

PHYSICS ALUMNI NEWSLETTER

Spring 2013

<http://swosu.edu/academics/physics>

♦ physics@swosu.edu

♦ Terry Goforth, Editor

This year's fillers are all quotes and tweets by astrophysicist Neil deGrasse Tyson.

DINING IN STYLE



Despite having three (yes, three) snowstorms in recent weeks that caused cancellation or delay of classes, we know by the calendar that spring is on its way. And with spring comes the Annual SWOSU Physics Spring Banquet. This year's gala will be held on Saturday, April 6, 2013, at 7 p.m. in the SWOSU Student Union. **Ken Elkins** ('82), Director of the Naval Surface Warfare Center, Indian Head Division, in McAlester, OK, will speak to cap off an evening of dinner, awards, and presentations.

Prior to Ken's address, the Physics Division will induct new members to Sigma Pi Sigma, the national physics honor society, and award honors and scholarships to recognize academic achievement and contributions to the department.

Tickets are \$20 each and may be paid for at the door, but we need a head count by Wednesday, April 3, so we ask that you make reser-

vations by email (physics@swosu.edu), phone (580/774-3109), FAX (580/774-3115), snail mail (100 Campus Dr, Weatherford, OK 73096), or in person. We look forward to seeing you there!

KENNETH ELKINS



Ken Elkins graduated from SWOSU in 1982, with a B.S. in Physics. He joined the Naval Surface Warfare Center (NSWC) in Port Hueneme, CA, initially as an Electronic Engineer working on the Armored Box Launcher. Beginning in 1987 he was Lead Engineer for the Tomahawk AUR Team, and served as the Team Leader for this group from 1998-2003. Ken received his M.S. in Systems Engineering from the Naval Postgraduate School in 2003 and was named Branch Manager for Missile Operations, Maintenance & Training. He completed the USDA Graduate School Management Succession Program in 2005, and in 2006 he moved to McAlester, OK to serve as the Engineering Management Division Manager, and became the Director of the NSWC Indian Head Division (McAlester Detachment) in 2008.

Ken has received many awards and recognition during his long career with the NSWC. He is certified as a Navy Acquisition Professional, received several Outstanding Ratings, On-the-Spot Awards, Special Act Awards, Special Achievement Awards, Sustained Superior Performance Awards, Bravo Zulu messages, and Letters of Appreciation. He has also received Certificates of Appreciation for Mobil Bay Shock Trials, Desert Storm, Philippine Sea Restrained Firing investigation, and USS Cole attack emergency support. Ken is a member of the SWOSU Chapter of Sigma Pi Sigma, the national physics honor society.

Ken lives in McAlester, OK with his wife, Karma Ingraham Elkins who is also a SWOSU alumnus. The couple has two daughters, Heather and Michelle.

According to the song, Rudolph's nose is shiny, which means it reflects rather than emits light. Useless for navigating fog.

DELECTABLE DELIGHTS



You can't resist.
You remember
how good it is.
You remember
the fun. Your
mouth waters
every time you think about it.
It's the annual Physics Shish-kebab at Crowder Lake. This year's affair will be on Saturday, May 4. We'll serve up all your favorites—beef, chicken, and veggies, along with a stunning array of sides and salads and sweets—about 6 p.m., but come on out and spend the afternoon soaking up the beauty of western Oklahoma in the spring. There'll be plenty of opportunity for relaxing, chatting, or just enjoying the sweet air and scenery. No reservations necessary—but if you let us know you're coming we'll be sure to have plenty of victuals!



PHYSICS AND ENGINEERING CLUB OFFICERS, 2012-2013

President: Luke Kraft
Vice-Pres: Brian Koehn
Secretary: Yimfor Yimfor
Treasurer: Michael Moore

The good thing about science is that it's true whether or not you believe in it.

MIKE'S OUR MAN!



Mike Aneshansley ('69) was inducted into Southwestern Oklahoma State University's

Distinguished Alumni Hall of Fame during 2012 graduation ceremonies on the Weatherford campus.

