



newsletter

Ray W. Herrick Laboratories

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Purdue Engineering Building Celebrations

The following comments are excerpts from Purdue University News Service Press Releases.

Homecoming week was a busy one for Mechanical Engineering. On Thursday, October 25, there was a celebration for the completion of fundraising for the Gatewood Wing to the Mechanical Engineering Building and on Saturday, October 27 Purdue and at least 16 of its astronaut alumni dedicated the university's Neil Armstrong Hall of Engineering. The Gatewood Wing is a \$33 million state-of-the-art addition to the Mechanical Engineering Building, and the Neil Armstrong Hall of Engineering is a new \$53.2 million building.

Gatewood Wing

The Roger B. Gatewood Wing is the first Purdue building constructed to environmental standards set by the U.S. Green Building Council. It will add approximately 41,000 square feet to the Mechanical Engineering Building, increasing its space by 55 percent. Roger Gatewood, a 1968 graduate, gave the key leadership gift to the School of Mechanical Engineering in 2003 to support the new learning and research facility. Roger Gatewood has also agreed to make an additional gift to fund the design and construction cost to qualify the building to seek Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ certification, through the U.S. Green Building Council.

The Gatewood Wing will include a classroom that will facilitate peer-to-peer learning. The Robert L. and Catherine R. Orth Student Commons and the Herbert A. and Janice Wilson Student Commons

will each provide much needed space for students to informally group as teams and work on projects and coursework. Students also will experience a microcosm of the entire product life cycle in the Product Engineering and Realization Lab.



Purdue Former Apollo astronauts Neil Armstrong and Eugene Cernan, hands raised, take part in Saturday's (Oct. 27) ceremony to dedicate Purdue's Neil Armstrong Hall of Engineering. Armstrong and Cernan, the first and last men to walk on the moon, joined 14 other astronauts and former astronauts who are Purdue alumni at the dedication ceremony. The \$53.2 million building is being hailed as a gateway to engineering research and education. The building's distinctive winglike roof extensions are part of a design that mimics the appearance of an aircraft to symbolize Purdue's contributions to flight and the space program. (Purdue News Service photo/Dave Umberger)

The centerpiece of the Gatewood Wing will be the Dr. Milton B. Hollander Atrium, named in recognition of a gift from his wife, Betty Hollander, which will spotlight mechanical engineering as Purdue's first engineering discipline. The clock from the original Heavilon Hall (the first mechanical engineering building) will be placed in the atrium and used as a working model with all of its components clearly visible.

The James and Diane Perrella Biomechanics Laboratory will provide space to study how the human body is affected by forces such as those that cause damage to the vertebrae in the neck and spine, providing information needed to develop new devices, implants and systems to replace damaged and worn out body parts.

Other areas of the Gatewood Wing will be named for leadership gifts from Caterpillar Inc.; Donald and Catherine Feddersen of Wellesley, Mass.; and Mike and Elaine Thiele of Houston.

Armstrong Building

Neil Armstrong Hall, located at Stadium and Northwestern Avenues where the "temporary" Quonset huts stood, houses the School of Aeronautics and Astronautics, School of Materials Engineering, Department of Engineering Education, and several engineering programs, including the Minority Engineering Program, Women in Engineering Program and Engineering

Continued on next page

Building Celebrations (continued)

Projects in Community Service, or EPICS. The facility also houses the dean's office and engineering administration.

The building's distinctive winglike roof extensions are part of a design that mimics the appearance of an aircraft to symbolize Purdue's contributions to flight and the space program. One of the wings, sheathed in metallic panels, hangs over the entrance and a sculpture of Armstrong. Purdue officials, working with Ratio Architects in Indianapolis, attempted to create a design that would be distinctively modern, yet would not clash with surrounding structures.

Conduits, ductwork, pipes for the chilled-water air conditioning system and other mechanical elements are exposed in the ceiling to provide a sense of engineering's role in the vital functions of a building.

Walkways inside the building look down on an expansive atrium, which has a 53-foot-high ceiling. Hanging in the atrium will be a replica of the Apollo 1 command module identical to the one in which Roger Chaffee, Virgil "Gus" Grissom and Ed White died in 1967. The replica is being loaned to Purdue by the Kansas Cosmosphere and Space Center.

Neil Armstrong Hall, built by Smoot Construction LLC of Indianapolis, has a gross square footage of 210,326 feet, including 126,441 square feet for teaching, research and administrative-offices on four floors, including a lower level. Of this space, more than 20,000 square feet is dedicated for research labs and 60,000 square feet for undergraduate teaching facilities, including discipline-specific design labs and "learning modules." The modules are intended to facilitate student teamwork, one of the most important facets of engineering education, Jamieson said.

A bronze sculpture of Armstrong, looking pensive and studious as an undergraduate in the 1950s, sits on a stone plinth in front of the building. His right hand rests on a small stack of books, and his

slide rule is removed from its case as though ready for action.

Neil Armstrong Hall also pays tribute to another Apollo astronaut: Chaffee, a Purdue alumnus who was killed in 1967 along with alumnus Grissom and White while training for the Apollo I mission. A curving 50-foot-long, floor-to-ceiling "exhibitry" near the atrium on the first floor will house a photomural of Chaffee's life. In the center of the mural is a display of a lunar sample collected during the Apollo 17 mission commanded by Eugene Cernan, a Purdue alumnus and the last astronaut to walk on the moon. The sample, on loan from NASA, was provided by Chaffee's widow, Martha Chafee.

