PURDUE Aero & Astro GRAM

A newsletter for alumni & friends of the School of Aeronautics & Astronautics • Winter 1998

Howell Designs Innovative Trajectory

Professor Kathleen Howell and two of her doctoral students have designed a trajectory for NASA's Genesis Mission, scheduled to be launched in 2001. Collecting solar wind particles is the primary scientific goal of the mission.

Genesis was chosen as part of NASA's Discovery Class Program. Some of the research developed under the Advanced Concepts Research Projects Program (ACRP) was used to support the trajectory design for Genesis. Additionally, Professor Howell received under the ACRP Program a grant of $250,000 for her research titled, "Application of Dynamical Systems Theory to the Design and Development of Spacecraft Trajectories."

Doctoral student Brian Barden assisted Howell in the ACRP Program initiative. He and Roby Wilson, also a doctoral student, have worked with Professor Howell on the Genesis Mission trajectory. By designing a trajectory that successfully meets a complicated set of mission constraints, Professor Howell along with students Barden and Wilson, were key in selling the feasibility of the mission to NASA.

The Genesis mission is the newest addition to NASA's Discovery Program, which is charged with

building lower-cost, highly focused scientific spacecraft. The solar wind particles collected will include samples of isotypes of oxygen, nitrogen, the noble gases, and other elements, according to NASA. The samples will then be returned to Earth and be analyzed, both chemically and isotopically, to glean information relating to the composition of the Sun.

Professor Howell said, "This information can then subsequently be used to validate theories concerning the composition of several objects in the solar system, including planetary atmospheres. To successfully collect these particles, the spacecraft must be beyond the magnetosphere of the Earth. However, to help keep the mission operation costs low, the spacecraft needs to remain as close to the Earth as possible."

"A trajectory about one of the collinear libration points is the ideal platform for this mission. The Genesis spacecraft will be inserted into a trajectory in the vicinity of the L_1 libration point in the Sun-Earth system."

A libration point, also known as a Lagrange point, is an equilibrium point associated with the motion of a spacecraft under the gravitational influence of both the Sun and the Earth. It is located approximately 1.5 million kilometers from the Earth in the direction of the Sun.

What makes this particular trajectory difficult?

Howell states, "The actual scientific analysis of the collected samples will be done on Earth, so the trajectory must accommodate the added challenge of returning the spacecraft—with its samples—to a specific landing site on Earth."

Known for her expertise in the three-body problem and with 15 years of experience in trajectory design for libration point missions, the Jet Propulsion Laboratory contacted Professor Howell back in 1996 to seek her expertise with this particular mission. Cost was a key factor, in terms of fuel, and had to be minimized while considering the maneuvers around the science requirements.

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AAE Briefing

Professor W.A. "Gus" Gustafson is retiring effective June 30th. He has been a steady presence and a vital contributor to the School since 1960. He has taught a wide range of core courses, and most recently has taught Fluid Mechanics, Aerodynamics, Spacecraft Design, and Satellite Aerodynamics and Planetary Entry. Since 1980, thousands of students have been served by him in his role as Undergraduate Counselor.

His work with industry representatives over the years has helped hundreds of students secure co-op and internship opportunities, which better prepared them for life in aerospace. It's quite fair to say, Gus has been instrumental in helping to launch the careers of the majority of our alumni.

Professor C. T. Sun, recently said, "Gus is a man of few words, but when he speaks everyone listens. Wisdom is never wordy. In my 30 years with the Aero School, I have not seen the kind of panic caused by Gus' announcement of retirement. The value of a person becomes evident when he or she leaves office."

continued on next page

AAE Briefing • continued

The School's been around for 52 years, and Gus for nearly 40. He has helped shape the curriculum, culture, and expectations of not only our students but faculty as well. Professor Emeritus Larry Cargnino, who has been a friend and colleague for 37 years, said, "Gus has had tremendous influence on the direction and success of our program."

