

PHYSICS ALUMNI NEWSLETTER

Spring 2008

<http://swosu.edu/academics/physics> ♦ physics@swosu.edu ♦ Terry Goforth, Editor



BANQUET 2008

The 27th edition of the Physics Spring Banquet will begin at

7:00 p.m. on Saturday, April 12, 2008, in the Upper Lounge of the Student Union. Join us for an evening of fine fare, well-deserved accolades, and the annual induction of some outstanding students into the SWOSU chapter of ΣΠΣ. The evening's finalé will be provided by **Randy Cabeen** ('84) of Northrop Grumman Corporation. Tickets are \$12 and may be paid for at the door. We do request advance reservations by April 9 so we can provide a head-count to the caterers. Call us (580-774-3109), e-mail us at physics@swosu.edu, or drop us a note (100 Campus Dr, Weatherford, OK 73096) to let us know how many will be in your party.

**YOU'VE
COME A
LONG WAY,
BABY...**

1984 Alumnus

Randy Cabeen will be the speaker at the 2008 Physics Spring Banquet. Mr. Cabeen



was born in Clinton, Oklahoma, and graduated from Canute High School. After earning a B.S. in Engineering Physics from SWOSU in 1984, he attended graduate school for one year at Northern Illinois University. In 1986 he was employed by BDM, an engineering services firm which was later bought by TRW which was later bought by Northrop Grumman Corporation. His professional experience is extremely diverse. He has been involved in the development of several major systems including the MX/ Peacekeeper ICBM, Small ICBM, Patriot Missile System, and Air Force One. He is a recognized leader in verification technology in support of multiple arms control treaties. Recently Mr. Cabeen has been actively involved in homeland security programs for the detection of unconventional nuclear weapons, re-engineering and sustainment efforts for nuclear hardened military systems, training efforts associated with maintenance, troubleshooting, and operating various systems and test and evaluation efforts that vary from complex software systems to portal monitoring systems used throughout the world.



YUM, YUM, YUM

The world-renowned, best-in-the-west

Physics Shish-kebab will be served up on Saturday, May 3, 2008. Join us at Crowder Lake University Park for all the mouth-watering hunger-busting goodies you've come to expect. The buffet line opens at 6 p.m. Come early to enjoy some of the park activities such as fishing, canoeing, walking nature trails, and watching your frisbee fly into the lake courtesy of the typical 40 mph Oklahoma springtime winds. Stay late to listen to the bullfrogs, swat mosquitos, and catch the induction of the 2008-2009 Physics Club officers. Y'all come!

IN MEMORY

Dr. Ray Jones
(March 16, 1941
to December 24,
2007)



As many of you already know, Dr. Ray Jones lost his battle with cancer on Christmas Eve last year. A memorial service was held for him on December 28 at the University Conference Center. Many friends and relatives shared

their thoughts and memories at that time.

Ray Christian Jones was born in Jonesboro, LA, to William Preston and Arlie Smith Jones. He spent most of his childhood in Shreveport, LA, and graduated from LSU in Baton Rouge in 1967 with a B.S. and Ph.D in physics. He was a postdoctoral fellow at the Univ. of Calif–Riverside for two years before accepting a job teaching physics at Southwestern State College (now SWOSU).

For 32 years, Dr. Jones happily taught astronomy and many of the upper-division courses in physics. He was a very “hands-on” instructor and loved to include students and other faculty in projects that were both educational and insightful. In 1978, he designed and oversaw the construction (some of which he did himself) of the astronomical observatory which still serves the university. In the early 90's, he built a directional lightning detector that proved even more sensitive than he anticipated, detecting lightning in storms as far as 500 miles away (confirmed by weather reports). He dedicated much time modernizing experiments for the Modern Physics Lab, and his work on the Millikan Oil Drop Experiment led to a publication in the *American Journal of Physics*. Throughout his career, he served as an inspiration to students. He was a beloved professor who influenced the lives of many students

and prepared them for successful careers using their physics training. Dr. Jones' role as an educator did not stop with his retirement in 2001. He wrote a book designed for the general reader which expanded on material from two series of seminars for the public that he presented in 1984 and 2003. The book, *Relativity Revealed: A Concrete Approach You Can Understand*, is currently being circulated for publication.