Mike graduated from Clinton High School in 1965 and then from Southwestern in 1969 with degrees in physics and mathematics. He joined the U.S. Navy and completed the Naval Nuclear Power School in 1970. He had various assignments in the U.S. Navy before being hired by Entergy, Inc., in 1977 to be training manager at the Grand Gulf Nuclear Station in Port Gibson (MS). He became operations manager in 1979.

Mike was then hired by the U.S. Nuclear Regulatory Commission as an inspector for nuclear power stations in the United States and, in 1981, he joined Quadrex, a management consulting firm that provided services to nuclear power plants across the United States. In 1983 he co-founded ENERCON to provide consulting services for the startup and operation of commercial nuclear power plants. From three people and four clients, the company quickly grew to a diversified, multi-disciplined company with many clients. In 1989, the company expanded its portfolio of services to include environmental and industrial

services. In 2005, the founders sold the remaining stock and retired from active management of the company. Aneshansley remains a director and consultant to the management team.

Mike has been married to Vicki (Roniger) Aneshansley, also a Southwestern graduate, for 45 years. They have two grown children and three grandchildren.

A NIGHT TO REMEMBER



The 31st Annual SWOSU Physics Spring Banquet was held on March 31, 2012. It was an evening of honors

and awards, memories and laughter, sharing and learning for the fifty friends, family, alumni, students, and faculty in attendance.

Physics demos scattered among the tables provided a chance to ponder the relevant physics principles over dinner. SWOSU's Sigma Pi Sigma chapter grew by two members with the induction of new members **Tyler Overton** (So, Cordell) and **Yimfor Yimfor** (So, Cameroon). **Brian Koehn** (Fr, Corn) was recognized as the Outstanding New Physics Club Member, and **Tyler Overton** was named the outstanding Midclassman in Physics. Physics Club President **Michael Moore** (Sr, OKC) received the Leadership Award, and the J.R. Pratt Award for Outstanding Student in Physics went to **Cal Humphrey** (Sr, Rocky). Cal was also recognized for being named to Who's Who and was presented

with a medallion to wear during graduation signifying him as Graduating with Honors. Several scholarships were presented and will be detailed below.

Dr. Charles Rogers was honored for forty years of service to SWOSU. Several former students and colleagues shared memories and some of their best "Dr. Rogers stories." Dr. Rogers reminded the audience of his teaching philosophy that "the mind is not a vessel to be filled, but a fire to be lighted."

The evening was capped off with a talk by **Brian Stephenson** ('92), COO and President of Tronics MEMS, Inc. in Dallas, TX. Brian started with a few memories of his teachers from his years at SWOSU. He then talked about his pathway from student to his current position. He stressed the value of the education he received at SWOSU, noting that he was competitive with students from places such as MIT because of the practical lessons and personal attention that four years at SWOSU provided. Brian also talked about some of his company's work with MEMS (micro-electromechanical systems) and their uses in cell phones, printers, and other devices.

Alumni attending the 2012 Banquet included the speaker **Brian Stephenson** ('92) and **Rachelle Cole Stephenson** ('92), **Benny Hill** ('57), **Stan Powers** ('57), **Jim Bates** ('62), **Justin Silkwood** ('10), **Frank Nickel** ('83), **Russell Kruckenberg** ('83), **Carol Carroll Kruckenberg** ('85),

Wendell Reisley ('81), **Stephen Duerr** ('11), **Joe Sullivan** ('59), **Jonathan Wallace** ('09), and **Terry Goforth** ('81).

My view is that if your philosophy is not unsettled daily then you are blind to all the universe has to offer.

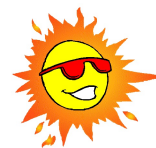
SCHOLARSHIPS GALORE



In a banner year for awards, we were able to present \$6,500 in scholarship support to six well-deserving students. **Amy Fields** (Fr, Seiling) and **Tyler Overton** (So, Cordell) each received a \$1,000 Chesapeake scholarship courtesy of Chesapeake Energy in Oklahoma City. The Arthur McClelland Memorial Scholarship in the amount of \$1,000 was awarded to **Luke Kraft** (Fr, Hooker), and a \$1,000 Physics Alumni Scholarship was awarded to **Yimfor Yimfor** (So, Cameroon). **Dylan Frizzell** (So, Mountain View) received the Ray C. Jones Scholarship, and the recipient of \$1,500 for the J.R. Pratt Scholarship was **Michael Moore** (Sr, OKC). The last four scholarships are supported by interest earned and donations to the physics accounts of the SWOSU Foundation.