The Chaffee mural will be on display for about a year. Fall 2008 will see the installation of an interactive exhibit aimed at audiences including elementary school children, alumni, groups and scholars from various disciplines.

A few select classes and labs currently are meeting in the building, which was completed in September and will be in full use beginning in January. In the meantime, faculty members are moving their labs and offices into the building.

"Neil Armstrong Hall will help Purdue lead the nation in developing a new strategy and agenda for training future generations of engineers who will be better able to compete in the global work force," said Kamyar Haghighi, head of the Department of Engineering Education, "the first of its kind in the world."

Researchers in the department are working to discover how students learn engineering concepts. The

new focus is geared toward developing more effective engineering curricula and learning environments and encouraging more young people to pursue engineering careers. Team-focused, collaborative spaces will prepare students for engineering careers by teaching them how the field is practiced as a global profession. Glass-walled labs in the building provide an integrated learning space to showcase programs for touring prospective students, alumni and other visitors.



Students admire a bronze statue of Neil Armstrong during an unveiling ceremony on Friday (Oct. 26) at Purdue. Armstrong, a Purdue alumnus, also is the namesake for a new building being dedicated on Saturday (Oct. 27). Artist Chas Fagan of Charlotte, N.C., created the sculpture, which depicts Armstrong as an undergraduate student in the 1950s. (Purdue News Service photo/David Umberger)

Purdue Names New President



Dr. France Córdova, 11th President of Purdue.

This article is adapted from a Purdue University News Service Press Release.

On Monday, May 7, Purdue announced that Dr. France A. Córdova, 59, will be Purdue's 11th President. Dr. Córdova and her husband, Christian J. Foster, come to Purdue from the University of California at Riverside. Her appointment was announced at a public meeting of the Purdue Board of Directors on May 7 at 2:00 p.m and became effective on July 1. She has impeccable credentials and a broad background with degrees in English and Astrophysics.

She served as chancellor at Riverside beginning in 2002, coming from the University of California at Santa Barbara where she had been vice chancellor for research and a professor of physics for six years. Before that, she was the youngest person to hold the position of NASA chief scientist, working on projects that included the Hubble Space Telescope.

After earning her doctorate in physics from Cal Tech in 1979, Córdova spent the next decade at Los Alamos National Laboratory as a member of the Space Astronomy and Astrophysics Group. She then joined Penn State University to head the Department of Astronomy and Astrophysics.

In 1993, she began work at NASA, serving as the primary scientific adviser to the NASA administrator and the principal interface between NASA headquarters and the broader scientific community. She has a current experiment flying on the European Space Agency's X-Ray Multi-Mirror Mission.

She is the winner of NASA's highest honor, the Distinguished Service Medal, and was recognized as a 2000 Kilby Laureate for "contributions to society through science, technology, innovation, invention and education."

She was the award-winning author in 1969 of a work of fiction, "The Women of Santo Domingo," based on her anthropologic field work in a Zapotec Indian pueblo in Oaxaca, Mexico, and a Zapotec Indian cookbook. She also wrote and edited for the Los Angeles Times News Service.

The oldest of 12 children, Córdova was born in Paris and spent a few years in Germany, where her father served as the Chief of Missions for CARE, a U. S. relief organization. She graduated from high school in La Puente, California, east of Los Angeles.

An avid sports enthusiast, she enjoys running, canoeing, hiking and cross-country skiing. Córdova met her husband, Christian J. Foster, a science educator, while rock climbing outside Los Alamos, New Mexico.

For more information about Córdova, visit <http://www.purdue.edu/president/>.

Reflections of Herrick Alumnae

In the last few years the number of women graduate students at the Laboratories has increased significantly. When I (Patricia Davies) came here in the late 1980's, the numbers varied between 0 and 2. This year there are 13 women students studying at the Laboratories, Leah Jamison is our Dean of Engineering and France Córdova is our President. We thought that this would be a good time to ask our female graduates to reflect on their time at the laboratories and share what they're doing now. Here are some of their responses.

Rong Deng

I graduated from the Herrick Labs in 2004 with a Ph.D in mechanical engineering under Dr. Davies and Dr. Bajaj's supervision.

I am now a computer aided engineer at the Procter & Gamble Company in Cincinnati. My current work is focused on integrating the CAE tools (modeling & simulation) with process/equipment development so that we can have quick development at lower cost. I have the opportunity to utilize the knowledge and skills in dynamics and signal processing that I learned while at Herrick Labs.

There is no doubt that the engineering education provided by Herrick Labs and Purdue is among the best. What I really enjoyed is the nurturing environment at the Herrick Labs. The professors are always so approachable and have great interests in developing their students. The fellow students are always friendly and share experience and fun with each other. As a female international engineering student, I always felt included and enjoyed the learning at the Herrick Labs.

Nancy Denton

My stint at Herrick Labs started in January 1985, just before West Lafayette set a new record for consecutive days with snow on the ground. For the first semester, I was the female student. Several of us Herrick newbies were workforce dropouts looking for a change. In my case, I wanted to move from design to testing and taking one class at a time towards an MSME wasn't working out. Prof. Bernhard hired me to investigate fan noise testing methods for IBM. This involved "automated" data acquisition of FFT and 1/3rd octave band signals for storage and later processing on an IBM PC XT.

Most of my noise data needed to be collected in the reverberation chamber. By the time all of the test preparations were ready, a construction project was underway just outside the reverb chamber, complete with jackhammers and other loud equipment that managed to transmit some sound into the chamber. I needed a new plan! Data collection turned into a marathon that started with instrumentation checkout and setup at 4:00 p.m. so testing could begin right after 5:00 p.m., and continued until I either couldn't stay awake or started making mistakes. My record was an 8:00 a.m. finish, just in time for the next round of construction noise.