Away from the university, Dr. Jones was a dedicated husband, father, and son. He constructed the family home with his own hands over a number of years and loved giving friends a tour during which he could point out its superior features. He enjoyed bicycling, golf, traveling, flying his plane, and talking to his friends.

He is survived by his wife, Jill Tedford Jones; three daughters: Kyrone, Kinley, and Kelanie; two sons: Kevin and Keldon; a stepson: Mark Owens; two grandsons: Nathan and Aaron; a brother: William Preston Jones; a niece, Alicia; and a nephew Gary. He was preceded in death by his parents.

Memorials may be made to the SWOSU Foundation–Ray C. Jones Memorial Scholarship.

Applying computer technology is simply finding the right wrench to pound in the correct screw.



HONORS, INC.

On a pleasant April evening, some 40 students, alumni,

faculty, family, and friends of the SWOSU Physics Program gathered in the University Conference Center to honor our own.

The first orders of business were a chance to visit with old friends, introductions for new friends, and a scrumptious meal. Then we got down to work. Membership in the SWOSU Chapter of $\Sigma\Pi\Sigma$ grew by six following the induction of **Nathan Hawkins** (Sr, Weatherford), **Jonathan Keahey** (Sr, Crawford), **Justin Silkwood** (So, Norman), **Ashleigh Streit** (Jr, Weatherford), **Jonathan Wallace** (Jr, Weatherford), and **Sean Wright** (Sr, OKC). **Ashis Shrestha** (Sr, Nepal) was named the J.R. Pratt Outstanding Physics Student.

Ashis was also presented with a medallion to be worn at convocation for Graduating with Honors. **Bhaskar Basnet** (Sr, Nepal), 2006-2007 Physics Club President, was presented with the Leadership Award. The Outstanding Mid-Classman in Physics award went to **Jonathan Keahey**. The evening was capped off with a presentation by **Royce Snider** ('91) in which he shared some of his opportunities, decisions, and experiences at Boeing and Bell Helicopters.



INVESTING IN THE FUTURE

Through the generosity of alumni, faculty, and friends, we are able each year to present scholarships to deserving students. Last year, the addition of \$2,000 in support from Chesapeake Energy in OKC allowed us to hand out a record \$6,800 in financial support. **Jonathan Wallace** received the \$1,500 J.R. Pratt Scholarship.

Jonathan Keahey received a \$500 Arthur McClelland Memorial Scholarship. Two \$1,000 Chesapeake Energy Scholarships were presented to **Jonathan Keahey** and **Ashleigh Streit**. **Justin Silkwood** and **Rachel Hurt** (So, Cordell) received \$800 each from Physics Alumni Scholarships, and December 2007 graduates **Bhaskar Basnet**, **Vishnu Pokhrel** (Sr, Nepal), and **Ashis Shrestha** each received \$400 Physics Alumni Scholarships.

THANK YOU!

The physics students and faculty wish to extend a hearty thank you to all the individuals and corporations who help support the physics scholarship program at SWOSU. State support of higher education has not kept



pace with increasing costs shifting the financial burden of a college education more and more to individual students and their families. Rising tuition prices have far outpaced inflation. SWOSU is looking at a 9.7% rise in tuition for the 2008-2009 academic year. Scholarships are one way to ease some of the strain this puts on families of college students. Long work hours seriously interfere with the study time that is so essential success for students majoring in physics. Your continued support at whatever level you can afford can make the difference for these students. So for your past and future contribution, we say "Thank you!" (If you wish to make a contribution and don't know how, just contact us at physics@swosu.edu or call 580/774-3109 and we'll fill you in.)