Science is like an inoculation against charlatans who would have you believe whatever it is they tell you.

THANK YOU FOR YOUR SUPPORT!



Each year we are able to offer financial support to several deserving students to offset the constantly rising cost of a college education. These awards are possible only through the continued generosity of donors like you who send your tax-deductible contributions to the SWOSU Foundation. Physics has several scholarship accounts whose funds can only be used for student financial aid, plus a general account which can be used for scholarships, recruiting, equipment, or other departmental needs. We know that times are tough right now, so we really do appreciate those of you who choose to pay-it-forward, investing your hard-earned dollars in future generations of physicists and engineers just as previous graduates invested to provide aid to students in the past. You may have even been a recipient of that generosity. If so, you already know how important it is and how much it helps. Every little bit counts. Whether you can give \$10 or \$1,000, we will put it to good use. And to those of you who can help, we THANK YOU!

Dinosaurs are extinct today because they lacked opposable thumbs and the brainpower to build a space program.

HONOR GRAD!

SWOSU's 2012 Convocation was held at Milam Stadium on May 12, 2012. Engineering Physics student **Cal Humphrey** (Rocky) walked across the stage and received his degree. Cal graduated summa cum laude. He is now working as a Dispatcher Engineer for Kiwash Electric here in western Oklahoma.

MOVING UP...

Last year we reported that Dr. Al-Jarrah had retired as Dean of Arts and Sciences. Dr. James South, formerly Chair of the Music Department, has been named as the new Dean. Dr. South came to SWOSU in 1995. He served as the Director of Bands since 1995 and as Chair of the Department of Music since 2008 before taking over as Interim Dean of Arts and Sciences in March 2012. Dr. South took over permanently as Dean effective June 1, 2012.

...MOVING ON...

Dr. Blake Sonobe retired from SWOSU effective December 31, 2012. Dr. Sonobe came to SWOSU in 1990. He taught chemistry and served as the chair of the Chemistry Department and then as chair of the combined Department

of Chemistry and Physics. Since 2005 he served as senior vice president and provost for academic and student affairs. Dr. Sonobe has accepted a position as Vice Chancellor for Academic Affairs at the Oklahoma State Regents for Higher Education effective January 1, 2013.

...AND MOVING IN

Following **Dr. Rogers'** retirement last spring, the Physics Division has welcomed a "new" faculty member in its caucus.

Dr. Brian Campbell, already a long-time member of the Chemistry and Physics faculty, has moved downstairs to join us in the Physics Suite. Dr. Campbell teaches geology, astronomy, and physical science. He also conducts several science camps for high school students and for public school teachers each summer.

HELLO TO ALL

by *Dr. Brian Campbell*



First I would like to say "Hello" to one and all.

Hardly a new member of the Chemistry and Physics Department, I *am*, however, the newest member of the Physics Division. My name is **Dr. Brian D. Campbell** and I have been teaching at SWOSU for, gads, 16 years. An old fart, actually. I earned a B.S. in Elementary and Science Education with minors in geoplanetary physics and mathematics from the UW,

Platteville, an M.S. in Science Education in 1993, an M.S. equivalent in Geology, and a Ph.D. in Science Education from the U of I in 1997.

My research experiences have included X-ray diffraction of clays and shales from Pennsylvanian and Jurassic Period exposures in central and western Iowa for volcanic eruption dating purposes, X-ray diffraction of clays and shales in central Iowa for soil and baseline purposes, and Ordovician paleontology of southern Oklahoma. I also have research interests in the nature, meaning, and philosophy of science. I have published works on the nature and meaning of science and teacher education. I have more than 50 science activities published for the online AURORA Project. I was a guest author for Chapter 15 *Evolving Earth*, CD Essay, *The Physical Universe 9e* by Krauskopf and Beiser. I have also been a textbook reviewer for, among others, Shipman, *Physical Science*, 10/e.

