CD's and data disks for use in the library.

Zora is working on organizing materials and honing her online searching skills to support faculty research on the STJ afterhours database (Physics Abstracts online.)

As usual the hours that the library is open in the summer will be shortened. Starting May 15, 1995, thru Aug. 20, 1995, the hours will be: Mon. - Fri. 8 am to 12 noon and 1 pm to 5 pm. Closed all day Sat. and Sun.

Anjana Jayasinha and Zora Sampson will be here all summer. Allen Houston will return in Fall 1995 after leaving us to work full time during the summer.

Zora Sampson

ALUMNI NEWS



Charles DeJoseph (PhD PHYS, 1989) is currently working as a Research Physicist and Task Leader for one of the two AFOSR (Air Force Office of Scientific Research) tasks in the Plasma Physics Section of the Aero Propulsion and Power Directorate at Wright Laboratory, located near Dayton, Ohio. His group is involved in basic Atomic, Molecular, and Optical Physics which supports Air Force needs in low energy plasma physics. Charlie says, "A better description of the latter would be electric discharge physics including direct current, radio-frequency, and microwave excitation of low pressure gases. Recently (May 2-3, 1995), AFOSR held a two-day 'Contractors Meeting' at our facility where some of the University contractors working in the AMO area could meet and exchange information with Air Force researchers working on similar problems. Among the attendees was Professor Chun C. Lin of the University of Wisconsin and, as any Oklahoma old-timer will remember, formerly of the University of Oklahoma Department of Physics and Astronomy. While Professor Lin had already left Oklahoma when I arrived (the first time) in 1972, I met him at a conference in 1975 and have known him since then. Two years ago I presented a seminar at Wisconsin and got to spend a couple of days with Professor Lin. They have an excellent AMO program at Wisconsin. It was nice this time to be able to show him our labs and get to see him again. For any of those people at Oklahoma who remember Professor Lin, he looks about the same as he did twenty years ago which I certainly can't say for myself."

Charles Levendosky (BS PHYS, 1958) is presently editorial page editor of the Casper (WY) Star Tribune. He has been for many years an influential writer on law, government, civil rights, and things political in Wyoming. Along the way he was honored by being named poet laureate of Wyoming in 1988. In 1994 he received the Silver Gavel Award from the American Bar Association and the Baltimore Sun's H.L. Mencken Award for his columns. (Note: this information was kindly provided by Robert J. Penney, BS Geol, 1945).

Ed Fast (PhD Physics, 1946) lives in Idaho Falls, ID. He retired about 1.5 years ago and now claims to be so busy that he is contemplating returning to work. He and his wife Marie recently joined a group of 14 for a trip around the world, visiting numerous sites including Beijing, Bangkok, New Delhi, and London. Ed also purchased a computer and fax machine recently and is now learning how to use both. In his letter, Ed thoughtfully enclosed the Physics Department song of the early 1940's, the lyrics which feature names of the folks in the Department at that time and is sung to the tune of "Solomon Levi". While it is too lengthy to print here, those desiring a copy can contact Ed (208-524-2627) or Dick Henry at the Department.

In response to a question raised by Ryan Doezema in the last issue of the newsletter asking "what constitutes applied physics," Jim Long (BA PHYS, 1937) was quick to point to the large number of physics majors of the 1930's and 1940's who eventually went into geophysical exploration, using seismic, gravity, and magnetic methods as examples of applied physics. And now we know!

THE PAPER CHASE



Recent Publications:

"Authorship Counts. Forty Years of the Physical Review and Physical Review Letters," Zora J. Sampson, *Scientometrics*, 32, 219 (1995).

"NTE Spectral Analysis and Model Constraints on Supernova 1993J, E. Baron," P.H. Hauschildt, D. Branch, S.J. Austin, P. Garnavich, H.B. Ann, R.M. Wagner, A.V. Filippenko, T. Matheson, and J. Liebert, *ApJ*, 441, 170 (1995).

"Spectrum Synthesis of the Type Ia SNe 1992A and 1981B," P. Nugent, E. Baron, P.H. Hauschildt, D. Branch, *ApJ*, 441, L33 (1995).

"Evidence of Heavy Element Nucleosynthesis Early in the History of the Galaxy: The Ultra-Metal Poor Star CS 22892-052," J. J. Cowan, D. L. Burris and C. Sneden, *ApJ. Letters*, 439, L51 (1995).

RESEARCH TRAVEL



Kim Milton continues on sabbatical leave at Imperial College, London, until July. Kim received one of the few Senior Visiting Fellowships awarded by the UK Particle Physics and Astronomy Research Council.

Ed Baron visited Peter Hauschildt at Arizona State University for one week in Tempe, AZ to work on spectral modeling of moving atmospheres.

John Cowan spent a few days in February at the University of Texas-Austin, working with collaborator Chris Sneden on their Hubble Space Telescope Cycle 4 project to detect heavy elements in a metal-poor halo star. In March, John traveled to the University of Chicago to work with

Jim Truran and Friedel Thielemann (Basel) on their graduate textbook, soon to be available at airport bookstands everywhere.

MEETINGS ATTENDED



Kim Milton attended the April meeting of the APS/AAPT in Washington, D.C. He presented an invited paper entitled "Julian Schwinger: UCLA and the Source Theory Years---From Magnetic Charge to the Casimir Effect," as well as a contributed paper on "Finite-Element Lattice Gauge Theory."

Sheena Murphy presented the paper "Lifetime Of Two Dimensional Electrons Measured by Tunneling Spectroscopy by SQM" at the March APS meeting in San Jose.

Kieran Mullen also attended the APS San Jose meeting in March, where he presented "Investigating Superfluid Helium Dynamics With Microlithographic Techniques."

