

FROM THE DEAN'S DESK – May 1, 2015

THE RADFORD UNIVERSITY COLLEGE OF SCIENCE AND TECHNOLOGY NEWSLETTER



2015 College of Science and Technology Dean's Scholars

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NINE RU STUDENTS RECOGNIZED AS CSAT DEAN'S SCHOLARS FOR 2015

To celebrate its nine 2015 Dean's Scholars, more than 50 faculty, family and friends joined Dean J. Orion Rogers of the Radford University College of Science and Technology(CSAT) for a ceremony and reception April 11 in Reed Hall.



2015 College of Science and Technology Dean's Scholars: (L to R) Joshua Oliver - Geospatial Science, Christopher Wingard - Anthropological Sciences, Daniel Metz- Biology, Jordan Snelgrove - Physics, Zachary Carpenter - Chemistry, Hunter Sharp - Mathematics and Statistics, Samantha Ashley - Information Science and Systems, Matthew Seiler - Computer Science. Not pictured, Victor Taylor - Geology.

Dr. Rogers welcomed the group with his thoughts on how he views the accomplishments that these students have achieved. "Dean's Scholars are students who have taken advantage of the opportunities provided by our faculty and made success happen" he said. "You are the embodiment of our hopes and dreams for all of our students and we are honored to be your teachers, mentors, advisers and friends."

Dean Rogers' comments were echoed repeatedly by the faculty present to introduce the Dean's Scholar from their respective departments. "One of my early mentors, Scotty Steeves, wrote a television show called 'Adventures of a curious mind' and I think of that title often when I think of Dan" said Dr. Bob Sheehy in his introduction of Dan Metz, Dean's Scholar for the Department of Biology. "Dan's curiosity and intellectual ability prepared him to win a prestigious SEEDs fellowship from the Ecological Society of America." Dr. Sheehy added "In 2014 Dan was one of three fellows chosen from an applicant pool of thousands and this fellowship provided him the opportunity to work at the Scripps Research Institute in California where he will be starting graduate school in the fall."

As is the case with Dan, the CSAT Dean's Scholars have been active in undergraduate student research in addition to their excellent work in the classroom. "Perhaps due to his Martial Arts training, or his skills in Mountaineering, Rock Climbing, Backpacking, Boating, Emergency Responder Advanced Wilderness First Aid Certification, Diver Certification, or perhaps because he is an Eagle Scout, Chris is also an outstanding field worker" said Dr. Donna Boyd in her introduction of Chris Wingard, Dean's Scholar for Anthropological Sciences. "He took a leadership role in Summer Field School in 2013 and during the several Field Searches he has assisted the Forensic Science Institute and Law Enforcement with, he could always be counted on to perform professionally and skillfully."

Dan, Chris and their fellow Dean's Scholars were awarded a plaque and crimson stole to be worn with their caps and gowns at Commencement ceremonies on May 9th before they move forward to career and additional educational opportunities across the nation and around the world.



Representing the Department of Anthropological Sciences – Christopher Wingard – introduced by Dr. Donna Boyd

Representing the Department of Biology – Daniel Metz – introduced by Dr. Bob Sheehy



Representing the Department of Chemistry – Zachary Carpenter – introduced by Dr. Christopher Monceaux

Representing the Department of Geospatial Science – Joshua Oliver – introduced by Dr. Stockton Maxwell



Representing the Department of Information Technology –



Computer Science Dean's Scholar - Matthew Seiler – introduced by Mr. Bob Summers

Information Science Dean's Scholar - Samantha Ashley – introduced by Ms. Nancy Artis



Representing the Department of Mathematics and Statistics – Hunter Sharp – introduced by Dr. Steve Corwin

Representing the Department of Physics - Jordan Snelgrove – introduced by Dr. Jack Brockway



Representing the Department of Geology – Victor Taylor – introduced by Dr. Jonathan Tso

RU CHEMISTRY MAJOR NAMED AS ONE OF RADFORD'S OUTSTANDING STUDENTS FOR 2015

Halle Edwards was recognized with a Radford University Outstanding Student Award on Friday, April 25, 2015 at the annual Student Awards Banquet. The Outstanding Student Award is the highest honor a Radford University student can achieve and recipients are chosen based on their positive contributions academically and in other areas of achievement, including contributions to the community, published papers, conference or workshop presentations, a role in a university production, participation in student government, athletics, and leadership or substantial time commitment to the university or the greater community. Winning students also must maintain a GPA of 3.2 for freshmen, 3.3 for sophomores, 3.4 for juniors, 3.5 for seniors and 3.7 for graduate students.