GRADS GOT IT GOING

Three students graduated with degrees in Engineering Physics in December of 2007. **Ashis Shrestha** accepted a job at Chesapeake Energy in OKC where he begins as an engineering tech in operations. His tutelage starts under the supervision of engineers, and his responsibilities will increase as he gains experience. **Vishnu Pokhrel** has applied to sever-

al graduate programs in nuclear and petroleum engineering. He has interviews coming up, so we wish him the best of luck. **Bhaskar Basnet** is currently employed with Precision Designs here in Weatherford working as a designer/mechanic on prototype aircraft. He has had interviews with potential employers including Chesapeake Energy and Halliburton and is waiting to hear back from them. (Anyone out there who can grease the wheels?)

MONSTER JOBS



We want to extend a big Thank You to our alumni who continue to let us know about job opportunities for our students. In the last year we've heard about jobs from **Scott Taylor** ('97), **Terry Cox** ('86), and **Tom Sullivan** ('87), and several of you have been in contact with us in years past. We really appreciate these "heads up" notices. Thanks so much, and keep 'em coming!

Karate is a form of martial arts in which people who have had years and years of training can, using only their hands and feet, make some of the worst movies in the history of the world. (Dave Barry)



LEADERS ONE AND ALL

The Physics and Engineering Club officers for the

2007–2008 academic school year are:

President: Justin Silkwood

V-Pres: Wessley Lamoreaux

Secretary: Sulav Regmi

Treasurer: Jon Keahey

Public Rel: Ashleigh Streit

Historian: Jonathan Wallace

PHYSICS CLUB NAMED OUTSTANDING SPS CHAPTER



The engineering and physics club was honored by the Society for Physics Students (SPS) as an Outstanding SPS Chapter for the 2006–2007 academic year. This honor continues SWOSU's tradition and was well earned. The physics club has been very active again this year and hopes to earn yet another certificate for our walls. Congratulations to our students.



END OF THE YEAR SHISH-KEBAB

Last year's annual shish-ka-bob was held at Crowder Lake. Despite stormy weather all around us, the local weather cooperated with us. Our guests were able to tire

themselves out canoeing before settling down to good meal prepared by our master chefs (Jon Keahey and Wessley Lamoreaux). Everyone in the sizable crowd left well-fed and entertained.



PHYSICS AND ENGINEERING CLUB VISITS THE NATION-

AL WEATHER CENTER
This fall, eight students and Dr. Stein descended on the National Weather Center in Norman for a tour and a tutorial on lightning and lightning research at the University of Oklahoma. The tour went very well. The only down side was that the weather was "too nice" at the time. In addition to the excellent presentation on lightning by Dr. Bill Beasley, the students got a flavor of the history of the center and an appreciation of some new weather detection systems that are being developed.

GEE WHIZ WOW!

On the first day of November, 2007, some 120 area high school science students and their teachers visited the SWOSU campus to be wowed and awed by demonstrations of physical phenomena that challenged the mind, but didn't defy explanation. As always, the



hands-on demos were the favorites, including the angular momentum chair and the smart light bulbs. The Physics and Engineering Club manned the registration area, provided tour guides, and assisted in set-up and take-down for the annual Physics Day event.

A HOLIDAY AFFAIR



The annual Physics Holiday Party was held on December 15 at the home of Dr. Trail and Dr. Goforth. Students, faculty, family, and friends gathered for a scrumptious meal, a round of Dirty Santa, and a lot of socializing. It was a welcome break from the hustle of final exams.

Life may have no meaning. Or even worse, it may have a meaning of which I disapprove. (Ashleigh Brilliant)

MODERNIZING THE ASTRONOMICAL OBSERVATORY

Our aging astronomical observatory got a boost with a new 16" Meade telescope and all new eyepieces. The improvements are amazing and the views spectacular. In addition we purchased a number



of smaller telescopes and a digital camera made for astronomical photography through a telescope. The cost of these upgrades were funded by a state bond issue courtesy of the Oklahoma taxpayers. **Dr. Wayne Trail** has spearheaded most of the work in purchasing the equipment and mounting the telescope with all of us contributing.