I serve on several state and national committees including the NSTA Science and Children Advisory Board, and the Geological Sciences subcommittee, Oklahoma State Regents for Higher Education Equivalency Matrix Committee. I have presented scores of papers at state, regional, and national meetings and supervised several research students. But enough of that.

My most recent research student, Zella Classen, and I will be presenting two works: "Paleontological

Survey of Ordovician West Spring Creek Formation, Arbuckle Group, Kiowa County, OK," and "Statistical Count of Invertebrata from Ordovician West Spring Creek Formation, Arbuckle Group, Kiowa County, OK," this spring at NCUR, the National Council for Undergraduate Research conference at glorious, exotic La Crosse, Wisconsin. It is important to give our students experience of this type before we send them to graduate school. Zella and I will also be presenting these works at the Oklahoma Undergraduate Research Day, April 13.

As a child, I was aware that, at night, infrared vision would reveal monsters hiding in the bedroom closet only if they were warm-blooded. But everybody knows that your average bedroom monster is reptilian and cold-blooded.

PHYSICS DAY

by Dr. Tony Stein



Every first Thursday in November, our faculty and physics club students enlighten and entertain local high school students using demonstrations and hands on activities in physics in during our annual Physics Day. Over 170 high school students (a new record!) and their physics teachers from 11 area high schools attended Physics Day in 2012. This year we were pleased to have Dr. Campbell join us. As usual, the

visitors were wowed and amazed at the impressive and sometimes surprising demonstrations of physics in action. This annual outreach activity continues to be popular among the local school teachers and students, and we continue to enjoy the opportunity to educate and enlighten them.

SSMA

by Dr. Brian Campbell



SWOSU will again be offering a Summer Science and Mathematics Academy designed to give up to 25 high school sophomores through seniors a two-week, on campus experience of the close relationship between science, mathematics, technology, and society. This program is designed to motivate the participants towards pursuing higher education and careers in science, mathematics, and technology. The objectives for the SSMA are designed to meet the Common Core State Standards and Assessments as well as National Education Standards in Science and Mathematics (NSES, PSSM).

The two-week SSMA will be located on the SWOSU campus with participants living in University dormitories, eating in the cafeteria, and taking classes in lecture halls and laboratories. The participants will have access to University facili-

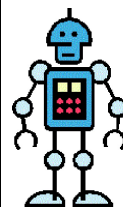
ties and equipment at no charge. Participants will take courses in Biology, Chemistry, Robotics, Geology and Space Science, Health, Mathematics, and Physics to provide the fundamental scientific content and methodological background. Laboratory activities and field experiences are designed to enhance the participants' inquiry skills required for scientific problem solving. During the last three days of the SSMA, the participants will be involved in a problem solving application competition.

The SSMA is the longest running, continually funded summer academy in Oklahoma, having begun in the 1970's!

We spend the first year of a child's life teaching it to walk and talk and the rest of its life to shut up and sit down. There's something wrong there.

SUMMER CAMP NEWS

by Dr. Wayne Trail



In seven summers, the ExxonMobil Bernard Harris Summer Science Camps (EMBHSSC) at SWOSU has graduated about 350 campers representing nearly every county in Oklahoma and even students from Arkansas, Texas, and Kansas. (I declined an application from Georgia a few summers

back). The 12-14 year-old students have learned a lot from this camp, and so have I!

EMBHSSCs, directed at economically disadvantaged groups and groups culturally under-represented in the sciences, are two-week over-night academic camps in which the students live in the dorms and take classes taught by high-school teachers and college faculty. Supported at 20 Universities across the country, the EMBHSSCs require host universities to provide a rigorous hands-on/minds-on STEM (science, technology, engineering, and mathematics) curriculum. All classes are in a laboratory setting with the students working individually or in small groups to solve problems.

Last summer, the theme of the SWOSU camp was “The Search for Life.” Over the course of the two weeks, the students take classes in:

Robotics: Building and programming Lego robots

Biology: Understanding what life is and exploring plant and animal cells

Nutrition: What do organisms need to survive, and specifically what do humans need?

Astronomy: How big is the solar system and what are the planets and their moons like?

Alternative energy: How do solar panels and wind turbines work?

Mathematics: Students explore the contributions of certain mathematicians to science.