Reflections (continued)

I have great memories of Friday volleyball at the Co-Rec, Herrick picnics, and just hanging out with the students and staff, and can't begin to share how much the time has influenced me in the allotted one to three paragraphs. Some great lessons learned that continue to guide me as a faculty member, wife, and mother of three are:

- Do what needs to be done whenever you can fit it in
- Make time for family and friends
- Don't lose sight of the impact of your efforts—even small actions can have significance

Josephine Lau

I would like to give my deepest appreciation for the faculty, staff and students at Herrick labs. You make Herrick lab wonderful and great. The new website looks great.

It is a blessing for me to meet a lot of people in Herrick lab who are so willing to give their helping hands and suggestions. Herrick lab has a good mix of international and American students, a good mix of males and females. I still remember the first day that I arrived; I was welcomed by the cheerful administrative staff and friendly students for tours. I never felt that I was in the minority or being ignored. I felt like I was connected with the people as a family at Herrick. We didn't just study and do research together. We had picnics, trips and even cooked meals together. The two years at Purdue rewarded me with a lot of nice experiences and good friendships.



Josephine Lau at a Taste of China festival.

After I finished my master's degree in August 2005, I went to Penn State University for my Ph.D. education. My current research is "Performance Modeling and Evaluation of In-Duct Ultraviolet Germicidal Irradiation Systems with Variable Operating Conditions." Besides, there are a lot of new opportunities for me to broaden my leadership skill. I am now serving as the President of ASHRAE student branch and a youth group leader in a local church. All these experiences bring fulfillment and joy to my life here.

Sarah McCabe

It was well known amongst my friends and family that I enjoyed my time at Herrick Labs so much I didn't want to graduate. As a result, I had a longer tenure there than most students. I saw

students and staff (and office spaces and labs) come and go. Through all the years and all the changes, some things remained constant: Herrick was a community of folks that worked together and played together and we did a good job at both. When I think back on my days at Herrick, here are some of the memories that come to mind. These may not be the most significant milestones, but as a whole, I hope they paint a picture of what life was like in those years.

It may seem odd to start with the annual lab cleanup in my list of most memorable times at the labs, but in truth, it was one of the first significant events most students experienced each fall. It was a team building event that most organizations would pay good money for their employees to experience. The camaraderie built by (most of) the professors and students working side by side to bring order out of chaos would last for quite a while each year. Plus, it never ceased to amaze me how much clutter and grime would build up in just one year.

Even if I hadn't gotten much research done, at least I could say I'd made a noticeable mess.

One of my less than proud moments at the labs was the time I installed pirated copies of Tetris on all the lab computers. Not only did I wantonly violate intellectual property rights of the software maker, but I think I was singlehandedly responsible for a 50 percent drop in student productivity for a full semester.

From the "welcome new students" pot luck in the fall to the spring pork roast barbecue, Herrick students and staff knew how to have a good time. I remember one student who would show up at parties with his own karaoke machine and another who never went anywhere without a blender in the trunk. "Have party will travel" was their motto. One year we held a chili cookoff at the labs where a bunch of students all brought in their favorite homemade chili. I don't remember who won, but let's just say that I don't care what folks from Cincinnati say, spaghetti doesn't belong in chili.

One year, Professor Davies got sick and tired of people, who didn't know what they were talking about, complaining that British food is so bad. So she decided to cook a traditional roast goose dinner for 30 people. We all came dressed as our favorite British person or character. I believe I was Christopher Robin and I distinctly remember Al and Shirley Masters (while she wasn't Masters yet) showing up dressed as polo players towing behind them a child's toy horse.

The dinner was magnificent. To this day, I won't let anyone contend that British don't know food in my presence without objecting. I know better.

Even when I was really doing research, I looked like I was having fun.

My research experiment involved vibrating a thin metal plate. After trying various methods of excitation that didn't work, we

Reflections (continued)

decided that acoustic excitation was what we really needed. So after a bit of investigation to find a good source, I decided that the best option would be a set of car stereo speakers with a strong bass. So off I went to the local car stereo store to pick up a pair of “Blue Thunder” speakers.

I don’t know what the guys at the store thought, since I’m sure I didn’t look like their typical customer. When they asked me if I wanted them to install them, I tried to explain what they were for. I just left them shaking their heads in puzzlement.

All fun and games aside, what I remember most from Herrick was that at its best, Herrick was a place where faculty, students and staff tried to support each other and cooperate to produce the best research possible. The office and shop personnel were invaluable in this endeavor, and it was their expertise and willingness to provide assistance that often made the difference between success and failure for many students’ research projects.

Alaina Pizzo

When I think back on all of my memories of being a student at Herrick, my first thought is of our summer 1998 softball team. We called ourselves “SMD” for Spring-Mass-Damper...quite fitting for a Herrick team, but no one else in the co-rec summer league seemed to get it.

That didn’t matter to us because we as Herrick friends understand each other. Looking back on my 4 years at Herrick, what I



Herrick Labs Northwest - Winter 2006 Snowshoeing in the Cascade Mountains (L to R): Steve Montgomery (MSME 1997, Ph.D. 2000), Tamaira Ross (MSAAE 1998), Vincent Badagnani (MSME 2005), Alaina Pizzo (MSME 2000, Ph.D. 2005), Rich Widdle (MSME 2000, Ph.D. 2005)

remember most are all of the people and the great times that we all shared both at and away from the lab—the students, the staff, the shop guys, the professors, and the interaction with industry. Whether it was playing softball, working late at night, our running club, preparing for the IAC, or just trying to write a thesis, we all supported and understood each other at Herrick.

