

Insights

Fall 1999

College of Science

Alumni Newsletter

Vol. 8 Issue 1

MacMahon's Musings

Students are back on campus, faculty are in the classrooms, and the Taggart Student Center is filled with card tables displaying everything a student must have or do. The new school year has started.



Dean Jim MacMahon

Early indications are that we will regain the loss of students that we incurred during the transition to semesters last year. That loss seems to be common to all schools that change systems. An important consequence of a loss of students is that budgets are negatively influenced and so are services that we can provide. Thus, the encouraging enrollment indicators are a great relief to those of us who have to plan ahead.

The Widtsoe Hall building project progressed very well over the summer. The building looks larger to most visitors than they ever imagined. In fact, we have nearly the same overall space as in the current Widtsoe Hall—it just looks bigger because of its configuration. We gain some usable space because of the economy of design that was developed by the architects. We are right on schedule to make the move to the new building in December and to commence the demolition of the old Widtsoe Hall to make room for the Eccles Science Learning Center.

Speaking of the Learning Center, we are still in need of major gifts. We must accumulate either funds or pledges totaling \$1.5 million in the next six months. If you

MUSINGS

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Dr. Jan Sojka Receives D. Wynne Thorne Research Award

April 12, 1969: A Scottish youngster celebrating his 11th birthday hears on the radio that the first manned spaceflight has just occurred, one orbit around the earth by Russian cosmonaut Yuri Gagarin. "It was like a birthday present that set my career forever. I've been in it since day one," explains

Dr. Jan Sojka, internationally known space physicist and recipient of the 1999 D. Wynne Thorne Research Award. This award is presented annually by the Office of the Vice President for Research to a faculty

member who has built a reputation for significant research or creative achievement and is recognized nationally and internationally by his professional peers. The award is named in honor of Dr. D. Wynne Thorne, USU's first vice president for research.

Dr. Sojka is assistant director of the interdisciplinary Center for Atmospheric and Space Sciences (CASS), a professor in the Department of Physics, and director of the Bear Lake Observatory (an optical/radar facility jointly sponsored by CASS and the Space Dynamics Laboratory). He earned a BS degree in physics from Edinburgh University in 1972 and a PhD degree in physics from University College London in 1976. He came to USU in 1978, after conducting research at the Mullard Space Science Lab of University College London during 1975 - 1978.

The following is an excerpt from a letter written in support of Dr. Sojka's nomination for the Thorne award by Dr. Robert Schunk (director of CASS, professor in the Department of Physics, and fellow of the American Geophysical Union):

"During his 23-year career, Jan has proven himself to be a dedicated, energetic, self-motivated, and highly competent scientist who has an excellent international reputation. He has authored or co-authored more than 140 scientific papers in refereed journals and books, and he has

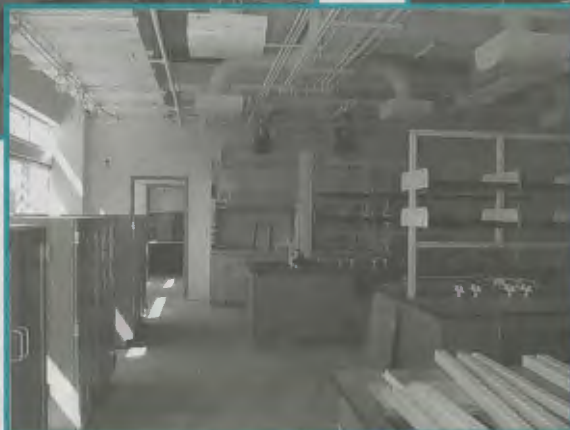
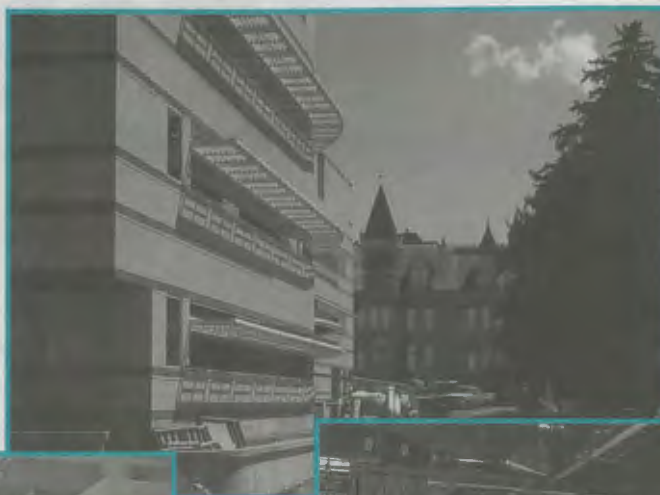


Dr. Sojka advises three students in the Get Away Special program.

SOJKA

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Widtsoe Hall Update



With a December completion date closing in, the new Widtsoe Hall takes shape. These pictures depict various stages of completion for the external facility and internal teaching labs.

By the time you receive the spring issue of *Insights*, many more changes will have occurred to Widtsoe Hall. The new Widtsoe Hall will be completed, and chemistry and biochemistry students and faculty will be engaged in classes and research in a state-of-the-art facility. Old Widtsoe Hall should be almost demolished, and construction should begin soon on the Eccles Science Learning Center.

Projected Construction Mileposts

New Widtsoe Completed by Opening Day of Classes 10 January 2000
Old Widtsoe Demolished and Science Learning Center Begun 15 April 2000
Eccles Science Learning Center Completed June 2001

MUSINGS

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can give any support in this important activity, either with significant gifts, pledges of gifts, or leads to potential donors, I would appreciate speaking with you.

We have 10 new faculty in the college this year. Wow! My colleagues get younger and I get older. You will read about these outstanding men and women in this and upcoming issues of *Insights*, but I wanted you to know that the quality of our new colleagues is outstanding and that they all show a dedication to teaching and working with students, as well as to their important research pursuits.

This is a great time to be dean of this college. We have an excellent faculty who are gaining national and international recognition for their research and teaching, we are getting new facilities, and we get to work with wonderful students. What more could I ask for?

I look forward to communicating with you again in the spring and sharing pictures of a finished chemistry building.

Sincerely,

SOJKA

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presented or contributed to more than 180 talks at national and international meetings. Since joining USU, Jan has been a principal investigator, co-principal investigator, or a primary investigator on federal grants and contracts (NASA [National Aeronautics and Space Administration], NSF [National Science Foundation], Air Force) that amount to more than \$5 million. A further testament to Dr. Sojka's scientific competency is the fact that he is constantly asked to give review talks and seminars, to serve on NASA and NSF proposal review panels, and to serve on satellite definition teams. Two recent NASA satellite definition teams Jan has served on are the Inner Magnetosphere Imager and the multi-spacecraft Global Electrodynamics missions, both of which are \$100-million programs. The members of the team outline the scientific objectives and then define the spacecraft configurations, orbital characteristics, and instruments needed to accomplish the scientific objectives of the mission. In addition to his involvement in NASA and NSF review panels, Jan has also organized workshops on behalf of the scientific community."

One of Dr. Sojka's primary research interests is global scale modeling of the ionosphere, the ionized portion of the earth's upper atmosphere. In collaboration with Dr. Schunk, he developed the first numerical model of the global ionosphere. Recently, a modified version of this model was selected as the official Air Force model to be used for ionospheric specification and forecasts, and it is currently being installed at the Space Forecast Center in Colorado Springs, Colorado. This model will be used to forecast space weather, which can adversely affect numerous civilian and military systems and operations, including over-the-horizon radars, high frequency communications, surveying and navigation systems using Global Positioning System (GPS) satellites, satellite tracking, and satellite lifetimes. According to Dr. Henry Rishbeth, Department of Physics and Astronomy at the University of Southampton, "Space Weather' is a field that will become increasingly important to science and industry, and indeed to everyday life. Jan Sojka has become a leading figure in that field...." Dr. J. Lemaire of the Belgian Institute of Space Aeronomy states, "His reputation as a skilled modeller of ionospheric processes is known in all laboratories and universities active in ionospheric and magnetospheric research both in the US and all other parts of the World.... [His models] have established his reputation as a most respected expert in this field of research."

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Look for us on the Web!

www.usu.edu/~science/alumni&friends

As solar winds interact with the earth's magnetic field, a magnetic cavity called the magnetosphere is formed around the earth. The magnetospheric electric fields and energetic particles that penetrate to the ionosphere are highly variable in both space and time. Dr. Schunk states that "a pioneering study" conducted by Dr. Sojka, using optical images taken from the Dynamics Explorer satellite as inputs to the global ionosphere model, "clearly showed the importance of incorporating realistic time-dependent magnetospheric processes in ionospheric modeling and forecasting.... Ultimately, it would be beneficial to have a coupled model of the entire ionosphere-magnetosphere domain so that the coupling mechanisms can be taken into account in a self-consistent manner. Working with colleagues, Jan has recently taken the first step in this direction. The goal is to numerically couple our global ionosphere model to the magnetohydrodynamic model of the global magnetosphere developed by scientists at the Naval Research Laboratory in Washington, DC. This is a difficult task.... The effort that is being led by Dr. Sojka is the first attempt at coupling global ionosphere and magnetosphere models and the results obtained should have a major impact on the direction of our field."

Another area of research interest for Dr. Sojka is solar-terrestrial weather forecasting. One impact of storms on the sun is geomagnetic storms approximately three days later in the earth's ionosphere and magnetosphere. Currently, Dr. Sojka and other scientists are conducting basic research in an effort to understand the mechanisms and effects of solar storms, particularly their effects on space weather, with the ultimate goal of improving space weather forecasting. He believes that the geomagnetic

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Partner in Science: The Willard L. Eccles Charitable Foundation

Just ask students what they desire most out of their lab sections and they will almost unanimously tell you they want a good lab partner. Someone smart, someone they can rely on and who shares their thirst for learning.

When the College of Science needed a good lab partner, somebody it could rely on and who wanted to learn, it looked to the Willard L. Eccles Charitable Foundation. Created in 1981, the Foundation memorializes the name of Willard L. Eccles (son of David Eccles), who was born in 1909 and passed away in 1985.

The Willard L. Eccles Charitable Foundation, comprised of eight board members, has a rich history of supporting basic scientific and medical research as well as having a strong funding concern for health-care issues in Utah. In addition, the foundation has been an active participant in efforts with the Nature Conservancy.

"As a direct result of the research funding I have received from the Willard L. Eccles Foundation, I have been able to aggressively pursue my interests in the determination of detailed reaction mechanisms for several enzymes which may lead to the design of new pharmaceuticals."

—Dr. Richard C. Holz, Department of Chemistry and Biochemistry

At Utah State University in general, and within the College of Science in particular, the foundation has consistently shown its support for our students, our faculty, and our varied research programs. In the past 11 years, the foundation has granted in excess of \$1.4 million for various projects critical to the college's ability to perform its mission of teaching, research, and service. In 1993, the foundation created the Willard L. Eccles Foundation Fellowship program in the College of Science and now funds three Eccles Science Fellows annually. The foundation also recently played a pivotal role in helping to obtain the funds necessary to secure the construction bid for the Eccles Science Learning Center that will be built following the completion of the new Widtsoe chemistry building in December.

Far and away, the greatest support from the foundation has been to sponsor faculty research in the College of Science. The

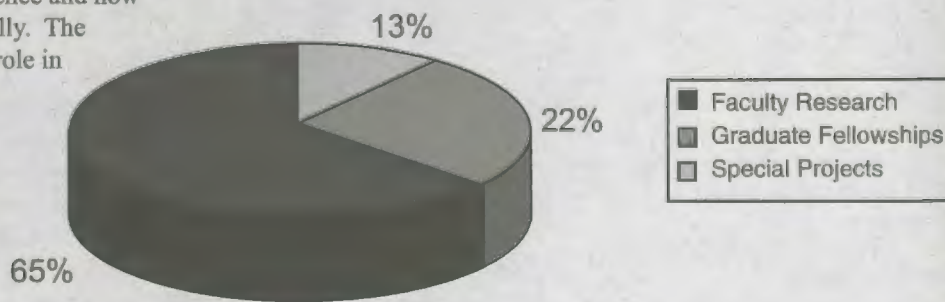
foundation has funded at least one science faculty research grant annually since 1988. Associate professor Richard C. Holz, Department of Chemistry and Biochemistry, has received funding through the foundation for two research projects in three years and has seen his research program grow dramatically following the

"The Board [of the Willard L. Eccles Charitable Foundation] has helped me help the College of Science realize some of its research and scholarship dreams. Without their help we would not have progressed as far as we have."

—Dean Jim MacMahon, College of Science

foundation's investment in his work. "As a direct result of the research funding I have received from the Willard L. Eccles Foundation, I have been able to aggressively pursue my interests in the determination of detailed reaction mechanisms for several enzymes which may lead to the design of new pharmaceuticals. The foundation's support also allowed me to generate significant preliminary findings which directly resulted in obtaining additional funding from the National Institutes of Health," said Dr. Holz.

"The board [of the Willard L. Eccles Charitable Foundation] has helped me help the College of Science realize some of its research and scholarship dreams," affirms Dean MacMahon. "Without their help we would not have progressed as far as we have." Given the foundation's exemplary support for the sciences at Utah State University, the College of Science has a superb lab and learning partner in the Willard L. Eccles Charitable Foundation.



Breakdown of support for the College of Science from the Willard L. Eccles Foundation by type.

SOJKA

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storms in the upper atmosphere induced by solar storms have little or no effect on weather down here on earth or on human health; however, geomagnetic storms do have an effect on technologies involving high-precision work with electric fields (e.g., electrical power systems).

Data compression is another area of research. The late Dr. Richard Harris (USU Department of Electrical and Computer Engineering) developed a technique called vector quantization for significantly compressing audio data. Because the amount of scientific data that can be sent from a satellite to the ground is limited (regardless of the amount collected), use of data compression has the potential for significantly increasing the amount of data gleaned from a satellite. Working with a group of scientists at the University of Iowa, Drs. Sojka and Harris showed that vector quantization could compress photographic data from a satellite by a factor of 10 without any loss of significant data. Currently, a satellite is using this technology to send 10 times the number of photos back to earth than had been possible previously. An example of one of these satellite photos is that of the aurora seen in Utah on 16 April 1999. An aurora is caused by electrical currents flowing along magnetic field lines in the atmosphere. In the northern hemisphere, auroras are normally seen in Alaska or Canada; however, on that day, huge electrical currents were flowing over Utah and southern Idaho for about six hours and the aurora was seen by people all over the area.