Writing: Students do journaling and write a biography.

Rocketry: Design, build, and test paper rockets, water-bottle rockets, straw rockets, and model rockets

Research: Students are given some topics related to the theme to research

Movie Making: Students film and edit short videos

A typical day has the students attending four classes, interspersed between meals at the cafeteria and topped off with a trip to the wellness center to burn off a little energy via dodge-ball, basketball, or running. The evening usually includes another class or activity. We do two full-day field trips: the Science Museum of Oklahoma and Frontier City Amusement Park; two half-day field trips: The Thomas P. Stafford Air and Space Center and the Crowder Lake Ropes Course; and one evening field trip: the SWOSU observatory. Using charter buses for the longer trips allows us to use travel time to show relevant movies (Apollo 13, and October Sky are regulars).

In the classes, we make a concerted effort to minimize lecture time and let the students learn by doing and learn from each other. I am constantly amazed at how much better they learn when they are the ones doing the work than

when they are “listening.” Whether it is building and programming a robot to follow a maze, growing yeast and looking at them under the microscope, or researching the Cassini mission at the library, the students seem most engaged with the least instruction. Give them a problem, clearly explain it, and get out of the way.

In post-camp surveys the campers usually say that the class they enjoyed most was not the one they thought they would be interested in. They are often unexpectedly “grabbed” by a problem in a particular class; for example, “What can you do to a paper rocket to make it go as high as possible?” (Often the problems are stated that simply.)

The EMBHSSCs require the students to do a “final project” in groups of four to six. In our camp we have each group act as a news crew and create a video of a report titled “Extraterrestrial Life has been found in the solar system!” They create the script and the actors (which may include teachers and counselors) then film and edit the entire story (which is, hopefully, informed by what they learned in camp). I am always surprised at how much they retained, and by which parts of the camp they found most relevant.

The students leave SWOSU with great enthusiasm and appreciation for science and technology

and a deeper understanding of how many different disciplines such as science, writing, and communication are needed to learn about the universe around us and to share that knowledge and understanding with others.

... there is no shame in not knowing. The problem arises when irrational thought and attendant behavior fill the vacuum left by ignorance.

METEORITES

by Dr. Brian Campbell



Of late, much attention has been given to meteorites. With the close approach of asteroid 2012 DA14 and the air burst over Chelyabinsk, I have been getting many questions from students and communities alike.

First, vocabulary: meteoroid, meteor, meteorite. A meteoroid is the piece of rubble in space; smaller than an asteroid, many are dust grain in size. The meteor is the streak of light seen as the meteoroid encounters the atmosphere. The atmosphere is heated by compression and friction until it glows incandescently. If the meteoroid is large enough, comes in at the right angle, or has the right composition, it might survive the passage through the atmosphere and is now known as a meteorite. Now, you think you have found a meteorite? Most likely you have not. They are ex-

ceedingly rare and the chances of you finding one is next to zero. But if you want to check it out, here are some tests you can run.

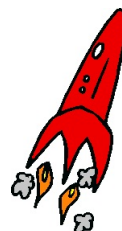
1. Is it attracted to a magnet? While most meteorites are composed of rocky material, over 90% of identifiable meteorites are composed of iron. These will be attracted to a strong magnet.
2. Is your sample denser than all surrounding rocks? Meteorites that contain iron will have a density between 4.0 to 8.0 g/cm³. Most Earth crustal rocks are silicates and will have a density of 2.5 to 3.0 g/cm³ (lower density due to high silicon dioxide content).
3. Does your sample have a black to gray or red streak? A streak is the mark left on an unglazed ceramic tile (bottom of a coffee mug or bottom of a bathroom or kitchen tile). A red streak will likely mean you sample is the metallic mineral hematite, a black streak will be magnetite. A true meteorite will usually leave no streak.
4. A fusion crust? Meteorites do not, as is often shown in the movies, usually have bubbles or holes. They tend to have a thin, black, smooth surface called a "fusion crust".

Now, only if your sample has passed these four tests should you begin to consider it a candidate for being a meteorite. Then I want to see it!

Not only do we live among the stars, the stars live within us.