This understanding

and support continues on after we all graduate and leave Herrick. It is also because of my Herrick network of friends that I was able to find my current job and relocate to the beautiful Northwest. Since October 2005, I have been working in Ultrasound R&D at Philips Medical Systems outside of Seattle,

Washington. It is wonderful to be in an area with several Herrick alums, and we often get together for fun outside of work...just like the good old days at the labs.

Being a student at Herrick labs influenced me by showing me how to work together as colleagues—from all around the country and world, men and women, different engineering schools and backgrounds. It also prepared me for working in industry and how I build relationships at work. In my new work environment, I try to spend time with my co-workers outside of the office. I also continue to be influenced by my Herrick friends all over the country and world. When we all get together, we still reminisce about our times at the labs, and recall all those funny stories that helped us get through our degrees. We also plan Herrick Reunions whenever we can and wherever we may be traveling. Although there have not been any plans for a Herrick SMD softball team reunion...yet!

Xiaotang Zhou

I hope everyone is doing well! It has been two years since I left Herrick Labs, I can’t express how much I have missed this family.

Herrick Labs has been a big influence on every aspect of my life. I moved to this country six years ago, and everything was new to me. It

was this family that welcomed me like parents welcomed their new baby. I still remember that moment I could not even say a complete sentence in English. Everyone here helped me to grow up happy and healthy in this different world. Not only that, more importantly, I have established strong basic skills for my career development, and again everyone from my professor, the staff, to my colleagues, has contributed to that. You guys made my Ph.D. study less difficult and more fun. Also, I will always appreciate Professor Jim Braun for his support to my academic and daily life.



Xiaotang Tong and her husband, Qingfan, taken at the Heart Island, which is one of the 1000 Islands in upstate New York.

I am now working at Carrier, and trying to do great things and contribute to the HVAC&R industry and academia. I am proud of Herrick Labs, and will take every chance to support the development of the lab.

Tribute to Wolfgang Leidenfrost

In Memoriam

Wolfgang Leidenfrost, 88, of West Lafayette, passed away at 8:45 a.m on Sunday, July 8, at his residence. He joined Heat Transfer at Purdue in the early 60's and retired in the mid 80's. He had lived in West Lafayette since 1961, coming from Germany.

Born April 20, 1919, in Ober Weissbach, Germany, to the late Wilhelm and Hedwig Dobebecker Leidenfrost, he received a master's degree and then his doctorate in 1952 from Technical University in Braunschweig, Germany.

He was professor emeritus of Purdue University, serving in the Mechanical Engineering department from 1961 to 1989. He also taught at Brown University from 1956 to 1958.

Mr. Leidenfrost authored and co-authored over 100 publications and reports in mechanical engineering, both in the U.S. and Germany. He also received the Senior U.S. Scientist Award from the Humboldt Stiftung Foundation in 1977 and 1985.

He was married to Waltraud "Walli" Klaus on May 22, 1948, and she survives. Also surviving are a son, Klaus Leidenfrost of Rolla, Missouri, and a sister, Christel Haack of Jena, Germany.

The Memorial service was held at 2:00 p.m. on Friday, July 13 at Soller-Baker West Lafayette Chapel, St. Elizabeth Hospice Spiritual Counselor John T. Johnson officiated. Also surviving is one grandson, Max Leidenfrost. He is preceded in death by one sister and two brothers.

Memories from Ed Eisele

I was shocked and saddened to hear of the passing of Professor Wolfgang Leidenfrost. Wolfgang was my major professor while I was a graduate student at Purdue. Although he sometimes appeared to be externally gruff, when you got to know him he had a wonderful sense of humor, genuine warmth and great concern for his students. Wolfgang always had more ideas and concepts to try than any student could explore in a lifetime of study! His enthusiasm for science and engineering was intense as was his pursuit of accuracy and excellence. All of those who worked with him were fortunate to have gotten to know this truly unique individual.

Ray Cohen Remembers Wolf Leidenfrost

The passing of Professor Wolfgang Leidenfrost on July 8, 2007 reminded me of many pleasant shared times with him and his wife, Walli. I shall always be grateful to them for their kindness to host the HERL Industrial Advisory Committee brunch before the Saturday football game at their home on the weekend of one

of the IAC meetings when Kathy and I were unable to do so. They were very gracious hosts and the IAC and faculty families all had a wonderful time.

I first became aware of Wolf's engineering and scientific skills when he built the one-of-a kind (in the world) thermal physical properties measurement facility on the ground floor of the Mechanical Engineering Building. It was capable of measuring such properties simultaneously to the umpteenth decimal figures like no one else had been able to. Later when on a sabbatical year in Germany, the German equivalent of our National Bureau of Standards asked him to replicate the equipment, which he did. Dave Tree who later became a member of our HERL faculty worked on that equipment as part of his Ph.D. requirements with Wolf as his major professor. The graphs showing results from measurements using that equipment showed accuracy and precision like I had never seen before. I believe Wolf will be remembered mostly for those measurements more than for any other of his and his graduate students other research advances.