Dr. Sojka is also interested in the use of small satellites for space research (as opposed to giant, more expensive satellites like the Hubble Telescope). He is now chairing the Global Electrodynamics Connections Committee at NASA, which is charged with producing the science technology document that will define a mission to launch four small satellites in 2008. The satellites will follow each other like pearls on a string and will provide much needed data on fluctuations in the space environment. Other NASA committees on which Dr. Sojka serves are the Sun-Earth Connections Roadmap Committee and the Sun-Earth Connections Advisory Subcommittee.

Currently, Dr. Sojka is a principal investigator or co-principal investigator (with Dr. Schunk) on grants from the National Science Foundation totalling almost \$800,000.

In addition to his personal research, Dr. Sojka has been involved with the undergraduate Get Away Special (GAS) program since 1979 and has been directing it since 1991. The program was established by NASA to provide an opportunity for undergraduates to conduct experiments on the Space Shuttle. Dr. Sojka has been responsible for four GAS payloads flown on the Shuttle and for 11 students who flew on the KC-135 aircraft (vomit comet) to conduct microgravity experiments. When asked about the program, Dr. Sojka replied, "That's the fun one."

Dr. Sojka and his wife, Susan, live in Logan; they have two daughters, Lara and Eveline.

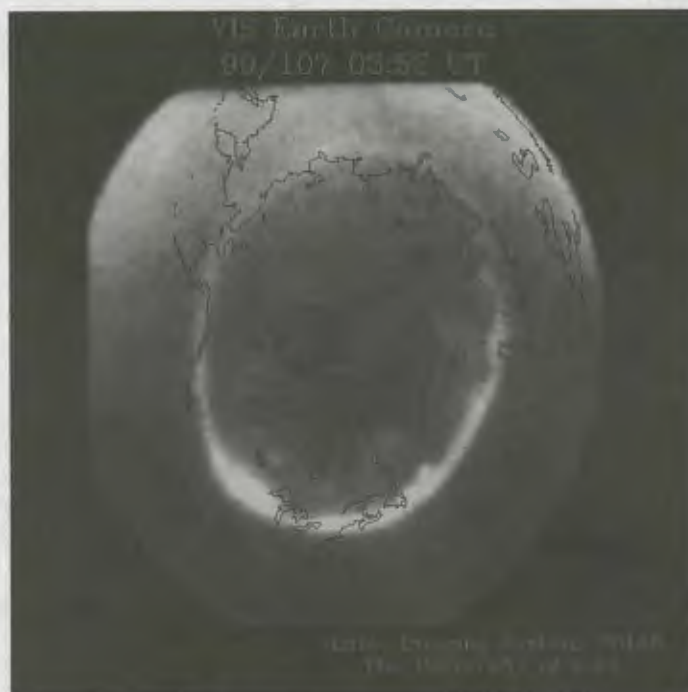


Image of aurora observed in Utah/southern Idaho on 16 April 1999, as seen from NASA Polar satellite.

Utah State University and the College of Science, in particular, are proud to be associated with that young boy who was excited by space travel at age 11 and grew up to be one of America's foremost space physicists.



College of Science
Alumni and Friends
Welcome

Alumni and Friends Web Page

In the last issue of *Insights* (Spring 1999), we alerted you to a new Web presence we had established exclusively for alumni and friends of the College of Science. Information of interest to alumni and friends (including this issue and the past four issues of *Insights*) can be found at our Web site. If you haven't yet visited the site, we invite you to do so, and if you have visited before, please check again because our information is updated periodically.

www.usu.edu/~science/alumni&friends

Chemistry and Geology Scholarships Make a Difference

(Editor's Note: This issue of Insights continues with the theme of scholarships but focuses on those privately funded scholarships benefiting students exclusively in the Department of Chemistry and Biochemistry and the Department of Geology. The next issue of Insights will complete our efforts to share information on this topic by highlighting the scholarships in the Department of Mathematics and Statistics and the Department of Physics.)

Like all departments in the College of Science, Chemistry and Biochemistry and Geology are extremely conscious of the role that private financial support for scholarships plays in helping to improve the educational experiences of its students. A select few students in these departments are particularly fortunate to be the beneficiaries of contributions given to create new or to enhance existing scholarships.

With two semesters of in-state tuition and fees at Utah State University amounting to \$2,314, the scholarship needs of science students have never been greater. Only a very small fraction of deserving students in science receive scholarship assistance. As a result, more science students would benefit greatly from gifts designated for scholarship support. Gifts to establish such scholarships can be contributed and expended annually or can be contributed through a perpetual endowment whose earnings will be used to annually support students.

Department of Chemistry and Biochemistry

The 11 scholarships currently benefiting chemistry and biochemistry students are cited below. Like any privately funded scholarship, these funds exist solely for the benefit of students. The Department of Chemistry and Biochemistry has a continual need for additional scholarship support for its students.

The **George H. and Billie Bush Emert Endowed Scholarship** is named for and donated by the university's 13th president and his

spouse. The endowment provides an annual scholarship to a student demonstrating academic achievement, financial need, and personal integrity. *The 1999 Emert Scholar is Daniel D. Clark, a PhD candidate in biochemistry with a 3.927 GPA.*

USU President George H. Emert explains, "Billie and I established and continue to enhance this scholarship because we fervently believe that to provide scholarship support for a USU student's education is an investment that provides excellent returns for our students, our nation, and our world. Through this endowment, we are able to help young scientists pursue a degree in a department that continues a long-standing tradition of providing a superior undergraduate and graduate education."

"Billie and I established and continue to enhance this scholarship because we fervently believe that to provide scholarship support for a USU student's education is an investment that provides excellent returns for our students, our nation, and our world."

—USU President George H. Emert

The **Chemistry and Biochemistry Alumni Scholarships** are provided through gifts from the department's alumni and friends and benefit two deserving students annually. *The 1999 Alumni Scholars are Michael C. Granger and Jishou Xu, PhD candidates in chemistry holding 3.953 and 3.924 GPAs, respectively.*

The **Thomas F. Emery Endowed Scholarship** provides scholarship assistance to graduate students in biochemistry making outstanding progress toward an advanced degree in the field. Established with gifts from friends and family of Dr. Emery, the

First Apollo Landing Remembered by Astronaut/Emeritus Physics Professor Don Lind

The 30th anniversary of the first landing on the moon was commemorated on 20 July 1999. On that day 30 years ago, Apollo astronaut **Dr. Don Lind** (emeritus professor in the Department of Physics) was in Houston mission control and viewed the landing from the center of the first row of controllers. In the event of any equipment failures on the lunar surface, Dr. Lind's job was to pick up the microphone and tell the astronauts how to handle the problem—he knew exactly what to do if anything went wrong because he had been involved in the design and testing of all the hardware and had worked out all the procedures.

Dr. Lind was expected to go to the moon on Apollo 19 or 20; however, the program was canceled before those flights. He did fly on the Space Shuttle Challenger in 1985, orbiting the earth 100 times and flying nearly 3 million miles.

The anniversary of the lunar landing "was a wonderful experience because it brought back in vivid memory all those absolutely wonderful things," he says. "In the early part of the space program while we were going to the moon, there was a sense of mission, a sense of destiny, a sense of high adventure that the space program really does not have right now. To think through again in detail just what we did brought all that wonderful feeling of high adventure flooding back."

scholarship honors his reputation as a biochemist and dedicated faculty member while assisting deserving graduate students. *The 1999 Emery Research Scholar is Jeannine M. Chan, a PhD candidate in chemistry with a 3.988 GPA.*

The Irving Condie Frost Endowed Scholarship, the newest scholarship, provides support to sophomore, junior, or senior students majoring in chemistry. The endowment, established by chemistry alumnus Irving Frost (BS 1931), provides an annual scholarship to a deserving student in the department. *The inaugural Frost Scholar for 1999 is Kristen A. Hill, a junior with a 3.922 GPA.*

The Marjorie H. Gardner Endowed Scholarship provides an annual award to the outstanding teaching assistant in the department. The endowment posthumously honors the achievements of Dr. Marjorie Hyer Gardner (BS 1946), a pioneering leader in chemical education and science, and was established with gifts from her family, friends, and colleagues. *The 1999 Gardner Teaching Award winner is Jeannine M. Chan, identified earlier as the Emery Research Scholar.*

The R. Gaurth Hansen, PhD, Endowed Scholarship provides scholarship assistance to selected chemistry students. Initially created by Dr. and Mrs. Vincent L. Rees (BS 1935), the endowment honors Dr. Hansen, former USU provost and distinguished professor in the department. *The 1999 Hansen Scholar was Heather D. Taylor, a senior in chemistry with a composite teaching major who graduated with a 3.875 GPA.*

The Garth L. Lee Endowed Undergraduate Scholarship memorializes former chemistry faculty stand-out, Dr. Garth Lee. The endowment annually provides support to an outstanding undergraduate chemistry student in each year of study who demonstrates command of chemical science. *The 1999 Lee Scholars are Heidi Fabrizio (3.946 GPA), John L. Blau (3.962 GPA), Alysa Andrews (3.905 GPA), and Ruth Anderson (3.983 GPA).*

The Maeser-Bauer Endowed Scholarship posthumously memorializes two outstanding faculty members, Dr. Sherwin Maeser and Dr. Norman Bauer. The scholarship fund presents an award to an outstanding junior or senior chemistry major who has completed the physical chemistry series. *The 1999 Maeser-Bauer Scholar was Binh D. Luu, who completed his studies with a 3.759 GPA and is now pursuing a graduate degree in the department.*

The fund also makes available the **Maeser-Bauer Teaching Assistant Awards** annually recognizing the efforts of two exemplary graduate teaching assistants. *The 1999 recipients of those awards are Daniel P. Ward, a master's candidate with a 3.776 GPA, and Quingyun Chen, a PhD candidate in chemistry with a 3.924 GPA.*

The Delbert A. Greenwood Memorial Scholarship honors Dr. Greenwood's noted work as a faculty member in the field of biochemistry. The award is provided by the Greenwood family

and is given annually to an outstanding graduate student expected to complete his work within a year. *The 1999 Greenwood Scholar is Jeffrey R. Allen who recently completed a PhD in biochemistry with a 3.973 GPA.*

The Harris O. and Eleanor Y. Van Orden Endowed Scholarship is named for Dr. Van Orden (BS 1938), a long-time faculty member in the department, and his spouse. Established by the Van Ordens, the endowment offers scholarship assistance to an outstanding undergraduate chemistry student. *The 1999 Van Orden Chemistry Scholar is Michael S. Wilkinson, a senior holding a 3.994 GPA.*

The Environmental Chemistry Scholarship Fund is a new fund being established by Dr. Stephen E. Bialkowski, a faculty member in the department. It is intended that this fund will become endowed and will subsequently provide scholarship assistance to deserving students in the department.

Department of Geology

"Our alumni and faculty, on an ever-increasing basis, have been particularly supportive of scholarships in geology," says Dr. Don Fiesinger, geology department head. "Prior to 1995 there were only two scholarship endowments in Geology. Now there are five, and a sixth one is being established, all of which provide important resources for our students to pursue their geological studies."

"Prior to 1995 there were only two scholarship endowments in Geology. Now there are five, and a sixth one is being established, all of which provide important resources for our students to pursue their geological studies."

—Dr. Donald Fiesinger, Geology department head

The five privately funded scholarships currently benefiting geology students are cited below.

The John M. Branch Memorial Scholarship Endowment memorializes John Branch (BS 1981, Geology), who was killed in a tragic vehicle accident in 1991. Established by family and friends of John Branch and geology alumni, the scholarship benefits an outstanding major in the department. *The 1999 Branch Scholar is Jason E. Heath, a senior with a 3.435 GPA.*

The Clyde T. Hardy Scholarship Endowment honors Dr. Hardy for his many years of service to the department. His death in 1998 marked 48 years of teaching, research, and association with the geology department at USU. The endowment, initiated by Joyce and Bud Voit (BS 1978, MS 1985, respectively) in 1986 at the time of Dr. Hardy's retirement, has been enhanced by gifts from

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alumni, faculty, friends, and Dr. Hardy himself. It provides scholarship assistance for a deserving student to attend the department's summer field camp. *The 1998 - 1999 Hardy Scholar was Dustin Lofthouse who graduated with a 3.428 GPA.*

The David Rider Scholarship Endowment memorializes 1954 geology alumnus David Rider (BS 1954, Geology; BS 1962, Civil Engineering), who was killed in 1976. Established in 1996 by his mother, Virginia R. Scott, the endowment provides annual scholarship support for an outstanding geology major with a GPA of at least 3.2 and in financial need. *The 1999 Rider Scholar is Scott K. Carl, a senior with a 3.483 GPA.*

The Thomas A. Riemondy Scholarship Endowment was established by General and Mrs. Augustus A. Riemondy in 1978 following the death of their son, Thomas, who was pursuing a BS degree in geology at USU. The scholarship assists a deserving out-of-state undergraduate pursuing a degree in geology. *The current Riemondy Scholar is Nora Wilson, a sophomore with a 3.790 GPA.*

The J. Stewart Williams Graduate Fellowship Endowment was established in honor of Dr. J. Stewart Williams, a former professor and student mentor in the department, by geology alumnus Phillip H. Wach (MS 1967) and his wife Elizabeth (BS 1960, English). The endowment provides assistance to geology graduate students in support of their field work and thesis research. *The Williams Fellow was John M. Robinson, a 1999 MS graduate with a 3.427 GPA.*

The Kim R. Robeson Geology Field Trip Endowment is being established by faculty members Drs. Jim Evans and Susanne Janecke, family, and others to honor the memory of outstanding graduate student Kim Robeson (MS 1998, Geology), who died in 1998. Once funds sufficient to establish the endowment have been contributed, the fund will provide perpetual support for geology field trips not part of a specific class.