Gus' reputation is not isolated just to our School. Clearly, he is a well respected faculty member and was recently honored by the Dean of Students Office. The M. Beverley Stone Award, presented by Omicron Delta Kappa, was awarded to Gus for his "personal concern, unselfish giving of time, ever-listening ear, and for his ability to advise but not dictate to Purdue students." (related story on page 5)

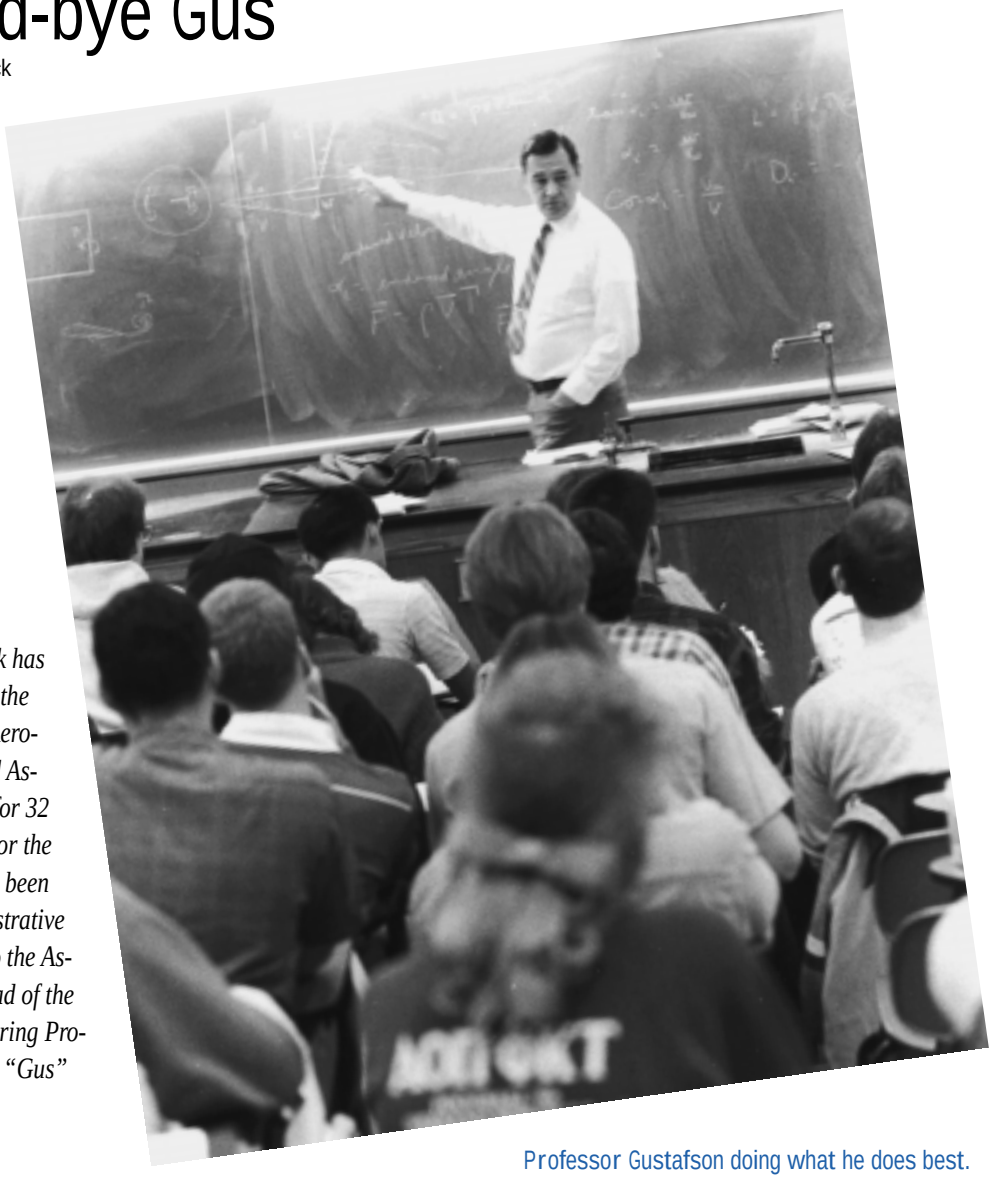
As a special farewell and thank you to Gus, the School is hosting a retirement dinner in his honor on Saturday, April 25th, 1998, at the Radisson Hotel in Lafayette. A postcard announcing the event was sent to all alumni in January. I hope you are planning to attend.

Although it will be a difficult good-bye, I do look forward to celebrating Gus' contributions to the School and Purdue University. His dedication, commitment, and loyalty to what he believes in, has helped form this School, and in turn its graduates into respected aerospace engineers, university professors, and business professionals. And for that we will be forever grateful.

John Sullivan
Professor and Head

Good-bye Gus

by Linda Flack



Linda Flack has worked for the School of Aeronautics and Astronautics for 32 years and for the past 16 has been the Administrative Assistant to the Associate Head of the School, retiring Professor W.A. "Gus" Gustafson.