My next recollection about his work was the pioneering work that he and one of our well-known HERL graduates, Ed Eisele, did on rotating heat exchangers. The idea was to integrate fans and heat exchangers into one piece of equipment instead of being separate units by making the fan blades hot or cold as the need required. I do not know all of the details but I believe a patent was issued to the Purdue Research Foundation and a company was formed to exploit this new technology. It made quite a stir in industry circles, but regrettably I think it never became a commercially successful device even though its feasibility was demonstrated in another HERL research project for use in household refrigerators.

One other HERL project that I remember of several others was the work of Wolf's graduate student, Branislav Korenic, working on augmentation of heat transfer in large heat exchangers to reduce condensing temperatures by spraying water on condensing coils. Branko was able to make an industrial career out of this work.

Finally, I have to retell a story I told at the party for Wolf at Dave DeWitt's home to mark his retirement. Wolf and I had been representing Purdue at a controls company retreat in Iowa. The closing banquet ended early and Wolf invited me back to his hotel room. We started to tell each other about our experiences as soldiers in WWII. Both of us saw limited combat at the end of war, mine included riding some of General Patton's tanks as an infantry sergeant after crossing the Rhine River. When I told Wolf about this experience and mentioned some of the towns we captured in the Black Forest, Wolf's eyes widened and he



An early photo of Wolfgang Leidenfrost from the Herick Laboratories' archives. He was affiliated with the laboratories from 1960 to 1980.

Leidenfrost Tribute (continued)

finally said to me: “You must have been the one who shot my foot.” My unit was advancing east in Germany as fast as we could, and of course Wolf’s unit was doing the same except moving backwards. Those of you who knew Wolf will remember that he wore special shoes and received periodic gratis treatments back in Germany every year or two as a result of his wounds. After we returned to West Lafayette, I was able to show Wolf the infantry division history that I had, and he verified that we took essentially the same route east at the time. But we never let that experience come between us in our many years of friendship.

I remember him with much fondness and admiration for his technical skills.

Memories from Terry Manon

I was saddened to learn of the July 8th passing of Dr. Wolfgang Leidenfrost. I first met Dr. Leidenfrost in the spring of 1973 when I was given the opportunity to pursue my Master’s degree at Herrick Laboratories. He was to be my Major Professor, and for 18 months I had the pleasure and honor of being under his tutelage.

He was a teacher and a mentor. He taught me that there is no such thing as a failed experiment. That you can learn something from every attempt and that sometimes finding out “what isn’t” is as important as finding out “what is.”

His door was always open. He had a way of “asking the right questions” to help me figure out what to do next when I needed

help, without providing the answer.

He was clever, often had a “twinkle” in his eye, and had a great sense of humor. He liked to laugh at a good joke— especially if it was directed at professors or the University “system.” Once I and another Herrick Lab student “modified” and posted a human specie evolutionary tree that had college professors evolving from electric toasters. He thought that was hilarious and insisted on having the original copy.

He enjoyed a good Scotch. Occasionally when his wife Walli was traveling he would invite me over at the end of the day for a drink. We had fascinating discussions, including his view of the world as a teenager growing up in the 1930’s in Germany, and his experiences in World War II. He wore special shoes to help him walk...a result of an injury he sustained in the war.

He also had a “pet peeve.” The way Captain Klink and Sergeant Schultz were portrayed in the 1960’s TV comedy “Hogan’s Heroes” used to drive him nuts.

We stayed in touch through the mid-1980’s. I only saw him once after that. I am sad for his wife Walli, his son Klaus and all members of his family. And I regret not having given him a call each time I was in West Lafayette, and all that I missed as a result, because of the discussions and laughs that we did not share.

Family News

Bob Bernhard Leaves Herrick



Photo of Bob Bernhard taken in 2004.

Please congratulate Bob Bernhard who was elected the new Vice President for Research at the University of Notre Dame in South Bend, Indiana. The announcement was made on Thursday, May 17. Fortunately for us, Bob will continue to do his tire/pavement interaction research at the Laboratories, and he plans to spend one day a week here with us while he assumes his new duties at Notre Dame.

Dan Hirleman, Head of the School of Mechanical Engineering said of the announcement, “Of course it is with mixed sentiments that we view this, since Bob has been a key member of the Mechanical Engineering and Purdue communities for 25 years. He has been a leader in many initiatives on campus, including Director of the Herrick Laboratories, the Diversity Action Committee, and most recently in his role in the Office of the

Vice President for Research. We will certainly miss him, but greatly appreciate all he has done over the years to make the School and Purdue a better place. This is an extremely compelling opportunity for Bob, and we wish him the best.”

His appointment became effective August 1. He also was appointed a full professor in the Department of Aerospace and Mechanical Engineering at Notre Dame.

Bob’s position is newly created and a result of the administrative restructuring of graduate education and research at Notre Dame. The new structure splits the former position of vice president for graduate studies and research into two positions that will each report directly to the provost. The reorganization was recommended by the Academic Council and the president and approved by the Board of Trustees at Notre Dame.

Bob will address infrastructure and support of research—the work of faculty, graduate and undergraduate students alike—and the competition for funding dollars, as well as support for the Notre Dame’s technology transfer efforts.

In e-mails Bob reflected on his time at Purdue and wrote, “My

Family News



A young Bob Bernhard and graduate student, Steven Marshall (MSME 1984). I guess Bob really did “grow up” while at Purdue.

decision is very bittersweet. The Herrick Labs has been a great community in which to ‘grow up.’ The community values, to balance the pursuit of excellence with outstanding collegiality, is extremely nurturing, but unfortunately, also rare. Purdue has

been an great fit for me, and I’ve actually had three wonderful careers here; as a faculty member, as a Director, and as an Associate Vice President for Research.