Paper Rockets

by Dr. Wayne Trail



As the director of a middle school science camp, I am always on the lookout for a science project that is low on cost

and high on science. Lego robots, for example, are a big hit with the kids, but they cost around \$400 per kit. It took us years to get enough kits to make things run smoothly. I will describe here one of my favorite low-cost activities called Paper Rockets, which you can do with your class, scout troop, child, grandchild, or inner child.

In this activity students make a rocket using a sheet of paper, an index card, and some tape. They then launch the rocket with a homemade PVC launcher. The launcher is constructed from PVC components that can be found at Lowes (or similar) for around \$30. If you Google "paper rocket PVC launcher" you will see links to a variety of them (I include some links below). Some of the launchers require the student to stomp on a 2-liter bottle to launch, others use a bicycle pump to pressurize a PVC compartment. The launchers are easy to

make and last a long time (I have had mine for years and lend them out a lot). The ones with a 2-liter bottle are often called "stomp rocket" launchers; they are a little easier to build and can be used by the kids with less supervision. (There should always be some oversight and the kids should wear some kind of goggles when playing with any type of projectile.)

A decent stomp-rocket launcher is described at http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Pop_Rocket_Launcher_Directions.html. A decent bicycle pump rocket launcher can be found at <http://www.eaa.org/chapters/resources/cookbook/activities/elementary/AIR%20PRESSURE%20ROCKET%20KIT.pdf>.

I don't really have a favorite style. I have made quite a few of different types and they all seem to work pretty well. (And I am not an experimentalist—you can do it too.) Don't be afraid to Google around and find different ones. There is a wide range of sophistication. For example some have pressure release valves so you don't

over-pressurize them (I use a bike pump that has a pressure gauge built in). For most PVC, 25 PSI is a stopping point. For a stomp-style launcher that is all moot.

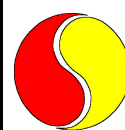
To make the rockets themselves, take a sheet of 8 ½ x 11 copy paper and a piece of half-inch PVC about 15 inches long, and roll your sheet around the PVC so your rocket's fuselage is 11 inches long. Make sure the fuselage fits loosely over the ½ inch PVC so it launches off it smoothly. ("Loose, but not too loose.") Tape the fuselage so it stays rolled up. Cut a nose cone and fins out of an index card and you are ready for launch. Structural failures are inevitable and great learning opportunities, so I won't go into them here. There are many learning opportunities here: is a shorter rocket better? Is a longer rocket better? Big fins? Small fins? 10 fins? No fins? Copy paper? Card stock?

Finally, an activity that gets a parachute into your rocket can be found at http://www.nasa.gov/pdf/295786main_Rockets_Adv_High_Power_Paper.pdf.

I hope you enjoy these as much as I have. If you have an interesting insight, suggestion, or photograph, please send it to us!

The Big Bang Theory: When geeky scientists can be main characters in a hit prime time series, you know there's hope for the world.

BIG NEWS FROM THE AMS?



In 2003, our banquet speaker, **Jim Bates** ('62), told us about one of NASA's collaborations to put the Alpha Magnetic Spectrometer (AMS) on the International Space Station. Its purpose: to gather data on anti-matter, and possibly shed some light on dark matter. The AMS was deployed in 2011, and since then has registered some 25 billion cosmic ray particles. 7.7 billion are electrons or positrons, and the ratio between the two should ultimately reveal something about dark matter. The first paper of results from the AMS team, headed by Nobel Laureate and MIT physicist Samuel Ting, is due for submission to a journal in March, 2013, and scientists working on the project are hinting that something big and exciting will be revealed.

Knowing how to think empowers you far beyond those who know only what to think.

IN MEMORY

Al Pennington
(‘67) passed away
on January 28,
2012, at his home
in Houston, TX.

Granvil Al Pennington, a.k.a. “GAP”, was born in January 31, 1944, in Lawton, OK. After graduating from Southwestern in 1967, he joined NASA where he worked in telemetry, communications, instrumentation, data, and software arenas beginning with the Apollo program and continuing until his retirement. He was an INCO for early Space Shuttles and was selected as a Flight Director in 1983. He worked 28 missions, serving as Lead Flight Director on 10 of those missions.