Halle exemplified the essence of the award through her exceptional work in the classroom and in undergraduate research, where she conducted a study of the varying quantities of caffeine present different types of tea. Outside her academic work, Halle has been an active member of the University community as Editor in Chief of the RU Yearbook "The Beehive" for the past two years and as the Chairperson of the Student Media Committee over the past year. She has also served as a work study student in the Office of Undergraduate Research and Scholarship (OURS) and is a member of the Chemistry Club. This is the second year that Halle has earned this distinction.



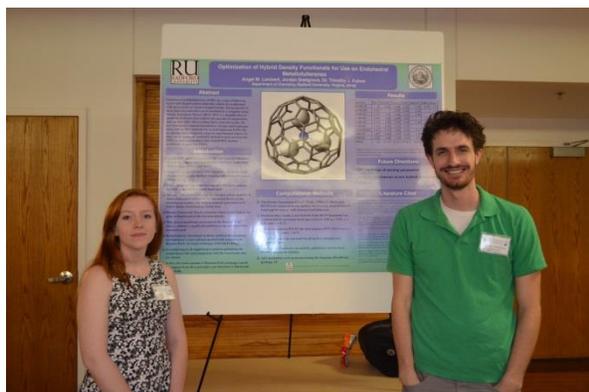
Halle Edwards receiving her Outstanding Student Award from Ben Litvak of the Department of Student Activities



2015 Radford University Outstanding Students with Vice President for Student Affairs, Dr. Mark Shanley. Halle Edwards is in the front row, center.

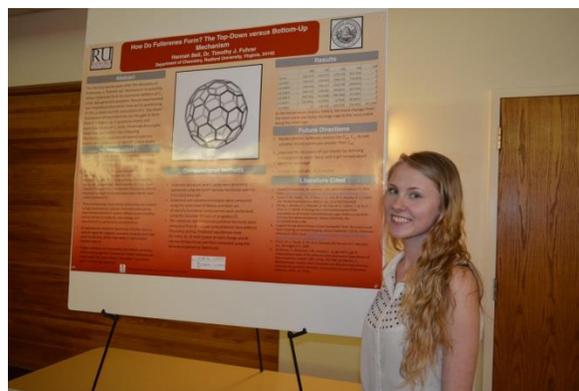
VIRGINIA BLUE RIDGE SECTION OF THE AMERICAN CHEMICAL SOCIETY HOLDS MEETING AT RU

Chemists from across the region gathered in Muse Hall on April 8th for the annual meeting of the Virginia Blue Ridge section of the American Chemical Society. The meeting featured a keynote address by Dr. Jim Rancourt of Polymer Solutions, awards for students and teachers from institutions in the area, and the 23rd annual undergraduate and high school poster session. Radford University students were well represented in the poster session, highlighting the research they've conducted over the past year, mentored by RU faculty.



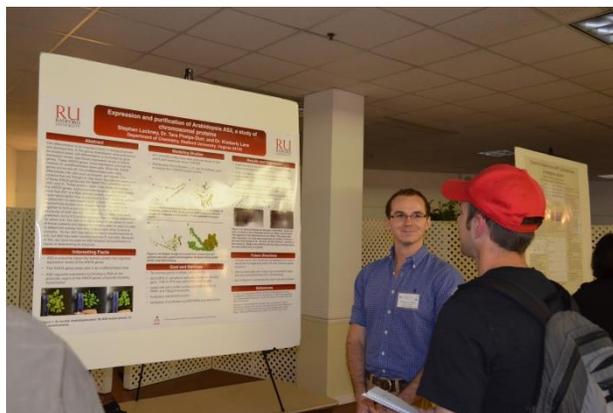
Angel Lambert and Jordan Snelgrove shared their work on the "Optimization of hybrid density functionals for use on Endohedral Metallofullerenes." Angel and Jordan worked with Dr. Tim Fuhrer.