USU Calendar of Events 1999 - 2000

Science Week	25 - 30 October
Aggie Travel to Maui	20 - 27 November
Aggie Travel to Southeast Asia	20 - 30 January
College of Science Spring Coffee Break	10 February
College of Science Phonathan	22 February - 4 March
Founders Day Recognition on Campus	8 March
Founders Day Celebration in Salt Lake City	14 March
Aggie Day	21 April
Senior Send-Off	26 April
University Hooding Ceremony	5 May
College of Science Graduation Open House	5 May
University Graduation	6 May
College of Science Graduation	6 May

As is demonstrated by these 16 departmental scholarships, students in the Departments of Chemistry and Biochemistry, and Geology are of outstanding caliber. There is currently no greater need within these departments or the college as a whole than attracting additional scholarship support for the many deserving students pursuing degrees in science.

Gifts to establish or further enhance scholarship opportunities for chemistry and biochemistry and geology students will help the College of Science provide the kind of support that these students both need and deserve.

To learn more about how you might be able to make a difference in the lives of science students, contact Development Director Jerome Davies at jeromed@cc.usu.edu or (435) 797-3510 or use the postage-paid envelope found in this issue of Insights.

Dean MacMahon Appointed Interim VP

Dr. Jim MacMahon, dean of the College of Science, has been appointed by USU President George Emert as Interim Vice President for Development and Alumni Relations. As interim vice president, Dean MacMahon will work with the alumni and development units, and he will serve as chair of the committee to find the permanent vice president. He states that this interim position will not affect any of his College of Science duties and that he hopes to have the permanent position filled by 1 July 2000 at the latest.

HOLO Experiments

The HOLO-1 and HOLO-2 experiments to demonstrate the use of holographic lidars for tropospheric wind measurements by tracking clouds and aerosol motion were conducted in March 1999 at USU (on top of the Space Dynamics Laboratory Jake Garn building) and in June 1999 at St. Anselm College (Manchester, New Hampshire) by Dr. Thomas D. Wilkerson (Center for Atmospheric and Space Sciences and Department of Physics), Jason Sanders (graduate student, Department of Physics), and colleagues at St. Anselm College and the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center.



Jason Sanders inside the HOLO-2 observatory at St. Anselm College.

A lidar is a meteorological instrument that uses transmitted and reflected laser light to detect atmospheric particles and make measurements on particle aspects such as elevation and concentration. A holographic lidar employs a holographic lens that revolves and transmits the laser beam at a 45-degree angle, resulting in a 45-degree laser cone, whereas a zenith-viewing lidar shoots the laser beam straight up. HOLO-1 employed the holographic scanning lidar HARLIE (NASA Goddard Space Flight Center) and USU's zenith-viewing lidar AROL-2. HOLO-2 employed HARLIE, AROL-2, and another holographic lidar, PHASERS (St. Anselm College). The "green beam" atop the Science Engineering Research building is also a zenith-viewing lidar; however, the lower power AROL-2 lidar is more versatile and portable (being transported successfully to New Hampshire for HOLO-2).

Currently, USU researchers are analyzing the data from HOLO-1 and HOLO-2. They are using data taken by AROL-2 as a baseline as they analyze data taken by the holographic lidars. According to Jason Sanders, early results appear promising in regard to the use of holographic lidars for tropospheric wind measurements, and further analysis of the data is underway.



Dr. Thomas Wilkerson with the AROL-2 lidar.

The HOLO-1 and HOLO-2 campaigns and the development of AROL-2 were supported by the US Army Research Office, the USU Space Dynamics Laboratory, and NASA.

Donor Contributions Enhance the College of Science

With the close of our 1999 fiscal and academic years, pages 10 – 11 of this issue of *Insights* is an appropriate time and place to acknowledge the contributions of 782 donors (up from 580 donors in 1998) who gave in excess of \$2.3 million to the College of Science during the year ending 30 June 1999. Alumni, friends, foundations, corporations, faculty, and staff have all contributed generously during the past year. Every department in the college, numerous scholarships, and a number of special programs and projects have all benefited from your contributions.

Your support is critical each and every year. With more science majors seeking degrees in our college each year, your contributions help our students to be successful and competitive in an ever-changing world. Thank you for enhancing the college's commitment to excellence in science education and research through your support.

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Earl & Kathryn Downey	Elko, NV	Sherman & Janis Johnson	Bakersfield, CA	Steve Orzol	Bordentown, NJ	Rick L. Turnquist	Milan, IL
Mark & Diana DuBois	Mesa, AZ	Wendell & Shariene Jolley	Laramie, WY	Leon F. & Kathy Osborne	Grand Forks, ND	Russel Lynn Turpin	West Jordan, UT
R. Duirell & Adele Duce	Moreni, UT	William Ronald Jolley	Aberdeen, MD	Ned A. Packer	West Valley City, UT	U S WEST Communications	Salt Lake City, UT
Brent R. & Sally Dyches	Murray, UT	Craig Jones	Mascoutah, IL	Robert A. & Marlene Palmer	Albuquerque, NM	John Valberg	Brigham City, UT
Carsen & Cara Dye	Farmington, UT	Gary Lee & Rose Jones	Riverton, UT	Virginia M. Palomo	Portland, OR	Allan L. & Diane Vance	Logan, UT
Stephanie Lynn Dyon	Farmington, UT	Glen Ford Jones	Malad Cit, UT	Robert & Elaine Pate	Logan, UT	Clair R. Vernon	Tooele, UT
Keith & Julie Eberhard	Bountiful, UT	Lewis W. Jones	Logan, UT	Peggy Patton	Vernal, UT	Noel T. Vigh	Naperville, IL
David O. Edlund	Johnson City, NY	Shashikant Kalaskar	Rochester, MN	Matthew & Cheri Peach	Salt Lake City, UT	Jagdish & Mridulika Virmani	Darnestown, MD
Alan & Angela Edwards	San Diego, CA	Stephen & Teresa Kan	Las Vegas, NV	Ronald E. Peckenpaugh	Twin Falls, ID	Troy Voelker	Missoula, MT
Paul Egan	Ogden, UT	Neil S. Karren	Olympia, WA	Martha Peters	Logan, UT	Carol Von Dohlen	Cove, UT
Richard & Joan Egan	Pearla, IL	Michael V. Keeling	Youngstown, OH	Charles G. Peterson	Bountiful, UT	Douglas & Wendy Wagstaff	Salt Lake City, UT
Ralph & Wendy Ellis	Portland, OR	Susan Graves Kelley	Logan, UT	Daryl & Mildred Peterson	Salt Lake City, UT	John Fredric Waldron	Hyde Park, UT
Gerald D. & Carol Elseth	Bountiful, UT	John & G. Jean Kemp	Logan, UT	Bruce W. St. Pierre	Irvine, CA	Craig & Brenda Walker	Ogden, UT
Diana Wach Evensen	Melrose, MN	William P. & Cheryl C. Kemp	Gilbert, AZ	Rhonda Munk Pikelny	Anchorage, AK	Arthur & Elina Wallace	Los Angeles, CA
Fulton James Fahrner	Somerville, NJ	Marshall & Carol Ketchum	Kanosh, UT	Michael V. Plummer	Kent, WA	Mike & Carolee Wanggaard	Manhattan, KS
Patrick Falconer	Tustin, CA	Steven L. Kimball	Weston, ID	Lynda Morton Plymate	Searcy, AR	Daniel W. & Claire M. Watson	Logan, UT
Reed & Laere Farrar	Columbus, GA	Jack King	Sobieski, WI	G. Norene Pond	Springfield, MO	Don Lee Weeden	Las Vegas, NV
A. Lee & Brigitte Fisher	Ogden, UT	James King	Reno, NV	Bernice Pope	Westlake Village, CA	David & Sue Weierman	West Jordan, UT
James R. Fisher	Salt Lake City, UT	David Lee Klopotek	Fairbanks, AK	Edmond & Teri Porter	Salmon, ID	Malcolm P. Weiss	Taylorville, UT
Tim & Renee Fitzpatrick	Columbia, MO	Jeffrey B. Knight	Bountiful, UT	Jeffrey Porter	Zillah, WA	Sally Welling	Santa Barbara, CA
George & Rosezella Fleener	Boise, ID	Ann Knowlton	Frederick, MD	Harlan & Marilyn Pulsipher	Perry, UT	George Mark Wells	Pine Valley, UT
Patricia D. Folkner	Salt Lake City, UT	James F. & Shirley Kohler	Logan, UT	Gregory & Robyn Rampton	Ashburn, VA	Dallas L. Wheat	Bowling Green, KY
Craig B. Forster	Martin, GA	Debra J. Krikorian	Logan, UT	Michael R. Rampton	Westlake Village, CA	James T. & Rebecca Wheeler	Smithfield, UT
Walter Fox	Evanston, WY	Brad R. Kropp & M. Grilley	Logan, UT	Ronald David Ransom	Roseville, CA	Danny & JoAnne White	Edmonds, WA
Mckay Francom	Satellite Beach, FL	Andrew Albert Laroche	Miami, FL	Craig & Ann Rasmussen	Logan, UT	Alden Orvil Whitehead	Pine, UT
Holly Ruth Franz	Logan, UT	Drew & Julie Larsen	Centerville, UT	Eric Rasmussen	Los Alamitos, NM	Michael H. Whitworth	Tulsa, OK
James D. Fry	Logan, UT	Larry & Arlene Larson	Richmond, UT	Lynn A. Rasmussen	Logan, UT	Stephanie R. Whyte	Orem, UT
Blair & Karen Fujimoto	Bountiful, UT	Paul Alan Larson	Lake Jackson, TX	Shon & Sherilyn Rasmussen	Ogden, UT	Dariusz M. Wilczynski	Logan, UT
Jennifer Funk	Santa Barbara, CA	James Gordon Laws	Tremonton, UT	Marden Reed & Joy Kohler	Flower, UT	Brad & Lori Wilson	Tooele, UT
Keni Funk	Gilbert, AZ	Mark Lazer	Rehoboth, MA	Michael & Terri Reeder	Burbank, WA	David M. Wonnacott	West Chester, PA
Larry & Jennifer Gardiner	Garland, UT	Kenneth Byron Layton	Littleton, CO	Neil Reese	Brigham City, UT	Carvel W. Wood	Corvallis, OR
Alan & Christine Gardner	Kailua, HI	Mary E. Leavitt	Logan, UT	Thomas E. Reese	Brookings, SD	Mary Lauritzen Woods	Richfield, UT
Donald & Kathryn Gardner	Port Angeles, WA	Wesley Leavitt	ELko, NV	Perc & Connie Reeves	Salt Lake City, UT	Richard S. Woodworth	West Jordan, UT
Oliver & Marian Garrard	Woodinville, WA	Michael R. & Karen Liechty	Providence, UT	Brent & Rhonda Reid	Gales Ferry, CT	William J. & Lois Worlton	Salt Lake City, UT
Dennis & Nancy Gay	Newhall, CA	Robert James Leonard	Moab, UT	David J. Remondini	Aurora, CO	Gena M. Wright	Grand Junction, CO
John Evan Gee	Avon, NY	Wesley E. Leonard	Brigham City, UT	Ronald Dee Rex	Silver Spring, MD	Jan E. Wynn	Mapleton, UT
Judith S. Georger	Winslow, AZ	David & Sheila Lewis	Hyde Park, UT	Weldon T. Richardson	Brigham City, UT	J. Greg Yates	Winnemucca, NV
Lynn H. Gerber	Smithfield, UT	V. Gordon Lind	Bountiful, UT	Tracy Rich-Greiner	Jackson, WY	Michael & Colette Yates	Providence, UT
James & Deborah Gessaman	Logan, UT	Gregory & Kaylene Lindley	Logan, UT	Donald & Lynnette Richins	Ogden, UT	Ming Yin	Columbia, SC
David Gibbons	Palmer, AK	Lance & Wendy Littlejohn	Dallas, TX	Kent W. Richman	Orem, UT	Daniel Young	Sandy, UT
Melanie Glatt	Mesa, AZ	Travis Lohnes	Lincoln, NE	Heather Ricks	Santa Clara, UT	Glen & Linda Young	Orlando, FL
Russell O. & Ramona B. Glauser	Boise, ID	David B. Loope	Logan, UT	D. Mark & Pamela Riffe	Reidburg, ID	Matthew Young	Boise, ID
Gary Godderidge	Salt Lake City, UT	Duane Loveland	Boise, ID	Vaughan Dale Rigby	Providence, UT	Christine M. Zagorec	Salt Lake City, UT
George & Jean Gowers	Katella Falls, WA	Mr. & Mrs. Arthur K. Lowry	Logan, UT	Steven Alan Roberts	Midvale, UT	Kamyar A. Zakehi	Cincinnati, OH
Donald Kenneth Gray	Bakersfield, CA	Martin & Jill Lundell	Logan, UT	Charles & Marie Robinson	Lakeview, CO	Maurice G. Zeeman	Silver Spring, MD
Whyland E. & Maile T. Gray							

MESA/STEP Update

In the last issue of Insights, we introduced you to Utah MESA/STEP. In this article, we bring you up-to-date on its current activities at USU and in Cache Valley.

MESA/STEP (Mathematics, Engineering, Science Achievement/Science, Technology, Engineering Programs) is working at USU and in Cache Valley toward its goal of increasing the number of underrepresented minorities and women who enter and succeed in mathematics, engineering, and science. MESA is the pre-college component of the program and STEP is the higher-education component. Sue Morgan, lecturer in the Department of Geology, is the USU STEP director.



As part of the Science Academy, students from Lincoln Elementary and USU student assistant Martha Hyder use spatial problem-solving skills as they attempt to scale the climbing wall at the USU Field House.

In the spring, STEP awarded \$1,000 scholarships to three freshman minority students for their sophomore year; two of the students, Antonio Rodriguez and Ruben Vasquez, are in engineering, and one, Jonathan Adebe, is in computer science. This fall, book scholarships of \$300 each were awarded to three female students who were returning to school and majoring in mathematics, engineering, or science—Stephanie Warenski, majoring in statistics; Heidi Stokes, electrical engineering; and Sara Mann, computer science.

A brochure and letter outlining the services available through STEP were sent to all incoming minority students. Several students have responded and hope to become active in the program this fall when they attend USU.