The Physics and Engineering Club has taken advantage of the new equipment as well. Three students wrote a proposal for a grant from the Society of Physics Students to automate and upgrade the dome. We have not heard from the SPS at the time of this writing, but whether the proposal is funded or not we have learned a lot from the experience and are likely to apply again next year with a much better understanding of the process.

In preparation for that application the club sponsored a viewing session to photograph Asteroid 2007 TU24 which approached Earth within 1.4 lunar distances of Earth on January 29, 2008. Three of our students along with **Dr. Trail** and **Dr. Stein** braved the cold to make the attempt. We were unable to capture the asteroid but learned a fair amount about the camera and the equipment. As the weather gets warmer the Physics and Engineering Club is planning to sponsor more opportunities to get familiar with using the camera.

There is still a lot of work to be done. The main telescope has been installed, and the coarse alignment is complete, but the precise alignment remains to be done. We also plan to improve the functioning of the motors and gears that turn and open the dome, and some remodeling of the building and patio are also in the works. Overall the observatory is a great place to see the night sky, and we look forward to making it even better.

Slogan of 105.9, the classic rock radio station in Chicago: Of all the radio stations in Chicago...we're one of them."

UPPER ATMOSPHERIC LIGHTNING OBSERVATORY SEES "FIRST LIGHT"

Working together **Dr. Tony Stein** and students **Justin Silkwood** and **Wessley Lamoreaux** set up and tested the equipment that will be used as our observatory to study upper-atmosphere lightning. This rare form of lightning is also known as "transient luminous events" (TLE) and has many different forms with common names such as "sprites", "blue jets", and "elves". The lightning observatory is being set up as part of a grant to study lightning. (See the article entitled *New*



Grant to Study Lightning.)

The main component of the observatory is a low-light camera with which we will observe distant (100–300 km away) storms. The storms need to be far enough that we can see above the clouds. In addition, the field of view is proportional to the distance, so our view of a nearby storm covers a smaller portion of the storm and the chance of catching an event is proportionally smaller.

Ironically, we are hindered somewhat by the fact that we are in the center of a stormy region. Most storms will be almost on top of us. The most convenient storms to observe will occur either in Kansas or in Texas when it is relatively clear here.

The trouble with people is not that they don't know but that they know so much that ain't so. -Henry Wheeler Shaw (Josh Billings)



NEW GRANT
TO STUDY
LIGHTNING
Working with
Dr. Bill Beasley

from the University of Oklahoma, Dr. Tony Stein has secured a three-year grant to study lightning. The money will be used to start a lightning observatory and to fund student research for three summers.

(See Upper Atmosphere Lightning Observatory sees "First Light" for more news about the observatory).

Lightning Fundamentals

Despite years of research, lightning is still poorly understood. A "typical" lightning strike transfers five coulombs of charge in a fraction of a second and carries tens of kiloamps of current. The potential difference depends on the length of the bolt but is on the order of hundreds of megavolts to a gigavolt or more. Therefore the "typical" lightning strike imparts 500 MJ of energy and has an average power of tens of terra watts. The lightning bolt itself heats the air to over 10,000 K (18,000°F) causing the flash we see.

Lightning begins before the flash with the process of creating leaders which are channels of negatively ionized air. These leaders grow toward Earth from the clouds in a stepping motion and branch out in the characteristic shape that eventually becomes the lightning bolt. As a leader approaches the ground the leader's electric field causes objects nearby (especially tall conductive objects with sharp points) to produce streamers. Streamers are ionized channels similar to the leaders but are shorter, of positive charge, and stream up. A branch from a leader often produces several streamers from nearby objects.