Hannah Bell showcased her work entitled "How do Fullerenes form? The top-down versus bottom-up mechanism." Hannah worked with Dr. Tim Fuhrer.



Charles Folsom and Lindsay Lesure explained their work on the "Characterization of the mutated bacterial loop of E.coli B Glucuronidase." A third member of their research team was Hannah Gullickson and all three worked with Dr. Kim Lane.

Bismark Amofah worked with Dr. Tim Fuhrer to further develop “Supercomputing technology for chemistry at Radford University” utilizing the LittleFe computational cluster.



Stephen Lackney shared his work in the “Expression and purification of Arabidopsis AS2, a study of chromosomal proteins.” Stephen worked with Dr. Tara Phelps-Durr and Dr. Kim Lane.

The James Lewis Howe awards were presented to Outstanding Students from colleges and universities located in the region. Nima Hami, a chemistry major from Sterling, VA was the recipient from Radford University. Nima is concentrating on both chemistry and biology as a pre-health student planning to graduate this spring. He has been the recipient of a SURF Grant, a recognized student on the Dean’s List at RU, a member of the American Chemical Society, and a brother in Theta Chi Fraternity. Dr. James Lewis Howe was for many years Professor of Chemistry and Head of the Department at Washington and Lee University. As one of the most distinguished chemists in the Blue Ridge Section, members have chosen to name the annual awards to outstanding students in his memory.



Nima Hami

RU BIOLOGY HOSTS BIOBLITZ 2015



Turtle image from Courtney Odenthal

About 50 students, faculty, and family members came out for various activities at the 2015 Radford University Bioblitz at the Selu Conservancy on April 17th and 18th. This bioblitz was a two day surveying effort to sample as many taxa as possible in a short time. This year, surveys were completed during a daytime and a night hike for small mammals, amphibians and reptiles, and birds.

The group welcomed a guest speaker on Friday night: Dr. Wally Smith from UVA-Wise gave an excellent talk on amphibian citizen science projects in Wise County. He encouraged students to get outside and get involved in many simple, achievable ways.

The Radford University Bio Blitz was hosted this year by Dr. Karen Powers, Associate Professor of Biology, Dr. Matt Close Assistant Professor of Biology, and the RU student chapter of The Wildlife Society. Several graduate students from Virginia Tech also participated by producing hands-on wildlife demonstrations on wildlife camera trapping and using radio telemetry to track wildlife.

The weather was perfect for this annual event, and organizers were happy that so many students could participate in this hands-on experience.



**Northern white-footed mouse (*Peromyscus leucopus noveboracensis*)
picture by Courtney Odenthal**

For more pictures from the event, please visit:

<https://www.flickr.com/photos/131888460@N07/sets/72157651649373150/with/17017425479/>

RU UNDERGRADUATE RESEARCH PROJECTS GET HOLLYWOOD TREATMENT AT SCORE FILM FESTIVAL



Student filmmakers and Dr. Jason Davis at the first annual SCORE Film Festival.

The Radford University research community rolled out the red carpet at the inaugural Scholarly Outreach and Research Engagement (SC.O.R.E.) Film Festival April 25.

"Knowledge, information and science can be fun and that came across today," said Jason Davis, assistant professor of biology and SCORE program director. "The ability to communicate these topics shows how deeply these students are into their work and their valuable ability to translate it to the public."

Sixteen three-minute videos rolled across the big screen on biology, chemistry, anthropology, art, nursing, geology and geophysics and health and human performance. Homegrown superheroes, giant roaches, California crabs, artists at work and the Juneau glacier fields were among the stars of the show. An authentic Radford bobcat captured on film while hunting at the Selu Conservancy by Will Dowd, a senior geospatial sciences major, closed the show.



Students had the opportunity to showcase their work on the big screen.

To see some of the featured videos, visit the [SCORE Youtube page](#) or the [RU SCORE homepage www.radford.edu/score](http://www.radford.edu/score).

Eleven of the filmmakers watched their films from the front row on the big screen and answered questions afterward from more than 100 students, faculty, family and friends.