In addition, Ms. Morgan has been interacting closely with USU Multicultural Student Services and Erika Cowdell, E.A. Miller

liaison with the Hispanic community, to formulate an agenda for early outreach to the Hispanic community in Cache Valley. Last year they targeted students in grades 3 - 5 at Lincoln Elementary School, which has a large Hispanic population. This year, the program will be expanded to include grades 1 and 2. The early outreach effort started with a very successful "Science Academy" on 1 May. That Saturday, 22 Lincoln Elementary students visited USU, where they enjoyed a slide presentation about fish and other animals by Rich Valdez and participated in fun science and other activities. Ms. Morgan and Ms. Cowdell are working together to develop an after-school science program at Lincoln Elementary. They both believe that it is very important to encourage minority students at the elementary school level and let them know that they can be successful in science.

In the future, Ms. Morgan would like to expand STEP to award more scholarships, increase services such as mentoring and tutoring, and improve and expand local outreach, including tracking students as they move from elementary school through college. Increased funding would ensure that these goals are met. Ms. Morgan is working with the state MESA/STEP office toward seeking state funding in addition to increased industry and USU support.

Visiting Professors

Visiting professors from other universities are an asset to our university as they collaborate with College of Science professors on various research projects.

Professor Miles D. Koppang is an analytical chemist from the Department of Chemistry at the University of South Dakota. He is working with Dr. Greg Swain (Department of Chemistry and Biochemistry) on applications of diamond thin-films for the detection of aliphatic polyamines.

Professor Jerzy W. Strojek from Selisian Technical University Faculty of Chemistry in Gliwice, Poland, will be working with Dr. Greg Swain on studies of diamond thin-film reactivity using electrochemiluminescence imaging.

Dr. Wopke van der Werf from Wageningen Agricultural University in the Netherlands is collaborating with Dr. Ted Evans (Department of Biology) and Dr. Jim Powell (Department of Mathematics and Statistics) on a project measuring and modeling the dispersal and pest suppressive impact of lady beetles in Utah alfalfa fields. Dr. van der Werf is an agroecologist and is at USU as an Organization for Economic Cooperation and Development Fellow.

Dr. Andy Anderson named Professor of the Year by USU President's Leadership Council

The select group of students who comprise the USU President's Leadership Council chose **Dr. D. Andy Anderson**, principal lecturer in the Department of Biology, as their Professor of the Year and honored him at their spring awards banquet.

Dr. Anderson teaches courses taken primarily by pre-health students, including premedical, pre-dental, and nursing students. Among the courses he teaches are human anatomy, human physiology, microbiology, human dissection, and bioethics. In addition, he is chairman of the Pre-Health Professions Evaluation Committee, which evaluates and writes letters of recommendation for all premedical and pre-dental students, and he has recently been named pre-health professions advisor. He also advises nursing students.

Teaching at USU since 1983, Dr. Anderson earned a BA degree in biology at University of the Pacific in 1971, an MS degree in bacteriology at Iowa State University in 1975, and a PhD degree in medical microbiology from Creighton University in 1983.

Dr. Anderson is extremely committed to and expends a tremendous amount of time and energy in his role as teacher and adviser of pre-health students. "I care how it turns out for them. I feel that they really need their best shot at getting to their goal," he says. His classes are designed to require a commitment from the students. "People who come and take my classes, they like me just fine—they don't like my exams at all. The reason they don't is because I

try to enforce the principle that unless they truly understand the information, they will not be able to answer the question." For example, Dr. Anderson will never ask a student to name the four chambers of the heart; instead he might ask the following: "I'm Roger the red cell and I'm feeling blue. I go to a place where I turn bright red, and after I turn bright red, what is the second valve I'll encounter?" [Answer: Aortic semilunar valve]

Previously certified as an Emergency Medical Technician, Dr. Anderson finds that training useful in teaching. "I saw a lot of things in the emergency room and on-scene. I bring a lot of those examples [as slides] into my anatomy class in particular. What students need to be able to do is to look at someone from the outside and know what's going on inside. Showing them pictures of various traumatic injuries helps demonstrate to them what's occurring internally. It helps them to learn the information that much better," he says.

"I plan to teach as long as they will let me do it here, until I die and they can make me into a cadaver. It's the gift that keeps on giving."

— Dr. Andy Anderson, Biology



Dr. Anderson shows a human brain and spinal cord to students during a "cadaver tour."

Dr. Anderson believes that it is important for a professor to be an effective role model for students. He feels that students should not only like the material but also like the professor, and because the students like the professor they will pay more attention to the information that the professor values. He contends, "[Professors] need to tell the students enough about themselves so that the students see it all in a big picture, not just something that has to be memorized but also why you think it's important that they know." When asked about the reasons for his success as a teacher, Dr. Anderson replies, "I enjoy students and I enjoy the information."

The students who nominated Dr. Anderson for Professor of the Year are appreciative of his teaching and advising efforts. They note, "He goes out of his way and breaks the mold of 'traditional' lecture so that if a student puts in the time, he/she will have a complete understanding of what is presented in class." "He is consistent in his efforts to teach his students information that opens up an understanding of how we work."

In addition to his traditional classroom teaching activities, Dr. Anderson teaches independent study classes in physiology and microbiology to students throughout the country. Also, he wrote an instructor's manual, with test questions, for a human biology textbook. He has presented lectures on a variety of biomedical

DR. ANDERSON
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Outstanding Students Recognized by College of Science

The three students profiled here reflect the high academic standards and love of science that we encourage in our college.

Department of Biology



Becky L. Williams

The outstanding student from the Department of Biology is **Becky L. Williams** who graduated this spring with a BS degree in biology and a 3.69 GPA. Becky, 24 years old, is a native of Ogden and currently lives in Logan, Utah.

During her senior year, Becky worked in the laboratory of Dr. Edmund D. Brodie, Jr. (Department of Biology) on a project entitled "Resistance of *Thamnophis sirtalis* to Tetrodotoxin: Injection vs. Ingestion." She presented her work

at the annual meeting of the American Society of Ichthyologists and Herpetologists (ASIH) and won the Tracy Storer Award in Herpetology for the best student poster. The project involved comparison of the toxicity of intraperitoneal (i.p.) injections of tetrodotoxin (TTX) to that of oral injections in the garter snake *Thamnophis sirtalis*, with toxicity measured on the basis of decreased snake crawling speed. TTX is a potent neurotoxin found in the skin glands of newts of the genus *Taricha*. Garter snakes are the only predator able to feed on these newts, and Dr. Brodie and his colleagues have found geographic variability in the resistance of garter snakes to TTX. Becky found that i.p. injections of TTX were about 40 times more toxic than were oral injections. She also found that the time to peak effect for the toxin was approximately the same for i.p. and oral injections, which suggests that the toxin is not metabolized by the snake but is absorbed in the digestive tract. She also found that the 40-times conversion factor was approximately the same in snakes and white mice, which also suggests (because of differences in metabolism between the two species) that metabolism may not play a very important role in the immediate toxic effects of TTX. Becky has been accepted to graduate school at USU in the Department of Biology, where she is pursuing a master's degree and continuing her research on toxicity and metabolism of TTX in garter snakes.

She was awarded a USU Undergraduate Research and Creative Opportunities grant to fund her snake research. In addition, she received an award from the Department of Biology for academic achievement during her senior year. She is a member of ASIH and the Society for the Study of Amphibians and Reptiles.

Her interest in snakes can be traced back to the first grade when a snake was brought into the classroom for the children to see. "No

one else wanted to touch it, but I did. I was excited," Becky says. An interest in toxicology and the possibility of working with TTX led her to apply for a job in Dr. Brodie's lab. When she began working in the lab and realized that she could turn her interests in herpetology and toxicology into a career, she was "thrilled." After she obtains an MS degree, she hopes ultimately to obtain a PhD degree and then teach and conduct research at the university level in the field of herpetology. Dr. Brodie states, "Becky is one of the most talented and focused students with whom I have had the pleasure to work; I predict great success for her."

Becky is grateful to be working in the herpetology group at USU which includes Dr. Brodie, Dr. Jim MacMahon, Dr. Joe Mendelson, and their students. "It's such a good environment. I feel quite lucky that I found something like that."

Department of Chemistry and Biochemistry



Ventris M. D'souza

The Department of Chemistry and Biochemistry has chosen biochemistry graduate student **Ventris M. D'souza** as its outstanding student. Ventris came to USU in 1994 as a PhD degree candidate, and she hopes to obtain her degree this fall. She earned a BS degree in microbiology/biochemistry in 1987 and an MS degree in biochemistry in 1989, both from University of Bombay (India), after which she held positions as research fellow at the Hindustan Lever Research Center (Bombay), research fellow at Hinduja National Hospital (Bombay), and laboratory technician at the

National Dairy Development Board (Gujarat). While at USU, Ventris has taught chemistry laboratory courses and chemistry tutoring sections. She has a 3.979 GPA.

"The project for my graduate research," states Ventris, "involves studies on the methionine aminopeptidase from *Escherichia coli* with a long-term aim of elucidation of the mechanism of action of this enzyme. I developed a simplified assay for studying this enzyme, furnished evidence that suggests it is an iron enzyme *in vivo*, and demonstrated full activity of the enzyme with only one equivalence of metal ion bound per enzyme molecule. I have currently grown and am analyzing crystals of this enzyme. This enzyme plays a central role in protein biosynthesis and is of considerable pharmaceutical importance since inhibition of this enzyme has been shown by other workers in the field to inhibit tumorigenesis." Ventris has presented her research at several scientific meetings.

"Doing research is fun because it is challenging and forces one to think creatively *all* the time," claims Ventris. "It is also incredibly awe inspiring when one realizes that scientific researchers are instrumental in continuously pushing ahead the frontiers of knowledge. I enjoy studying biochemistry because it is the

chemistry of fundamental life processes and I have always found it very fascinating."

Ventris is currently a graduate research assistant in the laboratory of Dr. Richard C. Holz (Department of Chemistry and Biochemistry). Dr. Holz, who is also her thesis adviser, says, "Ventris is a very gifted scientist who is deep thinking, motivated, energetic, and enthusiastic. Ventris has been a pleasure to work with and is a joy to have in the laboratory. She has trained several undergraduate and graduate students in my group and is clearly the leader among students in the group as well as the department. Overall, Ventris is simply an outstanding individual."

The recipient of several other honors, Ventris was awarded the E. L. and Inez Waldron Biotechnology Scholarship in 1998 and 1999, the Lawrence H. Piette Graduate Student Scholarship in 1997 and 1999, the Delbert A. Greenwood Memorial Award in 1998, the Claude E. ZoBell Scholarship for 1997 - 1998, and the Marjorie H. Gardner Teaching Award in 1995. In addition, she was elected a member of the USU Phi Kappa Phi honor society.

Originally from Bombay, India, Ventris plans to return to India after she obtains a PhD degree and to work in an industrial research and development facility. She says, "Logan [Utah] has been my home away from home for the last few years while I studied towards my PhD. I think it is the friendliest place in the world and I have really grown to appreciate the tranquility and beauty of the place. I am especially grateful to all the faculty, staff, and students in the Department of Chemistry and Biochemistry who have been unfailingly helpful and considerate."

Department of Computer Science



Carli Connally

Carli Connally, outstanding student in the Department of Computer Science, graduated in the spring with a BS degree in computer science and a GPA of 3.93. While at USU, Carli tutored and taught labs in the Department of Computer Science. She just completed her third summer interning with Hewlett Packard in Boise, Idaho.

Dr. Donald Cooley, head of the Department of Computer Science, remarks, "I have been Carli's

adviser since she became a USU computer science major. She is a very bright, articulate, and goal-oriented student. She not only is an excellent student, she is well liked and respected by her peers."

Carli was the recipient of an Honors at Entrance Scholarship, the Oscar Wood Cooley Scholarship, a First Security Foundation Scholarship, and an athletic scholarship for track. She received a scholar athlete award and also was named to the National Dean's List.

After visiting USU on a track recruiting trip, Carli chose to come here because of its friendliness and positive environment. "I like the size because it's big enough to have some good programs, but it's small enough that it still feels more personal," she states. She decided to major in computer science after taking her first computer science course and having a "great experience." In addition to her academic and athletic pursuits, Carli volunteered in the STOP (Students Taking Over Prevention), Adopt-A-Grandparent, and Expanding Your Horizons programs.

Carli, age 22, is originally from Highland, Utah. She enjoys mountain biking, roller blading, dancing, watching movies, and snow skiing.

This fall, Carli will be starting a job with Hewlett Packard in Loveland, Colorado, doing software development and engineering. She is considering getting an MS degree in either computer science or business administration; however, she would like to stay in the technical industry, doing software engineering, project management, or marketing.

Carli would like to encourage students, especially female students, to try computer science. "It's a major with a lot of opportunities and a very wide scope, and especially for women there are a lot of opportunities," she asserts. "I think it would be really good if more women just tried it out to see if they liked it."

DR. ANDERSON

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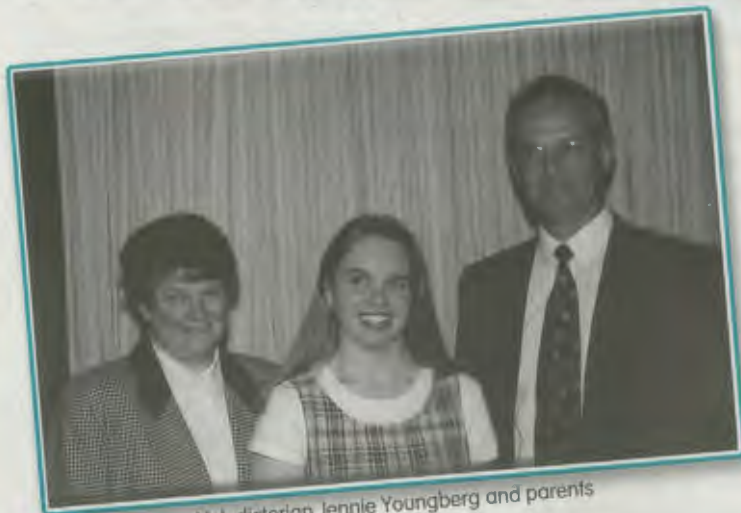
topics to numerous groups, including the Utah Midwife Association, Logan Public Health Department, and state high school science teachers, and he participated in the USU Summer Science Camp for Navajo children.