The lightning flash occurs when the leader connects either with

a streamer or with the ground causing a large surge of current. Leaders move and branch randomly so that the streamer that it connects with is not always (or even most often) the streamer due to the tallest (or most conductive) object. The initial flash lights up the entire system of leaders and is called the return stroke. Three of four subsequent re-strikes that follow will light up the main path only.

There is another rarer and more powerful type of stroke, though. Positive lightning, which extends from the positive portion of the cloud, can carry up to ten times the power and lasts up to ten times longer than conventional negatively charged lightning. Positive lightning can reach out tens of miles beyond the storm and sometimes strikes where the skies are clear. Such strikes are called "a bolt out of the blue".

Most lightning is cloud-to-cloud or within the same cloud. Lightning that strikes Earth is known as cloud-to-ground lightning. Both cloud-to-ground and cloud-to-cloud lightning has both positive and negative varieties. There is a third type of lightning that is of interest though; one that has been reported before but not taken too seriously until 1989: upper atmospheric lightning, which strikes from the cloud to the upper atmosphere.

Upper atmospheric lightning strikes, also called Transient

Luminous Events (or TLE), come in different shapes and colors and occur in different levels in the atmosphere above the storm. Based on these differences, they are categorized into sprites, blue jets, elves, and giant jets. Upper atmospheric lightning occurs in a region that extends from the cloud tops to 60 miles above the Earth—which is in Earth's ionosphere. Upper atmospheric lightning is associated with the large positive charge of the upper cloud tops.

As an example, we consider sprites, which are the most common form of upper atmospheric lightning. Sprites occur in a region above but not immediately above a storm. Sprites start off at an altitude of around 50 mi and strike both up and down. They seem to be triggered by the transitive electric field of a large positive lightning from the cloud tops.

Unanswered Questions

There are a number of unanswered questions about lightning. The first and most important is how the enormous potentials needed to create the lightning are generated. One model generates the electrostatic potential through collision and transport of ice and supercooled water in the clouds. Another model has cosmic particles from space triggering lightning by sending an avalanche of electrons cascading down the potential difference. The correct explanation most likely involves some combination of

both models. A second mystery is the exact nature of upper atmospheric lightning. When and why they are created is not fully understood. A third unanswered question involves Terrestrial Gamma-ray Flashes (TGF) that are produced by energetic thunderstorms.

The new funds will help our students probe these questions and more. We have already set up an observatory to photograph and document upper atmospheric lightning. If all goes well we may even be able to triangulate our lightning measurements with a similar observatory in Norman.



PHYSICS FUN WITH RICHARD FEYNMAN

Dr. Tony Stein
Are you looking
for a short book
to read about

physics that actually gets the physics right and is still easy to read? If you are, then let me recommend to you QED: the Strange Theory of Light and Matter by Richard Feynman. The book is based on a series of four public lectures meant for the general public by Richard Feynman. If you remember optics the concepts should be familiar, although the notation is simplified and quite different. If you don't remember optics then don't worry. QED tells you everything you need to know.



TALES OF MARS: THE MERMAID

submitted by Dr.
Charles Rogers
unofficial protector
of NASA

I was sitting at my desk correcting papers when I was distracted by someone clearing his throat. I looked up to see two somewhat disheveled students standing in front of my desk; of course most male students look disheveled—except for Pharmacy or Business students. One of the students said, “Dr. Rogers, my name is Cal, and this is my brother Mede.” Mede was wearing a baseball cap.

“Your names seem a little unusual,” I observed.

“Our parents named us after moons of Jupiter,” explained Cal. “But don’t call Mede ‘Gany’. Our sister lo does that, and Mede hates it.”

“I really hate it,” Mede agreed.

“Well, what can we do for you?” I asked.

“We have found some very interesting things in a photograph from Mars, and we want to know which NASA office we should send our report to,” answered Cal. “You are no doubt familiar with the West Valley panorama from the Spirit Rover, and the mermaid statue?” Cal asked.