I thank all of you for your contributions to the Herrick Labs and to my experiences here...but I’m not going away completely. Notre Dame has granted my request to be off site for one day each week for family and research obligations. I hope to be at the Herrick Labs quite often over the next two years and to be an active participant in the Herrick Labs.”

Who’s with Aladene?

In our tribute to Aladene Fontaine in our last newsletter, we included a photo of Aladene and Marlene Hodge. At least that was the consensus of the people asked. One of our retirees though, knew that we were incorrect. Pat Brandeberry, told us that the photo is of Aladene Fontaine and Marsella Smith. Marsella was married to Art Smith who was Shop Supervisor at the time. Art passed away on June 21, 1990.



Left is a young Aladene Fontaine and on the right is Marsella Smith. At the time, Marsella was married to the Shop Supervisor, Art Smith.

When we realized our error, we contacted Marsella to find out what she’s doing these days. She’s still living in Lafayette, and in November she will be 85. She has always been, and continues to be, a very active person. She maintains her own lawn and garden because, as she stated, “I want to. I have lots of pretty flowers.”

Marsella was the first married women to enter St. Elizabeth’s School of Nursing program. She is a gerontological nurse practitioner, and is currently busy volunteering in a medical capacity. She escorts aging patients to their medical appointments and even teaches a class once a month in Indianapolis for people

with artificial bladders.

She spends 45 minutes on her treadmill every morning and lifts her weights 100 times each day. She says a purpose in life is important to her. She’s finding many opportunities to keep busy and says, “There’s so much out there.” She is also active in her local church.

Where are They Now?

Tim Johnson (MSME 2002, Ph.D. 2006) accepted a position as an Advanced Engineer at the Owens Corning Science and Technology Center in Granville, Ohio. He started on February 12, 2007.

Engagements

Rick Meyer (current Herrick student) and **Janette Jaques** (current Herrick student) met playing volley ball on Friday afternoons and share a love of sports. They both participated in the Indianapolis mini-marathon. Rick says that Janette beats him in basketball, but he beats her in tennis. The two are planning July 2008 nuptials at St. Thomas Aquinas in West Lafayette.

Weddings

Muhammad Haroon (MSME 2003, Ph.D. 2007) and Maryam Mustafa were married on March 31, 2007 in Pakistan. Maryam is working on her Master’s Degree in Computer Science at Cornell University and anticipates completing it in June 2008.

Phanindra Garimella (MSME 2002, Ph.D. 2005) and Manjulata Chivukula were married on February 9, 2007. Phanindra works at Cummins, Inc. in Columbus, Indiana. His wife recently finished an advanced degree and is looking for suitable employment.

Births

Bo Shen (Ph.D., 2006) and **Hao Jiang** (current student) are the proud parents of a little baby boy, William J. Shen. He was born on September 23, and weighed 5 pounds and 1 ounce. He is a healthy and happy little boy.

Yoon Shik Shin (current student) and his wife, Seung Yeon Yoo, welcomed a new son, Hyun Ho Shin, into their family. This is their first child. He was born at 7:24 p.m. on October 9 and weighed 7.5 pounds. Everyone is doing fine and very excited to have him home.

Graduations

Spencer Ackers (MSME, August 2007), *A Method for Crack Detection in a Wheel End Spindle Using Broadband Modal Excitation*. Spencer is working with The Boeing Company in Seattle, Washington. He is from the Northwest and is pleased to be closer to home.

Gazi Naser Ali (Ph.D., May 2007), *Image Quality Analysis of Electrophotographic Printers for Banding Measurement and Forensic Application*. Gazi is working for Sony Electronics in San Jose, California.

Family News

Adam Andruska (MSME, May 2007), *The Design, Analysis, and Control of a Two Dimensional Hyper-Redundant Robot Interacting with an Elastic Environment*. Adam is planning to attend medical school to pursue a degree as a family practitioner.

Arthur Blanc (Ph.D., May 2007), *Validation of Vibro-Acoustic Numerical Models*. Arthur accepted a position with United Technology Research Center (UTRC) in East Hartford, Connecticut. He returned to Purdue for the Industrial Roundtable in September and stopped in to say, "Hello."

Xi Chen (MSME, August 2007) *A Numerical Study on Decontaminating Unoccupied Airliner Cabins*. Xi is working for Buro Happold Consulting Engineers in New York, New York.

Muhammad Haroon (Ph.D., May 2007) *A Methodology for Mechanical Diagnostics and Prognostics to Assess Durability of Ground Vehicle Suspension Systems*. Muhammad is staying at the Herrick Laboratories as a Postdoctoral Researcher.

Ali Israr (Ph.D., August 2007), *Tactical Transmission of Phonetic Features*. Ali is currently working as a Research Associate in the Mechatronics and Haptic Interface Laboratory at Rice University, Houston, Texas.

Scott James (MSME, August 2007), *Diesel Engine Diagnostics Using Singular Spectrum Analysis*. Scott is staying at Herrick Laboratories to pursue his Ph.D. under the direction of Professor Peter Meckl.

Miguel Jované (Ph.D., August 2007), *Modeling and Analysis of a Novel Rotary Compressor*. Miguel returned to his home country of Panama to teach at a university.

Andrew Marshall (MSME, August 2007), *A Preliminary Investigation into the Perceptual Characteristics of Low Level Sonic Booms Heard Outdoors*. Andrew is staying at Herrick Laboratories to pursue his Ph.D. under the direction of Professor Patricia Davies.