One of Dr. Anderson's more unusual teaching activities is conducting "cadaver tours" in the recently remodeled, state-of-the-art cadaver lab for about 1,000 high school students each year. He says that students are nervous at first; however, as he tells them all about each of the seven cadavers who reside in the lab, he gradually puts them at ease, and "by the end of the hour I almost have to kick them out, they're having such a good time."

Dr. Anderson has received several other honors at USU, including College of Science Undergraduate Advisor of the Year in 1993, College of Science Teacher of the Year in 1994, International Student Council Professor of the Year in 1996, USU Student Services Friend of Students Award in 1996, and Mortar Board Top Professor in 1991, 1993, 1995, and 1997.

Dr. Anderson and his wife, Sher, reside in North Logan and have two children—Lara, a freshman in physics at USU, and Lucas, who is completing his home schooling. Dr. Anderson has no plans for retirement. "I plan to teach as long as they will let me do it here, until I die and they can make me into a cadaver. It's the gift that keeps on giving."

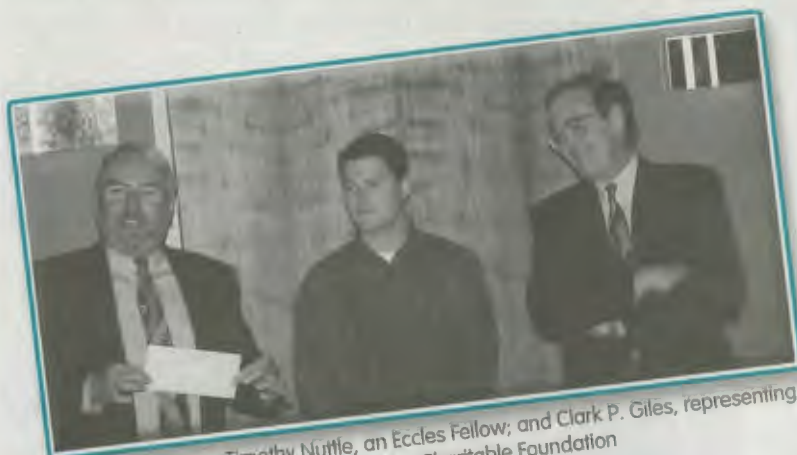
College of Science **AWARDS PROGRAM**



Valedictorian Jennie Youngberg and parents



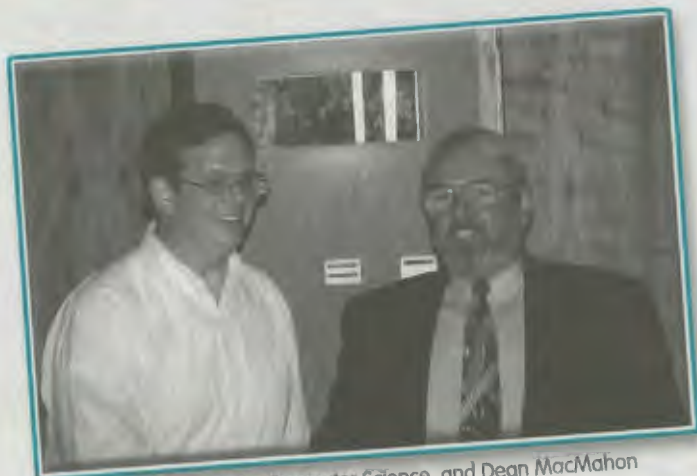
Dean MacMahon and Dr. Jim Gessaman, Biology



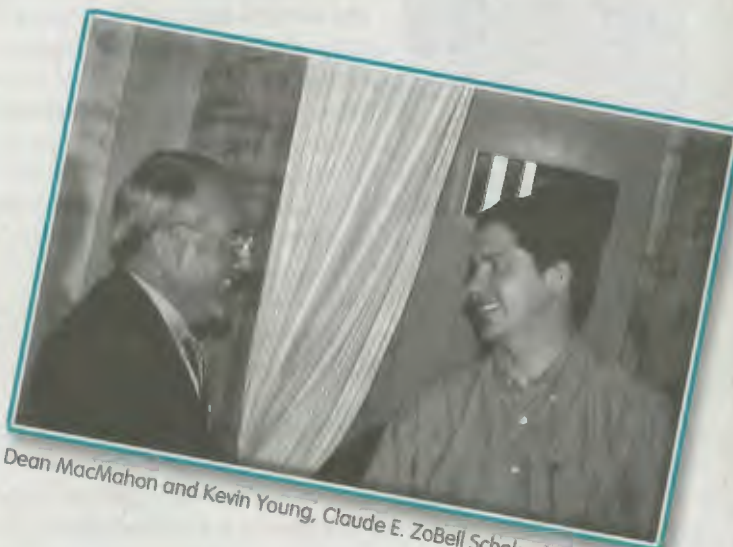
Dean MacMahon; Timothy Nuttle, an Eccles Fellow; and Clark P. Giles, representing the Willard L. Eccles Charitable Foundation



Dean MacMahon and Cathie Tingey, honors graduate



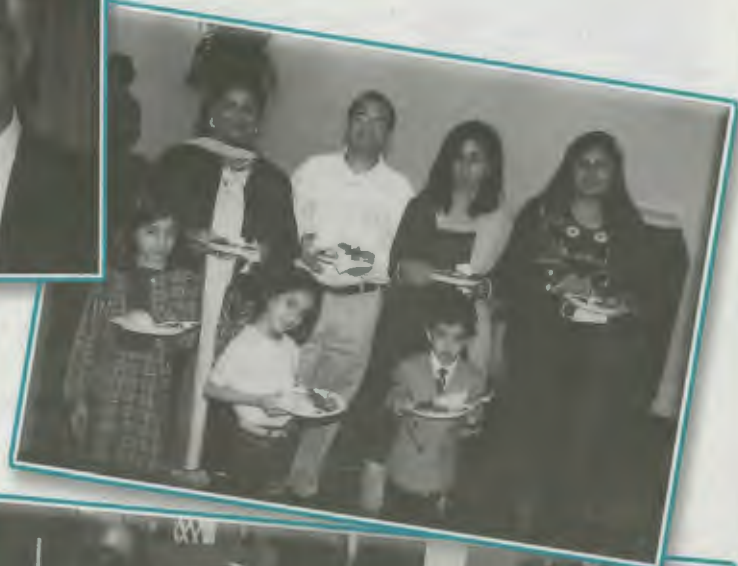
Dr. Stephen Clyde, Computer Science, and Dean MacMahon



Dean MacMahon and Kevin Young, Claude E. Zobel Scholarship recipient

GRADUATION OPEN HOUSE

Graduates and their families, faculty, staff, and guests enjoy the Graduation Open House.



1999 College of Science Awards

College of Science Researcher of the Year



Ann E. Aust

Dr. Ann E. Aust, professor in the Department of Chemistry and Biochemistry, is the College of Science Researcher of the Year. She earned a BS degree in biophysical science from the University of Houston in 1970 and a PhD degree in biochemistry from Michigan State University in 1975. Dr. Aust held postdoctoral positions at Ruakura Agricultural Research Center (Hamilton, New Zealand), the biochemistry department of Michigan State University, and the College of Osteopathic Medicine at Michigan

State, followed by employment at Warner-Lambert/Parker-Davis Pharmaceutical Research Division. Prior to coming to USU in 1987, Dr. Aust was a research assistant professor in the Department of Biochemistry at Michigan State University.

"The goal of the research in my laboratory," says Dr. Aust, "is to elucidate the mechanism(s) by which particulate materials, such as asbestos and urban air particulates, cause cancer and other lung disorders. Specific focus areas in this research are iron mobilization from the particulates in human airway epithelial cells and the effect of mobilization on the biological effects of the particles; iron homeostasis in human airway epithelial cells and the role that ferritin plays in this process; the pathologic effects of low-molecular-weight, non-protein associated iron in cells; the mechanism of cell membrane receptor-mediated efflux of glutathione from human airway epithelial cells; the effects of glutathione efflux on activation of phosphorylation signaling pathways and transcription of the inducible form of nitric oxide synthase; formation of modified DNA bases in human airway epithelial cells by reactive oxygen and nitrogen species; and induction of mutations resulting from DNA damage by reactive oxygen and nitrogen species." Coal combustion products and diesel exhaust are primary sources of the urban air particulates with which she has worked.

By understanding the mechanisms whereby asbestos and other respirable particles cause cancer and other diseases, Dr. Aust hopes ultimately to identify potentially dangerous particulates before human and other animal exposure and to prevent disease by intervening in the disease pathway. "By understanding how asbestos causes its pathological effects, it may be possible to make fibers to replace asbestos that will not be dangerous. To this end, we have identified two properties of iron-containing, carcinogenic fibers which we feel contribute significantly to their ability to cause cancer: first, their ability to release iron from the fibers inside the cell, and second, their ability to cause a decrease in intracellular glutathione, independent of iron associated with the particles," she states.

Research conducted by Dr. Aust and her laboratory on the effects of particulates on cell membrane receptor-mediated biochemical changes has led into a new field of investigation. The receptors that get bound by asbestos and other particulates and the resultant biochemical effects are similar to those of many viruses, including the human immunodeficiency virus, and some bacteria. "I think that we have really hit upon something here," says Dr. Aust, "and it's going to be instrumental in the etiology of AIDS and a number of different bacterial and viral infections."

Currently, her research is funded by the National Institutes of Health and the Health Effects Institute. Earlier research was funded by the Willard L. Eccles Charitable Foundation, Ford Motor Company, and the Elsa Pardee Foundation.

Dr. Aust is actively involved in numerous professional activities, including belonging to several professional societies, serving on the editorial board of *Free Radical Biology & Medicine*, reviewing manuscripts for several journals, serving on the advisory boards of the Environmental Protection Agency's Particle Center and the Iron Disorders Institute, and chairing several scientific conferences. She has presented invited seminars throughout the world, including France, Italy, UK, Austria, Canada, Australia, New Zealand, and South Africa. Dr. Vernon Parker, head of the USU Department of Chemistry and Biochemistry, states that Dr. Aust's research program has "achieved national recognition" and that her work is "highly respected by the scientific community."

Earlier honors for Dr. Aust include the John Boezi Outstanding Biochemistry Alumnus Award from Michigan State University and being named as the professor most influential in the undergraduate career of an outstanding USU senior.

Dr. Aust's interest in science began at an early age, stimulated by her mother who enjoyed identifying plants and animals and by her older brother who is a physicist. In college, when she got a job working in a biophysics/biochemistry lab and then started taking biochemistry classes, she knew that biochemistry would be her field of study. Since graduate school, she has been interested in applied research—"I really want to study something that is applied to a problem that's ongoing, a medical health problem in humans. That's always driven what I have done." Dr. Aust believes that her research "will always be health related. I see it evolving. The philosophy that I have always had for research is that I would select a problem and then I would see it to the end. You never get to the end, though. You continue to follow it even when it leads you into areas that you are unfamiliar with." She especially enjoys the intellectual stimulation of research and finds working with students and watching them develop to be "a very rewarding experience."

Dr. Aust expresses her thanks to Dean Jim MacMahon for his support of her and her research.

College of Science Teacher of the Year



J. R. Dennison

"Teaching is both a vocation and a way of life for me," says **Dr. J. R. Dennison**, associate professor in the Department of Physics and College of Science Teacher of the Year. "I come by this naturally. All of my parents, aunts, uncles, cousins, grandparents, and great-grandparents have been teachers. From them I have learned immense respect and admiration for good teachers at all levels. This has led me to become involved with teachers and students at the primary, secondary and college

levels. It has also instilled in me a great joy in watching the process as students learn—whether the students are in introductory or upper division classes, in a laboratory, in a mentoring research environment, or my own children—and in helping these students learn."

Dr. Dennison's teaching performance in the classroom is excellent, as attested to by his consistently high class evaluations from students; however, his teaching activities extend well beyond the normal classroom situation. He says, "I view my role as a teacher not only in terms of the classroom performance but also as a mentor to individual students through class projects, seminars, and research activities; as a developer of curriculum, courseware, and learning strategies; and as a member of departmental efforts to establish new programmatic approaches to meet the changing demands of our students and to maintain the relevance of our programs to the real-world applications encountered by USU graduates."

Dr. Dennison was responsible for a massive revision of the upper-division physics laboratory program involving both content and instrumentation. He developed approximately 20 new experiments that integrated computerized data acquisition and analysis with extended laboratory manuals emphasizing theoretical development, universal experimental skills, application to current research, and meaningful writing experiences. According to Dr. John Raitt, head of the Department of Physics, "He did an excellent job in this task, turning the course around from its state of disrepair when he took over to a laboratory course any physics department would be proud of." In addition, Dr. Dennison developed a 3000-level laboratory course to provide training to bridge the gap between introductory and 5000-level laboratory courses. He also developed a graduate class in the physics of material, emphasizing the practical applications of solid-state physics to materials of current interest. Last spring, he developed and taught for the first time a course on the physics of technology, designed primarily for students in the Industrial Technology and Education (ITE) program; this course emphasized real-world applications prevalent in the ITE program by using in-class demonstrations and computer-assisted mathematics problems and simulations.

Another curriculum enhancement in which Dr. Dennison has been instrumental is the introduction of and training in the Mathcad

computer software program for computation, graphing, analysis, and modeling of data. This software allows students to address more complex, real-world problems and larger data sets than could be dealt with previously. With funding from the Utah Higher Education Technology Initiative (HETI) program, Dr. Dennison and Dr. Mark Riffe (Department of Physics) have developed a CD-ROM-based course for students to learn and apply the fundamentals of Mathcad; this has been adopted by the makers of Mathcad for inclusion with current versions of Mathcad and Studyworks and is being considered for use as a distance education course. Drs. Dennison and Riffe also coauthored a Mathcad version of the venerable *Schaum's Outline of College Physics*.

As a principal investigator on a grant recently funded by the National Science Foundation, Dr. Dennison's main emphasis in education in the near future will be on upgrading the upper division laboratory courses through new computer equipment and resources and on developing innovations in the associated curriculum and software.

Dr. Dennison also emphasizes teaching via individual mentoring of undergraduate and graduate students. He has directed more than a dozen physics graduate students, mentored ten students on their senior project, and helped six USU Undergraduate Research and Creative Opportunities Award recipients. "I spent time with each student refining their skills in experimental techniques, analysis, and written and oral communications and fostering their development of physics intuition. In many ways, this is where my most demanding and rewarding teaching has taken place," he says. Dr. David Peak, assistant head of the Department of Physics, states that Dr. Dennison "is probably the most successful mentor of physics undergraduate research."