More than 100 people attended the event in downtown Radford.

"Doing the science, planning a film and then seeing my work on the screen was not as hard as listening to my own voice over and over as I edited," said Cassie Bonavita, a senior biology major whose film recapped her summer research initiative to capture mosquitos in Costa Rica and then analyze them for bacteria in Radford University's Arbovirus and Medical Entomology Lab.

Emily Guise, a senior biology major, talked about the importance of sharing research with the public, saying, "It is about finding something important about your life, and telling you about it."

Dr. Davis introduced the festival and the filmmaker/researchers, saying, "We are in an incredible age of scholarship, with new discoveries, experiences and learning being created every day. It is not enough to make discoveries, it is about sharing the discoveries in the discoverer's own voices and ways," he said. "These guys are creative, funny and super smart."

Another Radford University first, the inaugural Sigma Xi Science Café, preceded the screenings. Hosted by Assistant Professor of biology Sara O'Brien's BIO 460 Science and Society class, the Science Café featured a science trivia contest touching upon current scientific issues such as vaccinations, coral reef depletion, fishery health and the economic impact of the ecosystem.

The contest was won by the Ballin' BioBoyz, a team of biology students, captained by Kevin Flood, who said, "We had fun thinking about some of the things that are affecting the world we live in."



Brenna Hyzy and Katherine Self served as hosts for the Sigma Xi Science Café Trivia Session



Dr. Sara O'Brien and the Biology 460 "Science and Society" class.

SC.O.R.E. assists undergraduate students from all academic disciplines in developing and producing multimedia products that showcase their original scholarship and research.

Sigma Xi is a 125-year-old international scientific organization of scientists and engineers, whose research spans the disciplines of science and technology. Today, Sigma Xi has nearly 60,000 members in more than 500 chapters in the United States, Canada and other countries, including Switzerland, Thailand, Lebanon, New Zealand and

Australia. More than 200 Nobel Prize winners have been Sigma Xi members. RU's chapter began in 2014.

RUFESI RECEIVES GRANT TO AID IN CEMETARY RELOCATION

Modern development requires a lot of space and sometimes that can clash with a previous use of a piece of land. This was the dilemma for Mecklenburg County, Virginia where an opportunity for development is on a plot presently occupied by the historic Mosley cemetery. The county wants to have the best possible outcome for the relocation of the cemetery, so they have contacted Dr. Donna Boyd and Dr. Cliff Boyd of the Radford University Forensic Science Center for assistance, resulting in a grant award of \$34,600 to help make the project possible. “This project is for the skeletal analysis of individuals from the historic Mosley cemetery in Mecklenburg County, Virginia” said Dr. Donna Boyd. “The county wishes to use the property where the cemetery is located for development, so they obtained a court order and permission to move the cemetery.”

The cemetery dates to the late 19th/early 20th century, is African-American, and contains approximately 25 graves. Because it is an historically significant cemetery, the county hired an archaeological consulting firm (CIRCA—CRM) to conduct the excavations to comply with state law. “We are contracted to analyze the human remains before reburial in another location” adds Dr. Donna Boyd. Excavations of the cemetery are currently ongoing. “We should be receiving the remains for



An image of one of the skeletons in the historic Mosley cemetery during excavation.

analysis in late spring or early summer and hope to involve our advanced anthropological and forensic science

students in the analyses” said Dr. Donna Boyd. “Results of these analyses will add to our ongoing research focused on changes in historic African-American health across the 19th and 20th centuries.”

CSAT STUDENTS SHARE WORK DURING 24TH ANNUAL STUDENT ENGAGEMENT FORUM

Research and engagement are a way of life for most students in the College of Science and Technology. The programs are heavily interactive and require a greater degree of activity outside the classroom than do many disciplines. This was readily apparent during the 2015 Student Engagement Forum sponsored by the Office of Undergraduate Research and Scholarship in April. The work conducted by students and faculty ranged from class assignments to co-curricular experiences to multi-faceted research and exploration and the results of this activity were impressive.