Daniel Robinson (MSME, May 2007), *Effect of Low Frequency Sound on Resonant Sound Insulation and Rattle Systems*. Daniel is an Acoustical Engineer for Wyle Laboratories in Arlington, Virginia.

Mychal Spencer (MSME, August 2007), *Indirect Determination of the Strain and Stress in Physical Models of the Vocal Folds Using Digital Image Correlation*. Employment information not yet confirmed.

Nick Stites (MSME, August 2007), *Minimal-Sensing, Passive and Semi-Active Load and Damage Identification Techniques for Structural Components*. Nick accepted a position with Pioneer Engineering in Ft. Collins, Colorado.

Shankar Sundararaman (Ph.D., August 2007), *Numerical and Experimental Investigations of Practical Issues in the Use of*

Wave Propagation for Damage Identification. Shankar is working as Senior Research Engineer for Exxon Mobil Upstream Research Company in Houston, Texas. He says the climate in Houston is similar to the climate in his home town, and he's looking forward to warmer winters.

Liangzhu Wang (Ph.D., May 2007) *Coupling of Multizone and CFD Programs for Building Airflow Distribution and Contaminant Transport Simulations*. He accepted a position as a Guest Researcher at the National Institute of Standards and Technology (NIST) in Gaithersburg, Maryland.

Adam Wichman (MSME, August 2007), *Evaluation of Fault Detection and Diagnosis Methods for Refrigeration Equipment and Air-Side Economizers*. Adam is working for Black & Veatch, an engineering, consulting and construction company, in Ann Arbor, Michigan.

Tengfei Zhang (Ph.D., May 2007), *Detection and Mitigation of Contaminant Transport in Commercial Aircraft Cabins*. Tengfei joined the faculty in the School of Civil Engineering, HVAC Branch of Dalian University of Technology in Dalian, China.

Faculty and Staff Awards

Doug Adams received the 2007 Solberg Award for excellence in undergraduate teaching from the School of Mechanical Engineering. The H. L. Solberg Award is presented annually "to an outstanding teacher in the Purdue University School of Mechanical Engineering selected by its student body for excellence in teaching." In the fall semester, the Mechanical Engineering Pi Tau Sigma students conduct balloting of Mechanical Engineering 300- and 400-level courses and then an Awards Committee tallies the votes and determines who to present to the School's department head for final nomination. No faculty member can win the award more frequently than once every four years.

The Purdue Research Foundation honored **Doug Adams** and **Werner Soedel** as patent holders on October 10 at the annual Inventors' Recognition Dinner at the Purdue Memorial Union. They were honored for discoveries that resulted in commercial applications that benefit society. Only 27 people were honored for their patent work, and Herrick was pleased to have two faculty represented.

Luc Mongeau was appointed the Associate Dean for Academic Affairs at McGill University in Montreal, for a 3-year term in August. He will be responsible for policies and guidelines for faculty and staff; faculty hiring, retention, reappointment, tenure, and promotion processes; space allocation and management; and budget planning.

Donna Cackley, Herrick Laboratories' Secretary, completed the Accomplished Clerical Excellence Class (ACE). The class is a two-year program, and the participants receive advanced clerical training and develop valuable Purdue networking contacts. The ACE pro-

Family News



Morgan Olsen, Executive Vice President and Treasurer, congratulates Donna Cackley for completing the ACE program and the accomplishment it represents.

gram is an elite group of clerical employees. In fact, Donna was one of only 22 people participating in the 28th class. On May 2, she and her classmates were honored for completing the program at a luncheon held in the East and West Faculty Lounges of the Purdue Memorial Union. Donna was one of the program speakers. Congratulations, Donna.

Student Awards

Janette Jaques received the Arvin-Calspan/Gene Anderson Fellowship.

Alok Joshi received an outstanding dissertation prize from the School of Mechanical Engineering.

Matias Zañartu received a \$500 travel award for best poster presentation at the Latino Scholars Forum at Purdue on September 19. The award was sponsored by the College of Engineering and will be used to present his research work at a scientific conference. At the moment, Matias is planning to attend the ASA/EAA/SFA Acoustics'08 conference in Paris.

Tengfei Zhang received a monetary prize for winning the

Dimitris N. Chorafas Foundation doctoral dissertation award, which was established to encourage the development of promising graduate researchers in engineering. The prize money is intended as co-funding for his advanced studies and/or research.

Did Someone Say, "Tango"?

Stefan Bertsch (current student) and a dance partner, Ling Ling, were featured in the Aug. 31 TGIF section of the *Lafayette Journal & Courier*. Stefan is active in the Purdue Tango Club and performed at Global Fest which was held at Morton Community Center on Sept. 1. Stefan does the Argentinian style tango rather than the more widely known Latin tango.



Ling Ling and Stefan Bertsch strike a pose for the camera. Our special thanks to Michael Heinz, Multimedia Editor, and photographer, Frank Oliver, for allowing us to reproduce the photo here.

Stefan is not the only person at Herrick who enjoys dancing. Yuri Pensky (current student) has been doing the Salsa for years and isn't afraid to teach old grandmas how to Salsa during the Friday coffee hour. Hales Swift (current student) does some fancy footwork, too. This semester he's focusing on Swing, particularly the Lindy Hop.

Annual Industrial Advisory Committee Meeting

Many of you will recall your own experiences as students at the industrial advisory committee (IAC) meetings in the past: the laboratory clean up (Dust and Polish 101), putting your poster together (not always, but sometimes at the last minute), and meeting the IAC members to present your research. The 55th IAC meeting started at 3:30pm on Thursday, November 8th.