Professor Gustafson doing what he does best.

It is hard to imagine coming to work at Grissom Hall without Gus being here.

You see, he usually beats me to work every morning—and always goes to the faculty and staff lounge to get the coffee started. I can always find a Purdue *Exponent* tucked under the door of my office, and so can the other staff members on the third floor. But hey, where are the donuts?

I have had the privilege of working with Gus for more than 16 years and greatly admire him. The dedication he brings to his job is an inspiration for us all. He provides the highest quality counseling for the undergraduate students and is consistently available to students in the evenings and on weekends.

When I first came to the Aero school Gus was not one to say much—but boy has that changed. He is such a vital part of our School and does so many things that people don't know about. The students rely on him for counseling but I have also known him to take a sick student to the student hospital. He always has time in his busy, busy schedule to stop and help the students and of course to share a cookie or two with them.

Gus does have a weakness—anything sweet, especially chocolate. He is the original cookie monster and don't think the students don't take advantage of it. One Easter, a student brought him a delicious chocolate bunny. There was only one catch. He had to wear bunny ears and a tail all during class before

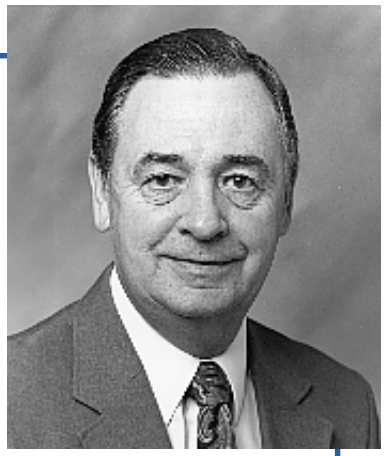
Industry representatives, AAE students and Gus in design class.

he could claim his prize. Yes, be assured he won the chocolate bunny!

Literally thousands of current and former students have had their education and lives touched with his unselfish devotion. Gus has played a vital role in the careers of all students in our department and gets a great amount of joy and satisfaction in his role of counselor. As Associate Head of the School, Undergraduate Counselor, Scheduling Deputy, Co-op Coordinator, and Recruiter Liaison, Gus has represented our School for nearly 40 years in a wonderful manner. He has spoken with prospective students, and their parents and has given hundreds of tours of the School's facilities.

I couldn't have a nicer boss and I will truly miss him. Congratulations and best wishes Gus!