As chairman of USU Amusement Park Physics Day at Lagoon for nine years, Dr. Dennison participates in one of his best-known educational activities. Each year, about 3,500 - 4,500 middle and high school students learn force and energy concepts as they compete in a variety of contests, complete workbooks, and make observations and measurements, all while enjoying themselves on the various park rides. Dr. Dennison developed the workbooks and curriculum used in the program, and he has held several "amusement park physics" training workshops for middle- and high-school teachers.

Based on Dr. Dennison's broad spectrum of teaching activities and his record of innovation and effectiveness in teaching beyond the classroom, Dr. Peak declares, "J. R. Dennison is Physics' Most Valuable Player."

Dr. Dennison received a BS degree in physics from Appalachian State University in 1979, and MS and PhD degrees in physics from Virginia Tech in 1983 and 1985, respectively. He lives in Mendon, Utah, and has two children.

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College of Science Graduate Student Researcher of the Year and USU Graduate Research Assistant of the Year



Thomas N. Buckley

The College of Science Graduate Student Researcher of the Year and the USU Graduate Research Assistant of the Year is **Thomas (Tom) N. Buckley**, who recently earned a PhD degree in biology. Tom came to USU in 1994 after graduating summa cum laude with a BS degree in biology from James Madison University.

Tom's dissertation research was on the implications of patchy stomatal conductance. He says, "Plant ecophysiolgists have traditionally assumed that stomata (dynamic leaf

epidermal pores that regulate CO₂ [carbon dioxide] uptake and water vapor loss) can be treated like the molecules of an ideal gas: variation in their behavior is random and thus irrelevant at large scales. This belief is used to justify and facilitate large-scale empirical modeling of plant gas exchange, but it also constrains the range of scales where mechanistic information about stomatal behavior can apply. For example, relationships between resistances, fluxes, and gradients are often inferred by a downscaling procedure in which a simple diffusion model is applied to whole-leaf measurements; however, strictly speaking, the simple diffusion model only works at very small scales. Spatial variation in gas exchange variables can skew the relationships inferred from this model. I found that the errors incurred by ignoring spatial variation in stomatal conductance can be quite large. It may be important to account for these errors, because the relationships obtained by downscaling are used to parameterize canopy- and stand-scale responses of plant gas exchange to climate change and can influence environmental policy.

"It is reasonable to ask whether the error-causing spatial variation in stomatal conductance actually occurs within leaves. Conventional wisdom holds that selection should have favored uniformity, because a groundbreaking theoretical study in the 1970s concluded that carbon/water balance is generally optimized by uniform stomatal behavior; however, that analysis employed a certain assumption about the mathematics of plant gas exchange. I developed a rigorous model of the system and found that this assumption fails in some environmental conditions and then showed analytically that variation in stomatal conductance actually improves carbon/water balance under such conditions.

"Clearly, variable stomatal behavior has large implications for interpreting and predicting plant gas exchange. So how do we deal with it? If the physiological mechanisms causing this variability

(which we call patchiness) were known, they could be incorporated into predictive gas exchange models. This is difficult because patchiness is dynamic. Work by Keith Mott [Tom's major professor, Department of Biology], myself and others suggests that hydraulic interactions can coordinate stomatal behavior within small, vein-bound regions in a leaf. Similar interactions could also destabilize and discoordinate behavior at a larger scale. To see if these hydraulic interactions could occur across long distances, I used changes in light intensity to change the transpiration rate over only half of a leaf while measuring stomatal conductance in the other half. The results indicated strong hydraulic interactions between distant leaf tissues."

This past summer, in an effort to study the cause of patchiness, Tom worked on building a fully mechanistic physical model of water relations in the epidermis of an intact leaf. He believes that lessons learned by studying such a model may help solve many of the scaling problems caused by patchiness.

This fall, Tom will conduct postdoctoral research with Dr. Graham D. Farquhar at the Australia National University in Canberra. Dr. Farquhar and his laboratory are trying to develop a carbon flux model for the entire continent of Australia. During 1996 - 1997, Tom spent eight months as a visiting fellow working in Dr. Farquhar's laboratory.

Dr. Keith Mott asserts, "Tom is quite simply one of the best graduate students I have known during my 15 years at Utah State University. He is intelligent, hard-working, enthusiastic, and has a knack for getting things done quickly and well.... [He] possesses outstanding problem-solving skills.... Tom is a good experimental scientist, but Tom's real strength is in theoretical problems and computer modeling, and it is here that he truly excels." Dr. James Haefner (Department of Biology) states, "Tom is an exceptional scientist.... [Among the graduate students that I have known well] I rank Tom number one...."

Tom has presented his research at national scientific meetings and has published five major papers in top journals. "This is outstanding productivity in his field," remarks Dr. Edmund D. Brodie, Jr., head of the Department of Biology.

In regard to future research, Tom says, "Everything I've done is pretty theoretical, in the sense that I sat here on a soapbox and figured out all kinds of problems that would occur if you didn't account for patchiness. I would like to see if we can actually improve large-scale gas exchange predictions by accounting for patchiness in the environmental conditions where we suspect its occurrence. That's part of what the postdoc in Australia is about."

In addition to research, Tom is active in road bicycle racing, and he enjoys hiking, backpacking, singing, and playing guitar.

During 1994 - 1997, Tom was the recipient of a Willard L. Eccles Foundation Fellowship, which targets students with outstanding academic achievement who creatively and ambitiously seek to solve research problems. Tom's achievements at USU and his successful

research in the field of plant ecophysiology show that the Eccles Foundation investment was a sound one.

College of Science and USU Graduate Student Teacher of the Year



Cora Neal

"Of all the instructors I've had at USU, whether professors or graduate students, **Cora Neal** has been one of the very best." "Cora is an *excellent* statistics teacher." "I really enjoyed statistics and I feel I owe it to Cora's great ability to teach." "I wish there were more teachers like her." These are typical reviews from students of Cora Neal, Graduate Student Teacher of the Year for both the College of Science and USU as a whole.

Dr. Richard Cutler, Department of Mathematics and Statistics, states, "Looking at Cora's student teaching

evaluations....we see that she consistently scores very highly on the questions pertaining to enthusiasm for the subject, use of examples, and opportunity to ask questions, make comments and express opinions.... Cora Neal is an excellent teacher, one of the best we have had in this department at the graduate-student level."

Cora has primarily taught statistics courses since her arrival at USU in 1997. She obtained BS and MS degrees in statistics from Brigham Young University. "I love to teach," says Cora. "I enjoy sharing my enthusiasm for the subject matter and appreciate the opportunity to serve others. I want to share my love of mathematics and statistics with my students. Often students come to my classes with a fear of the subject. I feel that I can dispel that fear and spread my enthusiasm by highlighting applications that affect their lives, providing hands-on experiences, and allowing students to participate in class.... Teaching is a wonderful opportunity for me to serve the community. I consider every teaching moment as an act of service. I get paid to teach the class. I serve when I teach the class well."

In the college teaching option of the mathematical sciences PhD program, Cora recently passed the qualifying examinations for a PhD degree. For her dissertation, she plans to work in graph theory, with Dr. LeRoy Beasley as an adviser.

Cora lives in Logan with her husband, David (who is also a graduate student in the Department of Mathematics and Statistics), and their 2-year-old daughter, Canyon. She finds the students at USU "great" and the community of Logan "wonderful." After obtaining a PhD degree, Cora would like to teach mathematics and/or statistics at the college level.

College of Science Valedictorian



Jennifer Youngberg

Valedictorian **Jennifer (Jennie) Youngberg** graduated in December 1998 earning a 3.99 GPA, with a major in mathematics education and a minor in German. Jennie is 23 years old and from Sandy, Utah. She has "always had an inherent interest in math" and even took calculus "for fun" during her freshman year before she decided on mathematics as a major.

Professor James Cangelosi, Department of Mathematics and Statistics, was Jennie's instructor in number theory and the history of

mathematics. He says, "Ms. Youngberg is an extraordinary student with a talent for discovering mathematics.... [Throughout the math course] Jennie continued to impress her classmates and me with her insights, attention to detail, and the tenacious way she pursued problem solutions.... [Her] enthusiasm energizes me and infects her classmates. The teaching profession desperately needs high-energy, talented scholars with professional dedication. Jennie possesses that rare combination of traits along with an engaging personality and delightful sense of humor."

Jennie received a USU Presidential Scholarship, the Joe and Carletta Elich Scholarship, and the Sharon Lee Gardner Ellis Scholarship. She worked with several professors in the math department, was a grader for math classes, and tutored in both math and German labs. Also, Jennie worked as a substitute math teacher at a local middle school and was a volunteer tutor in math in the public schools and in an English-as-a-second-language program. She is a member of the Mathematics Association of America.

Currently, Jennie is pursuing a master's degree in the Department of Mathematics and Statistics. Spring semester, she taught an introductory course in geometry and logic for prospective elementary teachers and "absolutely loved it." During the summer, she worked with several USU professors on a National Science Foundation-funded project to create an archive of mathematical manipulatives on the Web that math teachers throughout the nation can use to make their classrooms more interactive and discovery oriented. She also served as a mentor for undergraduate math students working on a non-linear dynamics project as part of the Research Experience for Undergraduates program. Plans for Jennie are uncertain; however, a PhD degree and teaching at the college level are a definite possibility.

Jennie says, "I would like to thank my parents and all the people at Utah State that have helped me along. My advisers and teachers have just been wonderful."

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College of Science Scholar of the Year



Ruth Anderson

Scholar of the Year is **Ruth Anderson**, who graduated in May 1999 with a BS degree in chemistry and a GPA of 3.98. Ruth is 21 years old and from Logan, Utah.

Ruth conducted undergraduate research with Dr. Scott Ensign (Department of Chemistry and Biochemistry) on the pathways and enzymes of acetone metabolism in the anaerobic photosynthetic bacterium *Rhodobacter capsulatus*. According to Dr. Ensign, "While other researchers have studied acetone

metabolism in anaerobic bacteria, no other groups have successfully reconstituted activity at physiologically relevant rates, which Ruth was able to do. Ruth has thus made a substantial contribution to the fields of environmental microbiology and biochemistry and her work will be included in a manuscript I am preparing for submission to the *Journal of Biological Chemistry*. Ruth's ability to take a difficult research problem and follow it to fruition is a testament to her work ethic, tenacity, creativity, and drive to succeed." Also, Ruth excelled as a teaching assistant in freshman chemistry and organic chemistry courses.

Ruth received a USU Presidential Scholarship, the Harris O. and Eleanor Y. Van Orden Award, the Garth L. Lee Scholarship, the R. Gaurth Hansen Scholarship, a National Science Foundation Research Experience for Undergraduates grant, and the award for Outstanding Graduating Senior in the Department of Chemistry and Biochemistry. She is a member of Phi Kappa Phi Honor Society and Alpha Epsilon Delta, the pre-med honor society. Extracurricular activities included volunteering at the newborn nursery of Logan Regional Hospital, shadowing local doctors at work, and working at a local nursing home.

Dr. Ensign says, "Ruth has the correct balance of academic record, teaching experience, research experience, volunteer work, and extracurricular activity to stand out among all other students within the college.... We can consider ourselves lucky that Ruth chose Utah State University to pursue her studies. Ruth is certain to be an unqualified success in her professional career. She is the best undergraduate student I have seen in my time at Utah State...."

Currently on an LDS church mission to Paraguay, Ruth plans to apply to medical school when she returns. According to Dr. E. A. McCullough, Jr., (Department of Chemistry and Biochemistry), "Ms. Anderson...is deeply committed to the application of her acquired knowledge to better the lives of people, and her choice of a career in the medical field demonstrates this.... In addition to her intellectual drive, Ms. Anderson has the compassion, motivation, and maturity that are essential for her

chosen career. I would certainly expect her to become one of Utah State University's outstanding graduates...."

Ruth is from Logan, Utah, and comes from a family with many Utah State connections. Her paternal grandfather, Roice Anderson, was a professor in the USU Department of Economics during the 1950s - 1970s; after farming until age 35, her maternal grandfather, Ross A. Nielsen, earned BS, MS, and PhD degrees in entomology from USU (in 1962, 1964, and 1972, respectively); her father, Dr. Timothy Anderson, graduated from USU with a BS degree in chemistry in 1971; her mother, Nedra Nielsen Anderson, attended USU; and her siblings also have attended USU.

Annual Gifts More Than Just an Annual Event

As evidenced by last year's contribution totals for the College of Science, private gifts from individuals, foundations, corporations, and others play a key role in the continuing growth and improvement of the college. The nucleus of those private gifts is the College of Science Annual Fund Campaign. We use both direct mail and phonathon appeals throughout the year to encourage gifts from you—our alumni, friends, faculty, and staff.

Each fall, Dean Jim MacMahon makes a point of writing everyone affiliated with the College of Science to ask for a contribution. Of 782 donors supporting the college in 1999, nearly one in five of you responded to his letter. Your contributions typically come to the college as unrestricted support for those areas of greatest need, for general or named scholarships, or for support of the specific programs, projects, or departments from which you might have graduated or in which you are particularly interested.

If you do not respond to the dean's appeal by the first of the year, we attempt to reach you by telephone and seek your support in late February through the College of Science Phonathon. Our student callers are unable to speak with each of you, but those of you we do reach and who send in a gift in support of the college account for nearly two-thirds of all donors (more than 500 of you in 1999).

As we commence our annual efforts to seek your support for the College of Science, we hope that you will take a moment to consider whether you can help us build a better college for both our current students and for future generations of science students.

In this issue of Insights you will find a postage-paid reply envelope for your use or to request additional information on the college's Annual Fund Campaign. You may also call Development Director Jerome Davies at (435) 797-3510 or email him at jeromed@cc.usu.edu.

Dr. David Sattinger Chosen as New Head of Department of Mathematics and Statistics



David H. Sattinger

The College of Science welcomes **Dr. David H. Sattinger** as the new head of the Department of Mathematics and Statistics, succeeding Dr. Jerry Ridenhour who served as head for four years.