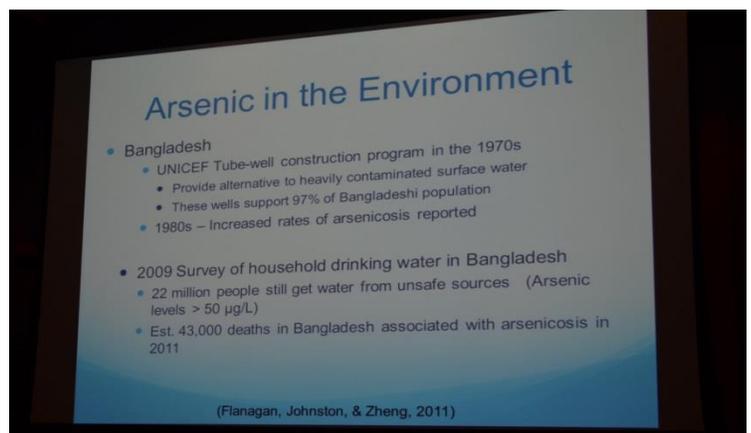
As a major part of the two hundred presentations, posters and ePortfolios on display over the three day event, students in the College of Science and Technology exhibited a love for exploration and discovery in a variety of settings.



Emily Guise presenting her research

On Tuesday, April 21, seven biology students provided presentations on five areas of research including "Arsenic Production by Environmental Bacteria", "Assessing Herpetofaunal Diversity at Selu Conservancy", and "Using land use history and site conditions to predict invasive plant distribution in Central Appalachia." Daniel Metz, Emily Guise, Matti Hamed, Jessie Daniels, Josh Oliver, Nathan Pirino and Alan Schano showcased their passion for the areas that they studied and shared results that could have a great impact on the world. "I never knew I could study reptiles and amphibians at this level before the opportunity with Dr. Matt Close came along" stated Matti Hamed during her review of the Herpetological study she helped establish at Selu Conservancy. "Now this program has

been established so future students and faculty can learn more about vulnerable species in the area so we can determine needs for habitat management. Daniel Metz shared his experience studying parasites in crabs and revealed that he may have had a breakthrough in his research. "The lines of evidence point toward existence of one of these parasites as a new un-described genus" he said as he shared the results of his work. The theme of "We can help make the world a better place" was repeated in the presentations of all the students as they shared their research. Nathan Pirino and Alan Schano shared their exploration of bacteria and bacteriocins effect on Arsenic in water. "Our goal is to show that the use of bacteriocins can limit the amount of arsenic in the system and reduce the impact on the organisms that use the water, including people" they said. The work of all of these students helps to contribute to original knowledge and scholarship that improves the understanding of the world around us.





Kayla McNeilly presents her work

The biology exhibitions continued in the poster session immediately following the oral presentations with nineteen areas of study on display showcased by thirty-three students. Topics included "Wildlife at Claytor Lake State Park", "Computational Molecular Modeling of Plant Proteins", "Monitoring the status of Gray Bats", and "Estimating Ingestible Size from Native Mammal prey species" among many other areas studied. Concurrent with the poster session was the interactive presentation of a number of student ePortfolios. Providing an enhanced experience for the viewer, the ePortfolio

project as a component of the Scholar Citizen Initiative at RU also encourages students to reflect on their experiences with the subject material and the learning process in general.

Hannah Gullickson, Skye Hicking, and Charles Folsom from the Department of Chemistry also provided oral presentations on April 21. Both presentations were designed to study methods to improve drug design including one study that could help colorectal cancer researchers synthesize more advanced inhibitor drugs for chemotherapy. A chemistry student poster session included fourteen topics ranging from measuring the amount of "Alcohol in Mouthwash" to "A Quantitative Chemical Analysis of Tea." Sixteen students participated in this informative session.



