



DEPARTMENT OF EARTH SCIENCES AND PHYSICS

May 22, 2003

Dear Friends and Alumni,

Hello again. I would like to take this opportunity to share with you some of the events that have occurred in our program this past year, catch you up to date with some of our former graduates, and tell you a little bit about some of our current students. With two newsletters in a row, I feel safe in saying this may become an annual event.

Astronomy/Earth Day Speaker

This past spring, we were very fortunate to be able to bring Dr. Leon Lederman to campus as the kickoff speaker for a variety of Earth Day activities on campus. Leon Lederman is an internationally renowned high-energy physicist and is Director Emeritus of Fermi National Accelerator Laboratory in Batavia, Illinois.

He was awarded the Nobel Prize in Physics in 1988 for the Two Neutrino Experiment and the Enrico Fermi Prize given by President Clinton in 1993. Lederman served as a founding member of the High Energy Physics Advisory Panel of the United States Department of Energy and the International Committee for Future Accelerators, as well as a Commissioner for the White House Fellows. Most recently, Dr. Lederman has become a strong proponent for reform in physics education. We had originally hoped to have Dr. Lederman speak at the Lawrence Symposium that I mentioned in last year's letter. Unfortunately, the Nobel Prize committee chose the same date for their Centennial Celebration of the Nobel Prize as we chose for the Lawrence Symposium and Dr. Lederman chose Stockholm. However, this spring our Astronomy/Earth Day event fit into Dr. Lederman's schedule. I feel safe in saying Dr. Lederman's visit was a treat for everyone on our campus. He spent his first afternoon visiting with physics majors, earth science majors and honors students. His evening lecture was entitled "Progress Report on Efforts to Learn How the World Works" and was very well attended. Tuesday morning he visited several science education classes on our campus. The number of unsolicited, extraordinarily positive comments that I received from students, faculty and other visitors about Dr. Lederman's visit was truly overwhelming. As you can see from the picture below, the students certainly enjoyed his visit.



Masters of Natural Science

Some of you may remember the Masters of Natural Science Program from your days at USD. The program has undergone a significant facelift in the past several years. The primary focus of the program has become one of providing discipline specific content to teachers who may be teaching outside of their fields of expertise. Recognizing a significant need in South Dakota and the surrounding areas, the emphasis has been on providing physics and chemistry coursework. The courses are designed as one-week intense class/laboratory experiences in subfields of physics or chemistry. In addition, there are interdisciplinary courses that use concepts in physics, chemistry and biology to explore topical problems. Last summer's focus was on "Energy Production and Use" as it applies to South Dakota. The program has been slowly growing. If you have any colleagues that may be interested in this program, they may contact me or the graduate school for additional information.

Apollo Era Material

After my request for information in our last newsletter, I received a number of letters. Perhaps the most exciting one was from Mr. Charles Nickel. Mr. Nickel graduated from USD in 1955 with a BA in physics and worked as an aerospace engineer in the 1960 to 1970 Apollo era including Lead Engineer in charge of *Preflight Tracking and Communications for Apollo Missions* with Boeing. Chuck had a large number of technical documents and books that he offered to donate to the department. We happily accepted. Included in this collection are items from the Preflight Tracking and Communications documentation for Apollo 13, handbooks from JPL's Interplanetary Trajectory Simulation, numerical-filter documentation and numerous other valuable resources. The room we use for our astronomy lab has a smaller setup room and we are using that room for our collection. The materials are on reserve and are available for viewing in Room 113A in Akeley-Lawrence Science Center. In addition to the technical documents, Chuck also donated a number of plaques given to members of the Apollo teams. We are trying to find a public, yet secure place to display these plaques. All of this material was donated in honor of Walter and Erna Nickel and we have made signs to mark this collection.

Graduating Seniors

This past year marks one of the largest graduating classes for the physics program in recent history. In December, we graduated two students, Ben Dowling and Chris Tuschen. Ben entered the graduate program in mathematics at USD where he plans on studying chaos theory. Chris will be entering the Applied Physics Masters Program at the University of Oregon starting in June. This past weekend we had five students graduate at spring commencement. Chris Dabney earned a major in mathematics in addition to his physics major and graduated with honors after completing the requirements for the honors program. His honors thesis was entitled "The Titius-Bode Relation: Formulating Natural Order or an Expression of Cosmic Coincidence." Cara Hamilton also graduated with honors. Her thesis was entitled "The Effects of Various Methods of Load Carriage on Hip and Trunk Movement While Walking." Unfortunately, Cara missed the graduation ceremonies. She was competing in the conference track meet where she placed fourth in the steeplechase and earned all-conference honors. Cara plans on entering USD's medical school in the fall. Brian Schiefen entered our physics program in the fall of 1992. (He's been here almost as long as I have.) Brian completed two years of school and then took some time off, OK a lot of time off. He reentered our program in the fall of 2001 and completed the remaining requirements for the physics major, graduating this spring with a B.S. in physics. Nataly Jager transferred to USD in the spring of 2001 from