Dr. Sattinger comes to USU after 28 years on the faculty at the University of Minnesota. A native of Michigan, he graduated magna cum laude from Oberlin College with a BS degree in mathematics in 1962 and received a PhD degree from Massachusetts Institute of

Technology in 1965. He was at the University of California at Los Angeles during 1965 - 1971.

Regarding his new role as department head, Dr. Sattinger reports, "I'm having a good time. I like the people in the department and I like the administration. Everybody in the department is very loyal. They really care about the department and they really work hard, so I'm enjoying working with people. There's a nice spirit on the campus and also in the various places in the administration. The dean is great to work with. Those were all factors in my decision to come out here."

One of Dr. Sattinger's chief goals as department head is focusing on mathematics students and their needs in regard to such things as curriculum and employable job skills. "For example," he says, "we want to make sure that they are computer literate and that they have some breadth in mathematics and maybe applied areas such as engineering or physics, so that when they go out, they can get jobs." He feels strongly that mathematics education should include the use of desk-top computers, which will allow students to do computations more easily and to experience the necessary trial and error process that leads to discovery in mathematics. Accordingly, he would like to see more laboratory courses in the curriculum. Another goal is to make the department run more smoothly and efficiently.

Dr. Sattinger's personal research is on non-linear waves (e.g., water waves). The full equations that describe this wave phenomenon are extremely complicated and too difficult to solve. However, simpler mathematical equations, such as the Korteweg-deVries equation which he studies, can be solved and analyzed explicitly. "What I'm trying to do is establish that the model equations are actually a good approximation to the full equation. Computationally, it looks like it is, but mathematically there's a lot to be proved," he relates. His research has been funded by the National Science Foundation since 1965. Dr. Sattinger has

interests in common with other faculty members in the department, and he looks forward to working on research projects with colleagues here at USU.

Dr. Sattinger and his wife, Irene, are enjoying the climate, mountains, and small-town life of Logan. He has one son, Christopher, who is a composer and computer programmer in New York. Although skiing, photography, and woodworking are hobbies, Dr. Sattinger says, "I think this job is going to take a good bit of my time. For the near future, this is going to be my hobby."

The College of Science is pleased to welcome Dr. Sattinger and wishes him well in his new position.

Department of Mathematics and Statistics Directs State Mathematics Contest



Devren Yener, Logan High School, top scorer overall in the state math contest. Devren is the son of Dr. Muzz Yener, USU Department of Civil & Environmental Engineering.

The State of Utah Mathematics Contest, sponsored this year by the USU Department of Mathematics and Statistics, was held on 16 March 1999. Approximately 2,400 students, representing 150 Utah schools, took a grueling 2-hour, 40-question exam developed by the Department of Mathematics and Statistics. Students in grades 7 - 9 took a junior-level exam while those in grades 10 - 12 took a senior-level exam. Exams were administered simultaneously at USU and in Cedar City and Moab, Utah.

The contest began more than 25 years ago as a means of finding and encouraging middle, junior high, and high school students with exceptional promise in mathematics.

It is sponsored in rotation by Utah State University, the University of Utah, Brigham Young University, and Weber State University.

The 22 winning teams and 32 individual winners were honored at the Eccles Conference Center on the USU campus on 17 April 1999. Winning teams were awarded trophies and winning individuals received plaques, cash awards, and prizes, including scholarships, mathematical software, and gift certificates.

The College of Science congratulates all the participants, the winners, and their teachers.

Source: Article by Bryan Nielsen, 16 April 1999,
<http://www.usu.edu/~news>

The College of Science Welcomes Eight New Faculty Members



Brett A. Adams

Brett A. Adams joins the **Department of Biology** as an assistant professor. Dr. Adams received BS and MS degrees in zoology from Oregon State University and a PhD degree in biological sciences from the University of California at Irvine. He conducted postdoctoral research at Colorado State University during 1987 - 1992 and was an assistant professor in the Department of Physiology and Biophysics at the University of Iowa during 1993 - 1999.

"My scientific research focuses on voltage-gated calcium (Ca) channels. These large transmembrane proteins perform essential physiological functions by allowing Ca ions to enter cells under the control of cell membrane electrical potential. Ca influx through voltage-gated Ca channels influences membrane excitability and functioning of the nervous system. Because Ca is maintained at very low concentrations inside cells, when Ca channels open and Ca enters cells from the extracellular space, it triggers prominent physiological events, including muscle contraction, secretion of hormones and neurotransmitters, and gene expression. My laboratory is currently studying how voltage-gated Ca channels are regulated by various biochemical signaling cascades. Our goal is to elucidate Ca channel function on the molecular level. Information gained by our studies will help in understanding the physiology of humans and other vertebrates and may ultimately be useful in the prevention or treatment of disease."

Dr. Adams is married to Cheryl, who has a BS degree in elementary education and an MS degree in library and information science. For recreation, they enjoy outdoor activities such as walking, hiking, bicycling, cross-country skiing, canoeing, and birdwatching.



Michelle A. Baker

Michelle A. Baker also joins the **Department of Biology** as an assistant professor. Dr. Baker comes to USU from Centre d'Écologie des Systèmes Aquatiques Continentaux (CESAC) in Toulouse, France, where she has been conducting postdoctoral research. She received a BS degree in biology from Lafayette College and a PhD degree in biology from the University of New Mexico.

"A primary goal of my research is to understand how water movement within the landscape influences ecosystem structure and function. I use an interdisciplinary approach, involving tools from hydrology, geochemistry, and

microbial ecology to ask questions about how hydrologic linkages within watersheds influence energy and nutrient cycling. I use empirical observations, experimental manipulations at microcosm and ecosystem scales, as well as statistically based modeling approaches. This type of research is relevant to fundamental limnological research and aquatic ecosystem management. The research program I bring to USU is organized into two broad fronts: 1) the influence of the 'flood pulse'—or seasonal high flows—on ecosystem scale processes in riparian corridors, and 2) sources and fate of organic matter in alluvial groundwater systems."

Dr. Baker is engaged to Dr. Rob Taylor, a population and community ecologist who recently obtained a PhD degree at the University of New Mexico. Dr. Baker's hobbies include hiking, skiing, camping, and quilting.



Alexander I. Boldyrev

Alexander I. Boldyrev comes to the **Department of Chemistry and Biochemistry** as an assistant professor. Born in Siberia, Dr. Boldyrev received a BS degree in chemistry from Novosibirsk University (Novosibirsk, USSR), a PhD degree in physical chemistry from Moscow State University (Moscow, USSR), and a Doctor of Science degree in chemical physics from the Institute of Chemical Physics, USSR Academy of Sciences (Moscow). Dr. Boldyrev was affiliated with the Department of Chemistry at the University of

Utah for seven years prior to coming to USU. Earlier positions were with the Institute of Organic Chemistry at Erlangen-Nurnberg University (Erlangen, Germany), the Institute of Chemical Physics at the USSR Academy of Sciences (Moscow), the Moscow Physico-Technical Institute (Dolgoprudny, USSR), and the Institute of New Chemical Problems at the USSR Academy of Sciences (Chernogolovka, USSR). He has published 192 papers.

"I want to focus my research at USU on designing new non-stoichiometric molecules and materials. I believe that theoretical chemistry has reached a point where we can make reliable theoretical predictions of new chemical compounds. Non-stoichiometric molecules represent a new challenge in chemistry. The vast majority of the millions of known chemical compounds obey the octet rule which dictates the stoichiometric composition of stable species. Classical valence theory is able to rationalize the structures and stabilities of such compounds, but for non-stoichiometric molecules the octet rule is not applicable. We need, therefore, to develop a new valence theory, which will be a useful tool in predicting structures, stabilities and other properties of nonstoichiometric molecules and compounds. For non-stoichiometric species, we may discover a lot of unexpected properties."

"For example, it is known that La_2CuO_4 is normally a boring insulator, but when extra oxygen atoms are added, changing it to $\text{La}_2\text{CuO}_{4+x}$, it becomes an exciting superconductor. Another example is a recent experimental preparation of pentaatomic molecules containing tetracoordinate planar carbon. This year we are celebrating the 125th anniversary of the introduction of the concept of tetrahedral tetracoordinate carbon by van't Hoff and LeBel. All chemical compounds discovered so far containing tetracoordinate carbon indeed were found to have a tetrahedral structure. We, based on the 18 valence electron stability rule discovered from quantum chemical calculations of nonstoichiometric molecules, were able to predict theoretically and to make experimentally the first pentaatomic molecules containing tetracoordinate planar carbon.

"We believe that understanding the bonding in nonstoichiometric molecules will help us to design new materials with unusual physical and chemical properties, which will be used in new technologies. In my research I like to work together with experimentalists and I hope to find colleagues at USU who will be interested in joint research projects."

In his spare time, Dr. Boldyrev likes to travel and learn how people live in other places. He and his wife, Natalia, have one son, Dmitry, who is a computer programmer making, among other things, musical players for the Internet.



Christopher Corcoran

Christopher Corcoran joins the **Department of Mathematics and Statistics** as an assistant professor. A USU alumnus, Dr. Corcoran earned a BS degree in statistics in 1995 and then went on to Harvard University where he recently earned an ScD degree in biostatistics.

"My primary interests are exact nonparametric inference for uncorrelated and correlated binary data as well as computational methods used to solve difficult computational problems in exact testing. Exact inference is useful in

situations where samples are small or sparse, or under any other circumstance that might make investigators wary of methods which rely on large-sample assumptions. I additionally have a more general interest in biostatistical science or the application and development of statistical methods for problems in biological and health research."

Dr. Corcoran is married to the former Barbara Griffin, and they have three daughters, Hanna (age 5 years), Emily (age 14 months), and Kathryn (newborn). Non-academic interests include spending time with his family, biking, basketball, tennis, and reading biographies and other historical nonfiction. "I'm also a huge sports fan, and am looking forward to many more disappointing years of Utah Jazz basketball along with most other residents of our new home state."



Joel L. Pederson

Joel L. Pederson, assistant professor, will be the new geomorphologist in the **Department of Geology**.

Dr. Pederson holds BA and MS degrees in geology from Gustavus Adolphus College and Northern Arizona University, respectively, and he recently obtained a PhD degree from the University of New Mexico.

"[My] broad research interest is in how hillslopes and streams respond to climate change, and how this is expressed in the sedimentary records that they leave behind. I do my research at the spatial scale of

drainage basins and sedimentary depositional basins and am currently working in the Grand Canyon, southeastern Nevada, and southern Utah. I am also involved in research regarding the evolution of the Colorado River drainage over the past 10 million years.

"I am married to a geologist named Carol Dehler who is finishing up her PhD on old sedimentary rocks in the Grand Canyon. If I were to ever take time to do something non-geologic, you'd find me and my wife hiking, mountain biking, gardening, and doing anything recreational that's related to streams and rivers. I am also a film buff, I find trees unusually fascinating and beautiful, and I secretly wish I was a meteorologist."



Ask the Scientist

We are initiating a new column, "Ask the Scientist."

In this column, your science questions (e.g., Why is the sky blue?) will be answered by a faculty member of the College of Science.

A space for your question is included on the ALUMNET form.

You may also email your question to

scido@cc.usu.edu or fax it to

(435) 797-3378.

Please, ask us a question!

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NEW FACULTY

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Bradley D. Ritts

Bradley Ritts is also joining the **Department of Geology** as an assistant professor. Dr. Ritts earned a BS degree in geology and biology from the University of Rochester, an MS degree in earth and planetary sciences from Massachusetts Institute of Technology, and a PhD degree in geological sciences from Stanford University School of Earth Sciences. During the past year, he served as an exploration geologist with Chevron Overseas Petroleum, Inc., conducting petroleum exploration in Bohai Basin, China.

"My research interests focus on understanding the formation and deformation of continental sedimentary basins and mountain belts and the occurrence of energy resources in those settings. Current research projects are active in China and the western United States."

His hobbies include mountain biking, backpacking, and camping.



Jüergen Symanzik

Jüergen Symanzik comes to the **Department of Mathematics and Statistics** as an assistant professor. Dr. Symanzik earned MS degrees in both statistics and computer science from Universität Dortmund (Dortmund, Germany) and a PhD degree in statistics and computer science from Iowa State University. Since receiving his PhD degree, he has worked in postdoctoral and research assistant professor positions at the Center for Computational Statistics at George Mason University.

"My research interests combine aspects of statistics, computer science, and information technology. My research spans dynamic (statistical) graphics, geographic information systems, virtual reality and statistics, and World Wide Web-based applications in statistics. Recently, I have been working closely with federal agencies such as the US Environmental Protection Agency and the National Center for Health Statistics and also with computer scientists, geographers, neuroscientists, and, obviously, statisticians. I am highly interested in all research collaborations that require a joint background in statistics and computer science.

"Some of my hobbies outside academia are skiing, traveling (I have been to 47 US states so far), attending live concerts, and watching soccer and basketball games (live and on TV)."



David O. Wallace

David O. Wallace joins the **Department of Biology** as a lecturer to teach industrial hygiene courses in the public health program. He obtained a BS degree in biology from USU and an MSPH in industrial hygiene from the University of Utah. He is also board certified in the Comprehensive Practice of Industrial Hygiene by the American Board of Industrial Hygiene.

Prior to coming to USU, Mr. Wallace was an instructor for eight years in the Department of Family and

Preventive Medicine at the University of Utah School of Medicine. There, he was responsible for development, direction, and instruction of Environmental Protection Agency accredited asbestos and lead courses and other courses presented through the Continuing Education facility at the Rocky Mountain Center for Occupational and Environmental Health. He also presented lectures and laboratory sessions of MSPH courses such as industrial hygiene and toxicology. Earlier positions include industrial hygienist/safety and health engineer at Industrial Health, Inc., both safety and health engineer and development engineer at AMAX Magnesium, and development/process control technician at NL Industries (all in Salt Lake City, Utah). Mr. Wallace has been an independent contractor/consultant in various areas of industrial hygiene for several years. In addition, he is active in both the national and state sections of the American Industrial Hygiene Association.

Mr. Wallace and his wife, Rebecca, have two sons, Aaron (age 24 years) and Nathan (age 13 years). They enjoy the outdoors, including backpacking, hiking, skiing, and water sports.