This year, the Thursday afternoon sessions were focused on overviews of the some of the interdisciplinary research and initiatives that faculty at the Herrick Laboratories are involved in. Jim Braun talked about an architectural engineering faculty search focused on increasing the number of civil engineering faculty working in issues related to energy efficiency in buildings, Greg Shaver talked about a proposal with faculty in Electrical and Computer and Agricultural and Biological Engineering for a dynamometer to increase the engines and other power generation research capabilities. Eckhard Groll, Steve Pekarek and their students talked about their research on innovative compressor design, and George Chiu and Hong Tan talked about their perception-based engineering research on

vibration quality and rotary switch design. Steve and Hong are both professors in Electrical and Computer Engineering. Doug Adams talked about the research center that he is working on with professors Byron Pipes (MSE), T. C. Sun (AAE) and other engineering faculty and their work for the Marines on fault detection, diagnosis, prognostics and repair of structures.

On Friday morning, the Director gave an overview of the laboratory activities over the past year and John Sanderson gave an update on the building fundraising campaign. As usual, the highlight of the meeting was the research exposition where students gave brief overviews of their and their fellow students' research. The students then had lunch with the 24 visitors from industry. During lunch a DVD on reproductions of Curtiss aircraft was played; this was an overview of a project in which one of our IAC members (Jim Lally) has been involved.

To help with developing the next Herrick Laboratories strategic plan, the afternoon was devoted to a discussion of future needs of the industries of the IAC members and the research and

IAC Meeting (Continued)

technology advances that would fulfill those needs. The faculty and IAC split into three groups focused on Transportation, Engineered Environments, and Machines, Appliances and HVAC&R Equipment and spent the afternoon discussing these issues. A recurrent theme in these discussions was the impact on the environment of engineered systems, particularly throughout their entire life cycle from manufacture through life-time operations and finally to decommissioning and disposal (recycling) of materials. Energy efficiency was another strong theme as was the need to be able to sense and evaluate the state of systems to enable optimization of their operation, maintenance, repair and control. Another theme was impact on people, not only because of being directly affected by the system

during its operation but also including, e.g., the community and environmental impact of building and running the manufacturing plants to make the products.

Business ended at 5:30pm and was followed by dinner at Jane's Gourmet Deli on 4th Street in downtown Lafayette. Before the Michigan State football game, which sadly Purdue lost 48 to 31, there was brunch at Patricia Davies' and Stuart Bolton's home. The brunch was catered by Mel Brutsman who used to own and run Sarge Oak's restaurant on Main Street in Lafayette. He is now the catering manager for University Place, a retirement home close to Purdue on Lindberg Road in West Lafayette.

Fundraising, A Note from the Director



The original building before the wings were added.

The fundraising for the new building is going well and an additional large gift was made recently to support the campaign. In addition to gifts our alums and friends have given we are now at \$9,163,697 getting closer to the \$11 million first phase goal. To rebuild the

Laboratories completely, we will be following on from this first phase to raise, in total, over \$30 million. This will give us almost a doubling of much needed floor space which includes both laboratory, technical support and office space. It will also mean that we are able to expand our research in the areas of thermal systems, air quality, acoustics, vibrations, diagnostics and prognostics, engine controls, electro-mechanical systems and perception-based engineering, all of which address the various challenges that society faces in the areas of energy consumption, environmental impact, sustainability, and quality of life.

Our plan is to make even the office and conference rooms part of the research by making it a living laboratory which will enable us to test promising new energy efficient and environmental friendly concepts in a real building. The aim is to help bridge the gap between technological

innovation and building practice by understanding and addressing implementation and robustness issues with new technology, making it less of a risk to incorporate into new buildings. Also, new technology should result in spaces where people enjoy working and living, so some of the research associated with the living laboratory will be focused on modeling the impact on people (health, comfort, productivity, etc.) so that energy usage and environmental impact can be optimized by using criteria that reflect impact on the occupants.

This is an extremely ambitious fund raising project, and we do need your help. Whatever you are able to donate is much appreciated. If you would like to know how to donate to the Laboratories (there are many different ways to do this), please go to our new website <https://engineering.purdue.edu/Herrick/> and click on "Giving" on the left hand side of the page. On the right hand side of this Giving page are details on how to donate to the Laboratories including on-line giving. If you cannot easily access the web, just send a check to us at the Laboratories and we will forward it on to Purdue Development so that you can get the official acknowledgement from Purdue for tax purposes. Make the check to "Purdue University" and mark it "For the Ray W. Herrick Labs. Building Fund". Send it to, The Director, Ray W. Herrick Laboratories, 140 S. Martin Jischke Drive, West Lafayette, IN 47907-2031, USA.



Front view of Herrick Labs.

Ray W. Herrick Laboratories
140 S. Martin Jischke Drive
West Lafayette, IN 47907-2031

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Herrick Announcements

In July, the Herrick Laboratories went live with a new updated Web site. It took some time to work the bugs out after the “go live” date. If you’d like to visit the new site, we’d welcome your comments. Visit us at: <http://www.engineering.purdue.edu/Herrick/>.

We have a new mailing address. In honor of the last Purdue President, our street name has changed to Martin Jischke Drive. Any items sent to us should use the new mailing address below.

News About You and Address Changes

We are always interested in hearing your news, and we want to be kept up-to-date on current addresses. Please send notes to Judy Hanks or to the e-mail address below. Don’t hesitate to let us know of other alums who have moved. Photos are always welcome.

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