Columbia (the country, not the school). As an undergraduate, she has done research with Dr. Keating on the solar magnetic field and also with faculty in the school of education. She also graduated with a B.S. in physics. Kortney Klinkel earned a B.S. in chemistry in addition to the physics degree, graduating magna cum laude. Kortney will enter the graduate program in Chemistry at the University of Colorado at Boulder this fall. Her graduate school will be funded by a \$27,000 NSF graduate study fellowship. Chris, Brian and Nataly also plan on attending graduate school in physics or astronomy but for personal reasons are remaining in Vermillion an additional year. This has been a very good group of students and I feel very fortunate to have had the pleasure of teaching them.

Current Students

This past year, Erin Konwinski, Katie Jacobs and Matt Powers each received the Joseph and Margaret Nelson scholarship and Tim Margheim received the G.I. Moller scholarship. Many of you may remember G.I. Moller, who taught in our program for many years. The scholarship was established several years ago to honor the memory of G.I. Thank you to those who have already contributed. If you would like to contribute to this scholarship fund, please contact the USD Foundation for information. Having scholarship money available in physics allows us to attract and retain some of the best and brightest students to our program. Our students have also been very successful in securing other scholarship money awarded by the College of Arts and Sciences. Akinwunmi Odeneyi (triple major: physics, mathematics and computer science) was awarded the Akeley-Lawrence-Norgren and the Harold E. Brookman Scholarships. Anna Van Duzer (double major: physics and mathematics) was awarded the Akeley-Lawrence-Norgren and Elbert and Marjorie Harrington Scholarships and the Nelson Shield. Andrew VanOsdol and Bret Jones each received the Glenn E. & Barbara R. Ullyott Scholarship. Two of our students also received offers for summer internships. Anna Van Duzer was accepted in an Astrophysics REU with the Cornell ExtraGalactic Group (EGG) at Cornell University, Ithaca, NY and Katie Jacobs will be an intern with the Geophysical Institute at the University of Alaska-Fairbanks.

Administrative Changes

I hope this is the last time I have to make the following statement: “We have been shorthanded in the department since the beginning of the spring semester. Dr. Keating, who is in the Naval Reserve, has once again been recalled to active duty in support of Operation Iraqi Freedom.” As usual everyone has pitched in to cover Dr. Keating’s courses. In addition to maintaining and producing our online manual for the introductory physics labs and teaching several sections of lab, Wayne James has also stepped in and taught our algebra-based physics course in Dr. Keating’s absence. Tim Cowman of the South Dakota Geological Survey picked up the digital electronics course. Nataly Jager and Kortney Klinkel assisted with the introductory lab to ease some of Wayne’s workload. We continue to share some of our upper-division physics courses with both SDSU and SDSM&T. This past year USD originated the upper-division optics course and classical mechanics and received electromagnetism and nuclear and particle physics from SDSM&T and received quantum mechanics from SDSU. Hopefully, when Dr. Keating returns to the department next year, progress on the observatory will pick up. We have submitted several grants this past year to obtain funding for this project.

The College of Arts and Sciences hired Matthew Moen as its new dean last spring. Dean Moen is a native South Dakotan and received a B.A. from Augustana and a Ph.D. from the University of Oklahoma in political science. Starting July 1, I will be moving to the college office as an associate dean for

administration. Fortunately, I will still be able to teach a few physics courses as well as maintain close ties with the physics program. Tim Heaton, currently the Director of Earth Sciences will step over into the chair position. As part of this move, physics will be able to hire an additional faculty member. If any of you former graduates that have earned a Ph.D. are interested in returning to South Dakota, please keep an eye out for our ad.

Former Students

Don Miller (B.S. Ed, 1969, MA 1970) is the Coordinator for admissions at Avila College in Kansas City, MO and teaches classes in Management Information Systems and Organizational Behavior. Prior to that, he spent twenty-three years in the telecommunications industry.

David Whiteley (MNS 1970) is the coordinator of Hobbs Observatory in Fall Creek, WI. Prior to that, he taught high school physics and astronomy at Viroqua, WI (1970-79) and taught physics, astronomy, computers and was the planetarium director at Lacrosse Central High School (1979 – 2000). You may visit the website for the observatory at <http://beavercreekreserve.org/observatory>.

Russ Verburg (MNS 1994) is the high school chemistry and physics teacher at both Boyden-Hull High School, Hull, IA and George-Little Rock High School, George, IA.

Keep the information coming. Send the information to ckeller@usd.edu or you may send the information to me via regular mail in care of the physics program at USD. You may also wish to explore our web site at www.usd.edu/phys. Thank you for all of your support and I look forward to hearing from you.

Best Wishes,



Tina Keller, Chair