Al was a drummer in a big band for over 30 years, active in the Clear Lake Gem and Mineral Society, enjoyed painting, and authored several sci-fi fantasy books. He is survived by his wife, Loyce, a son and a daughter, and one grandchild.

Lee McClune (‘69) passed away on August 31, 2012, in Knoxville, IA. Lee Franklin McClune was born August 3, 1934, in Keokuk County, Iowa. He entered the U.S. Air Force at age 18, where he served four years. In 1958 he was named Airman of the Year for inventing a tool utilized in repairs. Following his honorable discharge, Lee worked for the government in Huntsville, AL and co-invented a mass spectrometer that was

eventually sent to the moon during the Apollo program. Lee attended Southwestern and earned a degree in Physics in 1969. While a student, he worked as a night watchman at the 3M plant in Weatherford. He later set up 3M’s first computer controlled production system there. In 1974, he was transferred to the new 3M plant in Knoxville, IA where he was the first person promoted to F4 Technical Level in a production plant. Lee retired in 2002. In retirement, Lee invented the Sorganol biofuel process and patented equipment for the process.

Lee is survived by his three sons, two sisters and one brother.

But you can't be a scientist if you're uncomfortable with ignorance, because scientists live at the boundary between what is known and unknown in the cosmos. This is very different from the way journalists portray us. So many articles begin, "Scientists now have to go back to the drawing board." It's as though we're sitting in our offices, feet up on our desks—masters of the universe—and suddenly say, "Oops, somebody discovered something!"

No. We're always at the drawing board. If you're not at the drawing board, you're not making discoveries. You're not a scientist; you're something else. The public, on the other hand, seems to demand conclusive explanations as they leap without hesitation from statements of abject ignorance to statements of absolute certainty.

When asked about which scientist he'd like to meet, Neil deGrasse Tyson said, "Isaac Newton. No question about it. The smartest person ever to walk the face of this earth. The man was connected to the universe in spooky ways. He discovered the laws of motion, the laws of gravity, the laws of optics. Then he turned 26."

LET'S STAY IN TOUCH



In this age of connectedness, there's just no reason to lose touch. We send this newsletter out to let you know what we've been doing. Now it's your turn! We always enjoy hearing from you and learning about your activities and achievements. But we're not clairvoyant. You have to tell us yourself. And it's so easy! You can send us email at physics@swosu.edu or at one of the email addresses below. You can call us at one of the phone numbers below or send a FAX. Of course, you can send us a card or letter by snail mail to 100 Campus Dr., Weatherford, OK 73096. And you can also connect with us on Facebook at the SWOSU Physics and Engineering group, or on LinkedIn. We even have a place on the SWOSU website for you to update your address or other contact information (<http://swosu.edu/academics/physics/alumni/alumni-update.asp>). So no excuses! Let's stay in touch!

HERE WE ARE!



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

Dr. Brian Campbell	(580) 774-3118	brian.campbell@swosu.edu
Dr. Terry Goforth	(580) 774-3109	terry.goforth@swosu.edu
Dr. Charles Rogers	(580) 774-3108	charles.rogers@swosu.edu
Dr. Tony Stein	(580) 774-3107	tony.stein@swosu.edu
Dr. Wayne Trail	(580) 774-3124	wayne.trail@swosu.edu

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

AND WE'RE MOBILE!



You can find us at www.swosu.edu/academics/physics. Click on the Alumni link for newsletters past and present, announcements, or to update your information.

ALUMNI EMAIL ADDRESSES

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

If your address is incorrect or if you prefer to use a different address, 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 attending the 2012 Physics Banquet



Back row: Joe Sullivan, Jim Bates, Justin Silkwood, Stephen Duerr, Carol Kruckenberg, Russell Kruckenberg, and Frank Nickel

Front row: Rachelle Stephenson, Brian Stephenson, Stan Powers, Benny Hill, Wendell Riseley, Terry Goforth, and Jonathan Wallace.

PHYSICS ALUMNI BANQUET 2013

Saturday, April 6, 2013

7:00 p.m.

SWOSU Student Union Ballroom

\$20/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 3, 2013

SHISH KEBAB 2013

Saturday, May 4, 2013

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).