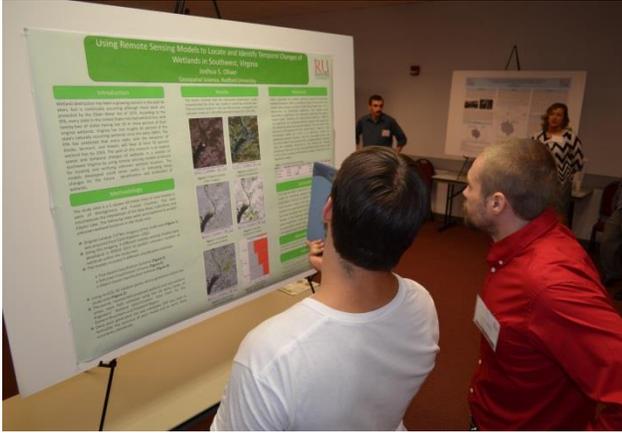
Christine Tutwiler explains what she discovered during her research



Marta Paulson shares her research that began in August 2014 as a part of the Accelerate program

On Wednesday, April 23rd, a session of Innovations in Forensic Science was held featuring presentations by eleven students in topic areas as diverse as "Assessing the Accuracy of Radiographic Imaging in Death Investigations" to "Consistency and Comparison of Ballistic Wound Patterns." Students shared their results but also some of the challenges they faced in gathering the data. Christopher Wingard, who was comparing wound patterns, said "I couldn't get calipers to work, original photos didn't work, so I struggled in finding a way to accurately measure the size of these wounds." He ended up using a computer program to determine wound area by converting pixels to

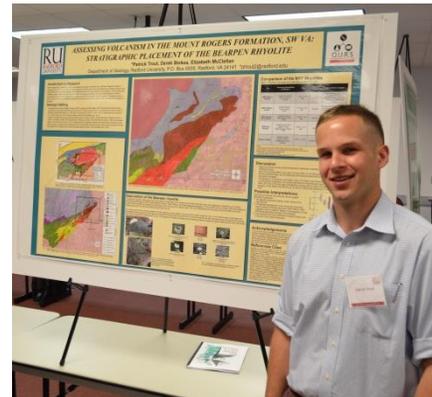
millimeters and utilizing a small paper gauge. For many students, finding a path to successfully gather the data was as big a part of their project as was the analysis of the information. Some students found that the information they did gather didn't support their original hypothesis, but that knowing what was not accurate was a step on the right path to an answer.



Josh Oliver discussing his findings with a fellow student during the Geology and Geospatial Science Poster Session

Geospatial Science and Geology students shared their work during a poster session during the afternoon of the 22nd in Heth Hall. Eleven Geology students showcased eight topics and fourteen Geography related topics were featured by eighteen Geospatial Science students. Areas of study included “Geochemistry at Mount Rogers”, “Potential Auxiliary Water Sources for Mountain Lake”, “Developing Land Use Plans for Rural Areas within Radford City”, and “Development of a Strategic Land Plan for Selu Conservancy.” Will Dowd said of his project “This is important because academic use and interest in Selu facilities has been steadily increasing over the last

few years and with that comes many ideas that may not fit within the mission of the Conservancy.” He added “We plan to create deliverables such as terrain analysis maps for prospective projects that will include the geomorphological and ecological characteristics that need to be considered.” Kent Weidlich and Dylan Dwyer have been working with Dr. Chester “Skip” Watts to determine potential water sources to help refill Mountain Lake in Giles County. “A western watershed near the lake appears to have the greatest potential as an auxiliary water source since some nearby development appears to have diverted some water away from the lake over the past decade” they said.



Patrick Trout with the poster that his group developed based on their research at Mount Rogers



Pham Tien shares her observations of the red ruffed lemurs at the North Carolina Zoo

A trip to the North Carolina Zoo in October 2014 led to a fascinating session of presentations regarding Primate Behavior that were shared on the final day of the forum, April 23. Several groups of students studied the interactions and behaviors of lemurs, baboons, chimpanzees, and gorillas creating a multi-faceted look at the activities of these primates and showcased the work of thirty-six students. With a narrower window of opportunity for observation, students took a divide and conquer approach to gather as much useful data as possible. One group found it necessary to make a return

trip to gain additional information as the challenges of observing a group of animals who might not be available for your work on a specific day or choose to sleep through the entire observation period. Social hierarchy, mating rituals and dominance, grooming, aggressive behavior, and juvenile behavior were all topics of discussion during the program with many observations overlapping from one group of students to the next, providing a more well-rounded view of these animals.