Martian Mermaid

“I am familiar with the panorama and with a remarkable statue-like formation,” I replied, “But I didn’t know that it had been identified as a mermaid.”



Copenhagen Mermaid

Cal set some photographs on my desk. “The mermaid identification is not official, of course,” he said. “Notice the similar posture. We grant that the Martian mermaid has her arm up, but note the wave motif sculpted into the rock below her. Can you really suppose that is just coincidence?”

“Yes, why not?” I said. “If you look at enough rock formations, you will eventually see one that looks like almost anything that you can imagine. Are you really proposing that a Martian influenced the Copenhagen sculptor

to reproduce a Martian statue?"

"Yes, why not?" Cal asked.

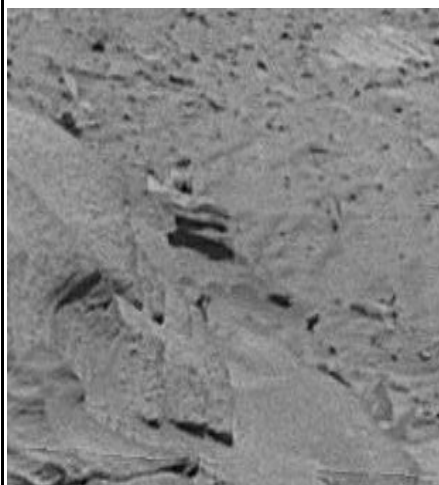
"Edvard Erichsen, the sculptor, said that the idea for the statue just came to him out of the blue.

"But there doesn't seem to be any Martians." I pointed out, reasonably. "If they influenced Erichsen, where are they now?"

"The fact that we can't see them strongly suggests that they have evolved into living on another plane. Clearly they are living in higher dimensions than we can now perceive," replied Mede.

I stared at him. He seemed serious.

"But there's more! Here's Luke Skywalker coming coming down the draw on his floater." He set more pictures on my desk.



Cal and Mede identified the object near the picture's center as Luke Skywalker coming down the draw on his floater.

"Notice that the floater is still suspended after who knows how many years! Think of the

advanced technology that we could learn from their artifacts," Cal added.

"Anyone could put a shadow underneath it with a photoshop program," I pointed out.

Mede protested, "No! The only thing we've done is to change the color to grey tones, brighten some pictures, and slightly enhance the contrast." [editor's note: this is true.]

"OK it does look like the rock is suspended in the air, but that is probably just a trick of perspective. Now how can you possibly identify the blob above the so-called floater as Luke Skywalker?" I asked.

"We are just following NASA practice of assigning whimsical names to rock formations so that everyone is clear about which formation is under discussion," said Cal reasonably.

"And just think of the wonderful technology the Martians must have had to go to a galaxy far, far away and long, long ago!" Mede adds enthusiastically.

I can't help it. I roll my eyes. "You can't take your whimsical names so seriously!"

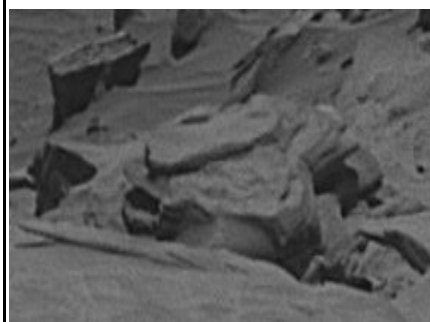
"Sometimes Mede gets carried away," said Cal. "But look at these other pictures." He placed two more on the desk. "We call this one the car door, for obvious reasons. The last one looks like

the ruins of an Abrams tank; or more exactly, like the ruins of a statue of an Abrams tank. Note the tank treads at the right, the turret on top, and the cannon lying along the left side."



The "car door". Can you really see through the "window?"

"What are the chances that these identifiable features would all be found in the same area?" Mede asked?



Ruined statue of Abrams tank.