W.A. "GUS" GUSTAFSON

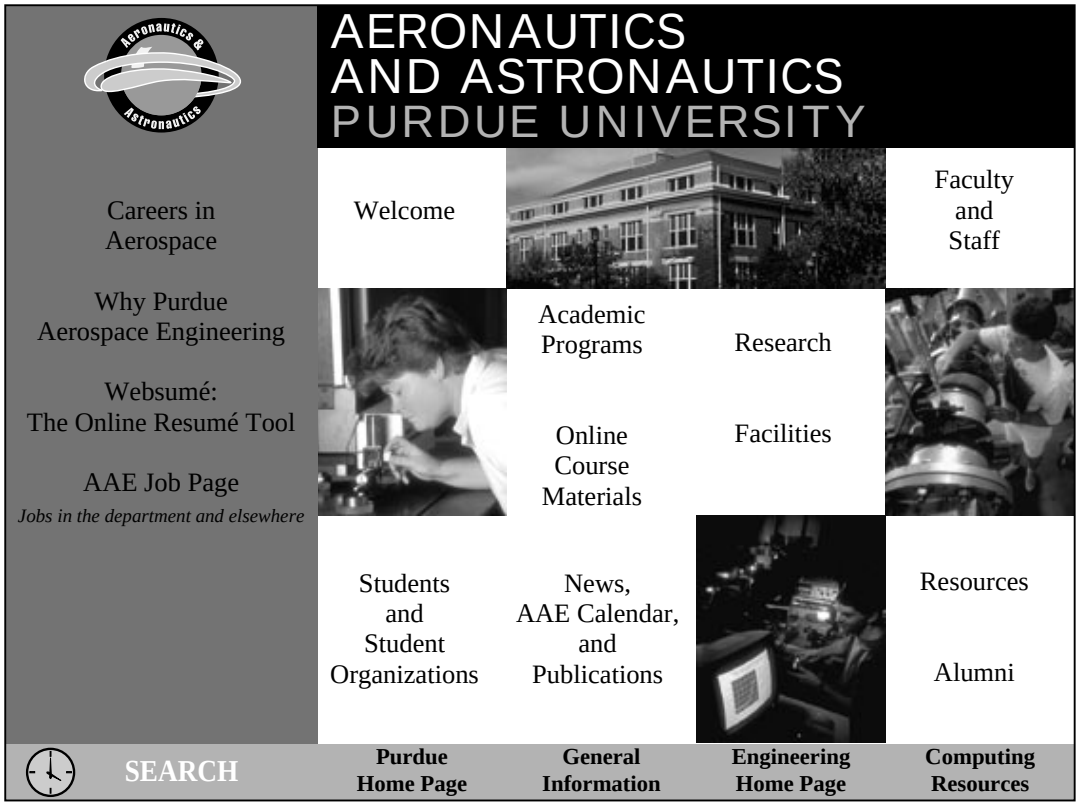


Born:	*October 14, 1928*
Family:	*Wife, Sally*
Children:	*Charles, John, Richard, Scott, Annette (Daughter-in-law)*
Degrees:	*B.S., University of Illinois, Aeronautical Engineering, 1950* *M.S., University of Illinois, Aeronautical Engineering, 1954* *Ph.D., University of Illinois, Aeronautical Engineering, 1956*
Academic Career:	*Purdue University, 1960*
Interests:	*Hypersonic Aerodynamics, Spacecraft Design*
Academic Appointments:	*Associate Head of the School of Aeronautics and Astronautics,* *Undergraduate Counselor for AAE students since 1981, Co-op Program Coordinator, Schedule Deputy*
Honors:	*1998 Elmer F. Bruhn Best Teacher Award* *1997 Beverly Stone Award, Omicron Delta Kappa* *1980 Elmer F. Bruhn Best Teacher Award*
Book:	*One Small Step: The History of Aerospace Engineering at Purdue University* *Co-Authored by A. F. Grandt, Jr., W. A. Gustafson and L. T. Cargnino*

WEBSITE RENOVATION *http://aae.www.purdue.edu*

This summer the AAE website received a major overhaul due to the efforts of Visiting Professor Todd Ely and his website crew. The School's website has always provided information about our program and aerospace engineering; however, the Industrial Advisory Council as well as the School's faculty believed we could significantly improve on what we offered.

"A significant focus in the website renovation was to bridge the gap between academics and industry. The aerospace industry is experiencing a resurgence from the difficult times that it has seen in recent years. Unfortunately, this good news is trickling down very slowly to perspective aerospace engineering students. In updating the website, we wanted to address this issue directly. We added more information not only about the programs that we have at Purdue, but about the industry as a whole. We also provided tools, such as the Websume', to help graduating students with their job search," stated Ely.



Changes to our website include:

- The new "Careers in Aerospace Engineering" page and its related page, "Why Purdue Aerospace Engineering?" are significant resources for perspective students considering aerospace engineering as a career. The careers page introduces aerospace engineering, the School of Aeronautics and Astronautics, and includes interviews with recent graduates about their new jobs. The Purdue Aerospace Engineering page answers questions on the health of the aerospace industry, the availability of jobs, and why our School is the best route to take for getting those jobs.
- A powerful and flexible online resume tool, named "Websume" is now available for AAE students to edit and post their resume. Once posted, potential employers can browse the resumes and print text versions. With this tool now available, a job interview may be only one click away!
- The Academic Programs page now has a complete outline of the available AAE courses with links to course descriptions, including a list of the most current or recent instructor.
- The Alumni Page now includes information about Purdue's 21 astronaut alumni, School alumni activities, information about our Honorary Doctorate recipients as well as our Distinguished Engineering Alumni.
- A School history page was added which includes many photos from the book, *One Small Step: The History of Aerospace Engineering at Purdue University,* written by Professors Grandt, Gustafson, and Cargnino.

"The website renovation has been a tremendous task that required a TEAM effort. The hard part—actually getting the job done—is due primarily to graduate students Greg Roth and Nathan Strange and undergraduate student Kyle Indermuehle. They did—and continue to do—most of the coding and page development.

"The effort made by the web team was only part of the formula leading to success; the contributions made by the students, faculty, and staff were a great help as well. It is a fair statement that the site represents the School because it was made by the School," Professor Ely stated.

According to Professor Ely, the team's goal is to provide the best information to our customers about AAE and the aerospace industry in general.