Ryan Doezema attended a Department Chairs Conference on the topic "Physics Graduate Education for Diverse Career Options" at the American Center for Physics in College Park, MD, in May.

Dick Henry attended the 5th Tex-Mex Astrophysics Conference in Mexico in April. He presented a paper on "A New Look at Carbon Abundances in Planetary Nebulae."

Ed Baron attended the APS Washington, D.C. meeting in April where he presented the paper "The Physics of Type Ia Supernovae and the Value of the Hubble Constant".

SEMINARS PRESENTED

Kieran Mullen gave a colloquium at Oklahoma State University in February entitled "Superhexatics: The Spatial Ordering of Helium in Superfluid Films".

A talk on "The Physics of SNe Ia and the Value of the Hubble Constant" was presented by Ed Baron at Arizona State University in March.

Sheena Murphy spoke on "Phase Transitions In Quantum Hall Systems," at Cornell in February, at Texas A&M in March, and at Kent State and Penn State in April.

Kim Milton enlightened an audience at Southampton University in April on the topic "Finite-Element Lattice Gauge Theory."

Dick Henry spoke at Central Michigan University in April on "Chemical Abundance Patterns in Cluster Spiral Galaxies."

CASH FLOW



K. Milton and R. Kantowski, "Nonperturbative Quantum Field Theory," \$100,000 (year 1 of 3-year grant), DOE.

Junior Faculty Summer Fellowships of \$5000 were awarded to Sheena Murphy and Kieran Mullen from the College of Arts & Sciences. Sheena received an additional \$1000 grant from OU for involvement in the Computer Infrastructure Improvement Program.

THE WELCOME MAT: Visitors to Nielsen Hall

Zongwei Li of Beijing Normal University visited for a week during April to attend the Medieval Festival and to work on supernovae with Ed Baron and Adam Fisher.

Tim Beers (Michigan State) visited John Cowan in March to give a colloquium and to talk with John about some possible research projects involving metal-poor stars. John also hosted a visit by Al Cameron (Harvard) in March. During Al's stay they discussed some possible research projects involving nucleosynthesis to pursue in the future.

ON THE ROAD TO STOCKHOLM: Recent Purported Breakthroughs at Nielsen Hall

Kim Milton and group have completed the formulation of the equations of motion for a non-Abelian gauge theory on a finite-element lattice. This was a very difficult problem, on which they have been working since 1987; the solution is very elegant and should enable new nonperturbative insights into gauge theories such as QCD. A paper describing this work has just been submitted to Nuclear Physics B entitled "Non-Abelian Finite-Element Gauge Theory."

John Cowan, Chris Eck, David Branch, Doug Roberts (University of Illinois), Francesca Boffi (Space Science Telescope Institute) have set limits and constraints on progenitors for Type Ia supernovae, based upon radio observations of SN 1986G in Centaurus A. Sure they have!

TEACHING & STUDENT NEWS

Kieran Mullen experienced his first semester of teaching freshman physics this spring. He comments that the "separate majors course is a very good idea, and that the students are exceptionally talented and enthusiastic to learn."

Bruce Mason, Mike Morrison, and Kieran Mullen are working on integrating computers into the undergraduate curriculum. They have developed a draft proposal and are discussing it with the Undergraduate Studies Committee.

Zora Sampson (Librarian, Physics Library) and Kieran Mullen are trying to arrange for library patrons to have access to a physics journal database, whereby one can search for articles by title, subject or author, and the database covers nearly 50 years of journals. Such a database is a great help for finding references in the rapidly growing field.

SUMMER PLANS



The four SNe'rs (Baron, Branch, Nugent, Fisher) are going to the NATO ASI in Barcelona, June 20-June 30.

John Cowan will be traveling to Basel, Switzerland (very close to the Alps...sorry, John) during the summer to work with Friedel Thielemann on research projects involving the formation of very heavy elements.

AWARDS DAY 1995

The Department's annual student awards ceremony was held this year on May 4, and numerous students were recognized for their outstanding work.

In Engineering Physics, Karcher Scholarships were given to Robert Coffie, Russell Gibson, Preston Larson, Aaron Lauve, Derek Miller, Kimberly Schneider, Dan Sinars, and Chun Yu. The Outstanding Sophomore award went to Derrick Kiker and the Outstanding Junior awards to Preston Larson and Robert Coffie. The Karcher Award for Outstanding Scholarship in Engineering Physics was presented to Daniel Sinars.

In Physics and Astronomy, recipients of Karcher Scholarships are David Miller, Dean Richardson, Ian Spielman, and Christina Talbot. Outstanding Sophomore awards went to Andrew Magness and Jason Magness, while an Outstanding Junior award was given to David Miller. The Karcher Award for Outstanding Scholarship in Physics and Astronomy was presented to Marc Welliver.

The Department's highest undergraduate award, the Fowler Prize, was given to Jeffrey Winesett. At the graduate level, the Nielsen Prize was shared by two recent PhD graduates, Tim Young and Marios Lymberopoulos. Congratulations to all of these students.

FINISHING UP

Two graduate students have successfully defended their PhD dissertations and are now out in the real world. Carmen Pantoja, a student of John Cowan's, completed a thesis on "Lifting the Veil of the Anticenter Zone of Avoidance". Carmen will soon begin a postdoc at the Center for Astrophysics in Cambridge, MA. Xu Fu, a student of Patrick Skubic's, defended his thesis on "Semileptonic Decay of B Meson to Vector D Meson", and is now doing software development for Loral Federal Systems, a former division of IBM, in Gaithersburg, Maryland. We wish Carmen and Xu all the best for the future.