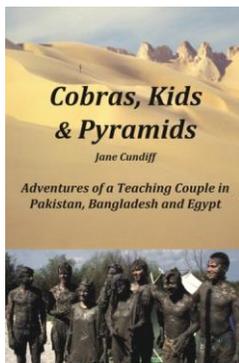


Differences in behavior of the ring-tailed lemur were discussed

Students from Anthropological Sciences also shared their work on a “Comparison of Lithic and Ceramic Artifacts from Two Adjacent Late Woodland Villages” during the Interdisciplinary Poster Session held as a part of the forum. Also during this session, Joe Ashley shared his research in “Optimized Power Transmission Protocol for Wireless Sensor Networks.”

Students from many varied disciplines across the College of Science and Technology exhibited the many ways that they are taking advantage of the opportunity to “learn by doing” in a multitude of experiences over the course of the Student Engagement Forum. That work helps to develop these students into the scientists who will continue to benefit the world in the future while showcasing the world of discovery and exploration that is abundant for current and future CSAT students.

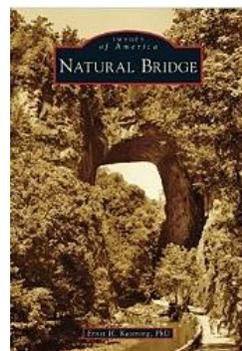
CSAT NOTES: PUBLICATIONS, PRESENTATIONS, AND FELLOWSHIPS



For your summer reading list, two books have recently been published by members of the CSAT family.

Jane Cundiff, Biology adjunct faculty member, shared her lifetime of teaching in the book *Cobras, Kids And Pyramids: Adventures of a Teaching Couple in Pakistan, Bangladesh and Egypt*. She says “There are 44 stories of our adventures living, traveling and teaching in Pakistan, Bangladesh and Egypt - the first 3 of seven countries.”

Dr. Ernst Kastning, retired faculty in the Department of Geology, is the author of *Natural Bridge*, a look at one of the most recognized and visited geologic landmarks in the country, located right here in Virginia. The book is a part of the Images of America series and features Dr. Kastning’s thoughts about this unique natural feature following his half-century of service as a hydrogeologist, engineer, and educator.



Both books are presently available from online booksellers.



Dr. Stockton Maxwell traveled to Chicago to present his work on identifying critical climate periods in tree-ring analysis during the Association of American Geographers annual meeting held April 21-25.

Congratulations to our Summer Undergraduate Research Fellowship Recipients for the College of Science and Technology:

Hannah Bell – Chemistry
Jessica Wood – Forensic Science
Cassie Bonavita – Biology
Shane Brandes – Biology
David Foley – Forensic Science
Charlie Folsom – Chemistry
Robert Huber – Geology

Caroline Leggett – Biology
Lindsay Lesure – Chemistry
Jean-Francois Racinet – Physics
Sharon Roller – Forensic Science
Annie Rudasill – Biology
Jordan Snelgrove – Chemistry

CAMP INVENTION AT RU SCHEDULED FOR JUNE



Camp Invention is a nationally recognized, non-profit elementary enrichment program backed by the National Inventors Hall of Fame.

Over the past 40 years, and in partnership with the U.S. Patent and Trademark Office, the Camp Invention program has encouraged nearly two million children, teachers, parents, college students and independent inventors to explore science, technology and their own innate creativity, inventiveness and entrepreneurial spirit.

Kids from the first through sixth grades can participate in Camp Invention at RU this June 22 – 26. Local educators will serve as faculty to lead the week of hands-on fun at Radford University, sponsored by the College of Science and Technology.

Registration is now open. For more information, please visit:

<http://inventnow-web.ungerboeck.com/programsearch/moreinfo.aspx?event=12027>

SUMMER BRIDGE APPLICATION DEADLINE EXTENDED FOR SELECT TRACKS

The Radford University College of Science and Technology Summer Bridge STEM program is a week-long residential experience for rising sophomore, junior, and senior high school girls interested in science, technology, and mathematics. The 2015 edition of the program will take place from Sunday, July 12 – Friday, July 17, 2015. More than 70 students have already been accepted into the program, but due to the generous donors of the program, additional scholarships are available for select tracks including space exploration, geology and environmental science.

More information and application instructions are available at:

<http://www.radford.edu/content/csat/home/summer-bridge.html>