"Obviously, one-hundred percent," I said, "since they were. But I would argue with the word identifiable. Features that you have given names to would be more accurate. And why an Abrams tank? These formations are probably tens or even

hundreds of thousands of years old. There have been tanks on Earth only during the past century so it can't be a copy of an Abrams tank."

"The other way around," said Cal. "How do you know that Abrams tanks are not patterned after Martian tanks?"

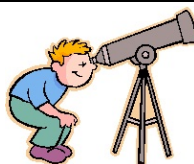
"With the Martian pattern being beamed somehow to Earthlings by Martians dwelling in a higher plane?" I asked.

"Exactly," Cal beamed. Mede beamed also. Could they possibly be Martians? No, their thoughts were simply trapped by their own fantasies—trapped and fossilized like ice-age animals in the La Brea Tar Pits of their minds.

"It's been interesting," I said. "At first I thought that you should contact the public information office, but I think I have a better idea. There is a smaller office that may be able to give you more personalized attention. I'll write it out for you: **Common Research Association and Policy Organization for Legitimate Askers**. Be sure to bold-face the letters as I have, since that is their official logo." I figured I owed NASA a heads up.

Only two things are infinite, the universe and human stupidity, and I'm not sure about the former. -Albert Einstein

Scintillating Summer Science



For the past two summers **Dr. Wayne Trail** and **Dr. Tony Stein** (and a host of others—see below) have been running a two week science camp for middle-school students (entering grades 6 to 8). The aim of the *ExxonMobil Bernard Harris Summer Science* (BHSS) Camp is to enhance education in STEM fields (Science, Technology, Engineering and Mathematics) in under-represented groups by providing a variety of "hands-on/minds-on" activities and classes taught by high-school teachers, university professors, and other professionals. In addition to providing STEM education the camps provide a glimpse of college life by having the students live in the dormitories and eat in the cafeteria during the camps 2-week duration. In 2008, BHSS camps, funded almost entirely by ExxonMobil, will be held at 25 universities across the country.

Last summer the SWOSU camp hosted about 50 students from all over western Oklahoma. We taught Robotics (using Lego Mindstorms), Astronomy (using some of the new observatory equipment), Biology (respiration and energy use),

Newton's laws (can you recite them?), Windmill design (to produce energy—have you seen ours?), Rocketry (we launched all kinds), Mathematics, writing, and more. We took field trips to the Omniplex, the Stafford Air and Space Center, and the Sam Noble Museum of Natural History in Norman.

The camp has a visible effect on the students. They are at an age where they are still excited about science and the classes and activities seem to stimulate them in a good way. During the school year we call them back to SWOSU for "Saturday Academies," in which we do a day of activities. We have great attendance at our Saturday Academies, and students regularly call and e-mail asking when the next one will be.

The camp is a large collaboration. Besides Dr.'s Stein and Trail, other collaborators are Sue Ball from the biology department, and several outstanding public school teachers: Marie Pool, Joyce Schimmel, James Hampton, and Suzanne Franz.

Every man is a damn fool for at least five minutes every day; wisdom consists in not exceeding the limit. -Elbert Hubbard



DID YOU HEAR ABOUT...

**Lyndon "Bud"
O'Dell ('61)** lives

in Newport, WA. He is a retired geophysicist. During his career with the U.S. Geological Survey he recorded and analyzed geomagnetic data and recorded and interpreted seismic data.

Chantz Drake ('06) dropped by for a visit last month. He is working with WesternGeco as a seismic engineer and is currently stationed in India. His work involves analysis of seismic data from marine acquisition crews.

Richard Vaughn ('99) is a financial consultant in a small firm in OKC. He runs clients' portfolios and manages their other financial concerns when possible. With an eye on the future, Richard is hoping to purchase the business in the next few years when his boss retires. He hopes to develop it further into an estate planning enterprise.