In Memoriam



William Sidney Boyle

William Sidney (Sid) Boyle, emeritus professor in the Department of Biology, died 16 August 1999. Born in Provo, Utah, on 27 May 1915, he was 84 years old.

Dr. Boyle earned a BS degree in botany from Brigham Young University in 1937 and MS and PhD degrees in botany from the University of California at Berkeley in 1939 and 1943, respectively. He held positions with the US Department of Agriculture and the National Park Service before coming

to the Department of Botany at USU where he taught for 30 years (1945 - 1975).

Named an Outstanding Educator of America and recipient of the 1960 Robins Professor of the Year Award, Dr. Boyle was a gifted teacher and served as an inspiration to generations of students. Ivan Palmblad, emeritus professor in the Department of Biology, remembers Dr. Boyle's "extremely rigorous demands for detail in research and in publication" and that many graduate and undergraduate students benefited, in particular, from a plant anatomy and microtechnique class of Dr. Boyle's in which the students conducted a project and then wrote up the project as though they were publishing a scientific paper. According to a letter written by Dr. Ralph M. Johnson, former dean of the College of Science, Dr. Boyle was "one of our best teachers." In addition, he "had an absolutely wonderful sense of humor," recalls Dr. Palmblad.

Following retirement, Dr. Boyle continued with research and writings in plant cytology and development of drought-resistant grains.

Dr. Boyle was a member of Sigma Xi, American Association for the Advancement of Science, Society for the Study of Evolution, California Botanical Society, Genetics Society of America, and Utah Genetics Society. Also, he was an active sportsman and an award-winning sharpshooter.

He is survived by his wife of 62 years (Rowena), 3 children, 7 grandchildren, and 11 great-grandchildren.



Robert G. Hammond

Robert (Bob) G. Hammond, assistant professor in the Department of Mathematics during 1956 - 1983, died on 8 March 1999. Born on 14 February 1917 in Portland, Oregon, he was 82 years old.

After serving in the Navy during World War II, Professor Hammond attended USU, receiving a bachelor's degree in mathematics in 1948 and a master's degree in mathematics education in 1952. He also pursued graduate studies at the University of Wyoming, Harvard University,

and Brigham Young University.

Professor Hammond was a popular teacher whose students enjoyed coming by to visit even after they had finished his classes, according to Dr. Wayne Rich, emeritus professor in the Department of Mathematics and Statistics. He was also generous, going so far as co-signing a bank note for a loan to a student.

He was a former president of the Utah Teachers of Mathematics, refereed for high school football and softball games, was a member of the Faculty Men's Club, served on the state textbook selection committee, was a lifetime member of the National Education Association, and served in various callings in the LDS church.

Professor Hammond is survived by his wife (Claire), 3 children, 10 grandchildren, and 1 great-grandchild.

If you are aware of anyone who is not receiving *Insights* and would like to do so, please contact us at *Insights*, Office of the Dean, College of Science, Utah State University, 4400 Old Main Hill, Logan UT 84322-4400; email us at scido@cc.usu.edu; or fax us at (435) 797-3378.

Awards, Honors, and Publications

Insights welcomes news of alumni awards, honors, and publications. Please mail announcements to Insights, Office of the Dean, College of Science, Utah State University, 4400 Old Main Hill, Logan UT 84322-4400, or use the ALUMNET form. Please include book covers if available. Announcements may also be emailed to scido@cc.usu.edu or faxed to (435) 797-3378.

Alumni Awards and Honors

Douglas K. Lemon (BS 1974, PhD 1978, Physics) received the Entrepreneurial Award from his former employer, Battelle Pacific Northwest National Laboratory, for starting a new business. He is now president and chief executive officer of Advanced Geographic Information Systems, an imaging and global positioning system company.

Faculty Awards and Honors

Jan J. Soyka, Center for Atmospheric and Space Sciences and Department of Physics, received the D. Wynne Thorne Research Award, presented annually by the USU Office of the Vice President for Research to a faculty member who has built a reputation for significant research or creative achievement and is recognized nationally and internationally by his professional peers. (See article, page 1.)

Thomas D. Wilkerson, Center for Atmospheric and Space Sciences and Department of Physics, has been invited to spend a 3-month period as a visiting scientist at the Max-Planck-Institut für Meteorologie in Hamburg, Germany. (See article, page 9.)

Transitions

Promotion and/or Tenure

Department of Biology

James W. Haefner, promotion to full professor
Peter C. Ruben, tenure

Department of Chemistry and Biochemistry

Ann E. Aust, promotion to full professor
Bradley Davidson, tenure

Department of Computer Science

Heng-Da Cheng, promotion to full professor
Stephen W. Clyde, tenure and promotion to associate professor
Donald H. Cooley, promotion to full professor
Daniel W. Watson, tenure and promotion to associate professor

Retirement

Department of Biology

LeGrande C. Ellis, 35 years of service
Nabil N. Youssef, 33 years of service

Department of Chemistry and Biochemistry

Lamar M. Anderson, 11 years of service

Department of Geology

Robert Q. Oaks, Jr., 33 years of service

Department of Mathematics and Statistics

Donald V. Sisson, 40 years of service

ALUMNET Responses

1930s

Royal H. Sorensen (BS 1938, Microbiology) is retired now from a career as a microbiologist. His first job was in the microbiology department of the US Public Health Service in Norfolk, Virginia, working primarily on treatment of tuberculosis. He then served in the US Army Medical Service Corps in the southwest Pacific, engaging in malaria control. Back in the US, he worked as a microbiologist at the Letterman General Hospital in Fresno, California for 4 years, as chief of laboratory service at the Fresno VA Hospital for 15 years, and as a research microbiologist at Fresno VA Hospital for another 10 years. After retirement from the hospital, he taught microbiology at Fresno City College for two years. He and his wife, Alice, presently live in Saint George, Utah. They spent the summer of 1998 in Logan and particularly enjoyed the Class of 1938 reunion, hiking in Logan Canyon, and seeing the changes on campus.

1940s

Clark T. Rogerson (BS 1940, Botany) earned a PhD degree in 1950 at Cornell University and worked as a mycologist at the New York Botanical Garden for 30 years. He is now retired and living in Ogden, Utah.

Clark J. Gubler (MS 1941, Biochemistry/Bacteriology) is an emeritus professor of biochemistry at Brigham Young University. He obtained a PhD degree from the University of California at Berkeley in 1945 and then worked as a research professor in the Department of Medicine at the University of Utah during 1945 - 1955, at the University of Wisconsin during 1956 - 1958, and at BYU during 1958 - 1978. After retiring from BYU, Dr. Gubler was a research professor at the University of Utah during 1978 - 1982, a visiting professor at Kuwait University during 1982 - 1986, and then a Fulbright Scholar at Sultan Qaboos University in Oman during 1989 - 1990. Currently, he resides in Orem, Utah.

Charles D. Hendricks (BS 1949, Physics) earned an MS degree at the University of Wisconsin in 1951 and a PhD degree at the University of Utah in 1955. Since 1991, he has been chief scientist at Schafer Corporation, San Francisco Operation, where he has been instrumental in the direction of the Inertial Confinement Fusion (ICF) Target Fabrication project. He has been responsible for research, development, and production of ICF targets for the NIKE KrF laser program at the Naval Research Lab and for development of glass shell technology for hydrogen storage for fuel cells. In addition, in 1996, Dr. Hendricks was appointed principal institute scientist in the Institute of Plasma Physics and Fusion Research at the University of California at Los Angeles. Dr. Hendricks retired in 1990 from his position as physicist and senior scientist at the Lawrence Livermore National Lab, where he served in the Inertial Confinement Fusion Laser Program as leader of target fabrication research, development, and production. During 1956 - 1980, Dr. Hendricks was a faculty member in both electrical engineering and the Nuclear Engineering Program at the

University of Illinois at Urbana and was responsible for establishing the Charged Particle Research Laboratory. He is an author on more than 300 published articles and reports; is co-author of a book on applied electrostatics; has served as a consultant for many corporations, laboratories, and governmental agencies; and has patents for inventions in a number of fields (including electrostatic paint spraying, high-speed matrix printing, ink jet printing, laser fusion targets, cryogenics systems, glass shell production, and electric charge removal from high speed aircraft). Dr. Hendricks is an avid fly fisherman and an instrument-rated commercial multiengine, glider, and seaplane pilot.

1950s

William E. Harper (BS 1950, Bacteriology/Public Health) retired in 1987 from Washington State Public Health and his position as director of environmental health for a two-county health district. He also ran a dairy farm in Washington and spent almost three years in the US Army, serving in Italy with the 10th Mountain Division. He lives in Longview, Washington.

Harlan Pulsipher (BS 1950, MS 1956, Chemistry/Analytical Chemistry) retired in 1991 from Thiokol Corporation. Since retirement, he has served two missions for the LDS church. He and his wife, Marilyn, reside in Perry, Utah, and have 12 children (6 sons and 6 daughters) and 31 grandchildren. Among his children are two physicians, two dentists, one lawyer, one accountant, one teacher, one nurse, and one retired Air Force lieutenant colonel.

1960s

Ronald L. Webster (BS 1965, Mathematics) earned an MS degree from Brigham Young University in 1969 and a PhD degree from Cornell University in 1976. He is now retired after working as a structural engineer at Thiokol Propulsion for 27 years. He also worked for General Electric for eight years, Boeing for 14 months, and Lockheed Propulsion for 14 months. He has consulted on underwater mechanics for 25 years and is active in graduate engineering education. He lives in Brigham City, Utah, and has 13 children and 24 ("and counting") grandchildren.

Edwin M. Duffy (BS 1969, Geology) was recently promoted to vice president of Reliance National Insurance Company. He resides in Plano, Texas.

Barbara L. Petrovich (attended 1969) is an instructor in mathematics at Weber State University.

RESPONSES
Continued on page 30

RESPONSES

Continued from page 29

John H. Woffinden, Jr. (BS 1969, Geology) is a geologist for the Department of Defense at Dugway Proving Ground, Utah. He recently transferred from the explosives research area to the Environmental Office, where he is responsible for all water programs on the post, including groundwater, drinking water, storm water, and waste-water treatment.

April Wanstrom (BS 1997, Biology) is a microbiologist at Melaleuca, Inc. She lives in Idaho Falls, Idaho.

Ramie Beck (BS 1998, Mathematics Education) is a mathematics teacher in the Holbrook, Arizona, school district. Ramie says, "I really enjoy teaching students about mathematics and its applications in their lives. I enjoy the outdoors—especially hiking, bicycling, and camping. I am interested in finding mathematical connections to/with other disciplines."

Aaron Adams (BA 1999, Geology) is attending graduate school in geology at Brigham Young University.

Lee Crosby (BS 1999, Chemistry) is a research and development chemist at Scytek Laboratories in Logan, Utah. Lee states, "I am married and just had my second child. I enjoy outdoors, recreational vehicles, and investing. I also enjoy corresponding with international friends."

1970s

Douglas K. Lemon (BS 1974, PhD 1978, Physics) recently left Battelle Pacific Northwest National Laboratory after 20 years to take over as president and chief executive officer of Advanced Geographic Information Systems, Inc., an imaging and global positioning system (GPS) company. He received the Entrepreneurial Award from Battelle for starting a new business.

1980s

Dennis E. Kunimura (BS 1987, Mathematics) received an MS degree at the University of Texas at San Antonio in 1995. He is employed by the University of Phoenix and lives in Kenosha, Wisconsin.

Do Weon Lee (BS 1988, Chemistry) earned a PhD degree at the University of Hawaii in 1998 and is currently a postdoctoral research associate at Marquette University.

1990s

Polly Allred Christiansen (BS 1990, MS 1994, Mathematics) is a homemaker in Kempner, Texas.

Vikas Agnihotri (MS 1995, Computer Science) is employed by Oracle as a database administrator. He resides in Parsippany, New Jersey.

David Cook (BS 1995, Chemistry) earned an MD degree in 1999 from Johns Hopkins University School of Medicine. He is now an internal medicine resident physician at the Mayo Clinic in Rochester, Minnesota. He and his wife, Jennifer, have a 3-year-old daughter (Emily) and an 8-month-old son (Nathanael).

Susan Browning Greger (BA 1995; Biology, Liberal Arts and Sciences) earned an MD degree from Washington University in St. Louis in 1999. Currently, she is a resident physician in family medicine at the University of California at Los Angeles Medical Center. Her husband, Bradley, is pursuing postdoctoral research in neurobiology at the California Institute of Technology.

Alumni: In Memoriam

The College of Science extends its deepest sympathy to the families of the following alumni:

Lavell M. Henderson—BS 1939, Chemistry

Max L. Sweat—MS 1941, Biochemistry

Robert G. Hammond—BS 1948, Mathematics;
MS 1952, Mathematics Education

Denton C. Linton—BS 1948, Chemistry

Lorenzo G. Demars—BS 1952, Geology

DeOrr Newell Wight—BS 1964, Physics

Dale Peter Huyck—BS 1976, Applied Biology

From _____



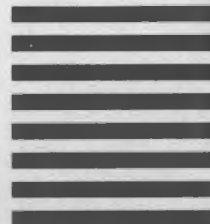
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A L U M N I E T

Dear College of Science Alumni and Friends,

We always enjoy hearing from you and hope you will take a moment to complete and mail this alumni information form. Please note the postage-paid format—simply cut off this last page of the newsletter, fold along the lines marked on page 31, tape it shut, and drop it in the mail. You can also fax it to us at (435)797-3378 or email your information to scido@cc.usu.edu.

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Profession/employer _____

Professional/personal awards _____

Books Published _____

About yourself _____

Question for "Ask the Scientist" _____

Insights, the alumni newsletter of Utah State University College of Science, is published twice a year. Its purpose is to inform alumni and friends of current events, projects, and changes within the college. The newsletter also provides a forum for alumni to follow one another's careers and professional development. This issue of Insights was produced under the direction of Judy Brodie, editor, and Colette Yates, project coordinator and editor. Contributors include Development Director Jerome Davies and Dean James MacMahon. Special thanks to Andy Anderson, Rowena Boyle, Mary Jo Hansen, Jonathan Hirschi, Sue Morgan, Jason Sanders, Jan Sojka, Gene Underwood, and USU Photo Services for the photographs or illustrations, and to Kandy Baumgardner and Paula Larsen for editorial assistance.

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