Kevin Johnson ('93) is on the faculty in the Dept. of Family Medicine at the Univ. of N. Carolina in Chapel Hill. He recently published an article on "The Long Term Effects of Soy Formula" in American Family Physician and a commentary on "The Physicians Role in Reporting Medical Errors" in the Journal of Family Practice. Kevin remains active as a medical researcher with a project on "Electronic Health Records and the Patient Centered Medical Home: Facilitation or Inhibition."

Terry Goforth ('81) was promoted to full professor of physics at SWOSU. She continues to teach physics, astronomy, and now chemistry classes, recruit new students to the physics program, and stay in contact with SWOSU alumni.

Ken Elkins ('82) has moved up to Director of the Special Weapons Detachment at the Naval Surface Warfare Center Indian Head Detachment, McAlister Division. Congratulations, Ken.

Terry Cox ('86) continues to work for Siemens Transportation Systems in Minnetonka, MN as a Software Engineer. He is finishing up one phase of a project for Canadian National that has been on-going since 2002. In his next assignment, he will be the Requirements Manager (and possibly the Test Manager) for a new project for GO Transit in Toronto.

There is something fascinating about science. One gets such wholesale returns of conjecture out of such a trifling investment of fact.
-Samuel Langhorne Clemens
(Mark Twain)

Einstein and an assistant, having finished a paper, searched the office for a paper clip. They finally found one, too badly bent for use. They looked for an implement to straighten it, and after opening many drawers, came upon a whole box of clips. Einstein at once shaped one into a tool to straighten the bent clip. His assistant, puzzled, asked why he was doing this when there was a whole box full of usable clips. "Once I am set on a goal it becomes difficult to deflect me," said Einstein.

NOW IT'S YOUR TURN...

We've done our best to bring you up-to-date with our news. Now it's your turn to tell us what's up with you. We love hearing from you. By U.S. Post, by phone, by FAX, by e-mail, or even better, a personal visit if you're passing through, tell us your news. Even if it's just news that you've moved—you need to keep us abreast of your current address (mail and e-mail) so we can stay in touch.

WE'RE WAITING TO HEAR FROM YOU

You can send mail to us at 100 Campus Drive, Weatherford, OK 73096-3098, send a FAX to 580-774-3115, or call us at

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Dr. Wayne Trail	(580) 774-3124	wayne.trail@swosu.edu

or just send your e-mail to physics@swosu.edu. We'll see that it gets to the right person.

GET THE NEWS ONLINE

You can find us at www.swosu.edu/academics/physics. Click on the Alumni link for the newsletter (past and present) and other news.

ALUMNI E-MAIL ADDRESSES

If you are a SWOSU Alumnus, drop us an e-mail at physics@swosu.edu and we'll send you the complete list of alumni e-mail addresses that we have on file.

If your address is incorrect, please let us know and we'll correct it.

If your address isn't on our list (you haven't received any e-mail from us in the last year) and you'd like for us to add it, let us know! We'll gladly include you.

ALUMNI POSTAL ADDRESSES

Did you receive a "hard" copy of this newsletter by traditional mail? If not, there's a good chance we don't have your current address. Let us know where you are and what you're up to these days. We love to stay in touch!

PHYSICS ALUMNI BANQUET 2008

Saturday, April 12, 20078 7:00 p.m. SWOSU Student Union Upper Lounge \$12/person

Name _____ No. Persons Attending _____

Address _____ Phone _____

_____ Email _____

Please return to: Dr. Tony Stein ✧ 100 Campus Drive ✧ Weatherford, OK 73096

We need to provide a head-count to the caterers by April 9, 2008

SHISH KEBAB 2008

Saturday, May 3, 2008 6:00 p.m. Crowder Lake University Park

Name _____ No. Persons Attending _____

Address _____ Phone _____

_____ Email _____

Please return to: Dr. Tony Stein ✧ 100 Campus Drive ✧ Weatherford, OK 73096

If you plan to attend, letting us know will help us in planning the food, but feel free to drop in!

Or... just give us a call or e-mail us to confirm for either/both event(s).