During February there were more than 15,000 accesses to thewebsite. We invite you to help us to continue to improve it, take a moment to view the site and if you have any comments, send us e-mail at: *webmaster-aae@ecn.purdue.edu.*

Faculty UPDATE

Gustafson Honored with Stone and Bruhn Awards

Professor W. A. "Gus" Gustafson was awarded the "Dean M. Beverley Stone Award" by the Omicron Delta Kappa National Leadership Honor Society. The award, established in 1980 when Dean Stone retired from her position at Purdue, is given annually "to an individual who shows personal concern, gives unselfishly of time, and who shares love through outstanding service in counseling Purdue students."

Gustafson was nominated by the student chapter of the AIAA. According to Greg Roth, chapter President, Professor Gustafson was chosen because of his "personal concern and never-ending willingness to do whatever necessary to lend a helping hand."

Additionally, Gus also won the 1998 Elmer F. Bruhn Teaching Award, administered by the School and voted on by the undergraduates. Congratulations Gus!

Medal of Excellence Awarded to Sun

C.T. Sun, the Neil A. Armstrong Distinguished Professor of Aeronautics and Astronautics, was awarded the 1998 Medal of Excellence in Composite Materials by the University of Delaware Center for Composite Materials.

With the School since 1960, Dr. Sun has more than 350 journal publications and conference papers, is on four journal editorial boards, and is the recipient of numerous honors including more recently the American Society of Composites 1995 Distinguished Research Award and AIAA's 1997 Structural Dynamics and Materials Award.

"We are very honored to have Dr. Sun accept the Medal of Excellence, as his international reputation in the field of composites, added to that of past winners, elevates the prestige associated with the Medal," stated Karl V. Steiner CCM Executive Director.

Karl V. Steiner, the CCMM Executive Director stated, "Not only does Dr. Sun have an outstanding record of his own achievements, but he has contributed to the dissemination of knowledge in the field through the 80 plus graduate students whom he has supervised during his career, including 14 who are teaching at universities in the United States and abroad. Professor Sun has had a very significant impact on composites science and engineering during the past three decades."

Howell Designs Innovative Trajectory • continued

Howell stated, "For missions in which the spacecraft is expected to spend significant intervals of time near libration points, a baseline concept derived from solutions in a three body regime—Sun, Earth, and spacecraft—is necessary. In designing the trajectory for Genesis, we used techniques based in dynamical systems theory to explore and isolate various arcs that could be useful. These arcs are then patched together to serve as the critical initial guess. A numerical process then forces a solution that meets specified launch and return constraints."

The trajectory developed for the Genesis mission takes the spacecraft out to the vicinity of the L_1 point in the Sun-Earth system. When viewed in a frame that rotates with the Earth around the Sun, the trajectory remains in the vicinity of the L_1 point in a Lissajous trajectory. Such a trajectory is ideal for long term study of the interaction of the Sun with the Earth environment, and for sample collection.

After approximately two years of gathering solar particles, the spacecraft return, scheduled for 2003, is managed by using the natural dynamics of the system.

Doctoral students Roby Wilson, standing, and Brian Barden.

From the Lissajous orbit, the spacecraft is targeted to the Sun-Earth L_2 libration point. The L_2 point is located opposite L_1, on the far side of the Earth at a distance of approximately 1.5 million kilometers. From the vicinity of L_2, the spacecraft is then positioned for a dayside return to the Earth, with reentry and airborne retrieval over the Utah desert.

ON BOARD
Alumni Gather in California

On a damp, foggy, January night in Long Beach, California, more than 50 School of Aeronautics and Astronautics alumni and friends gathered. Ranging in graduation years from 1943 graduate James Dunn, to May 1997 graduate Joe Tinfina, Purdue Boilermakers turned out to reminisce, make new friends, and listen to Professor Sullivan's update on School activities .

Power Plant Option Flo, BS '51 (see related story on page 8), the first women to graduate from the Power Plant Option from our School, and Leslie, MS '53 and PhD '57, and Bobie Hromas, both who used to work at the School, were there also to support AAE night. Three of our Distinguished Engineering Alumnus (DEA) attended, including our very first 1965 recipient, Bud Mahurin (BS '49) his friend 1973 DEA awardee Dick Freeman (BS '50), and our 1997 award winner William O'Neil (BS '61).

It was a special event that helped to highlight the importance of what you as alumni do, and to reinforce that you indeed are a group of select individuals who take your professional and ethical responsibilities very seriously.

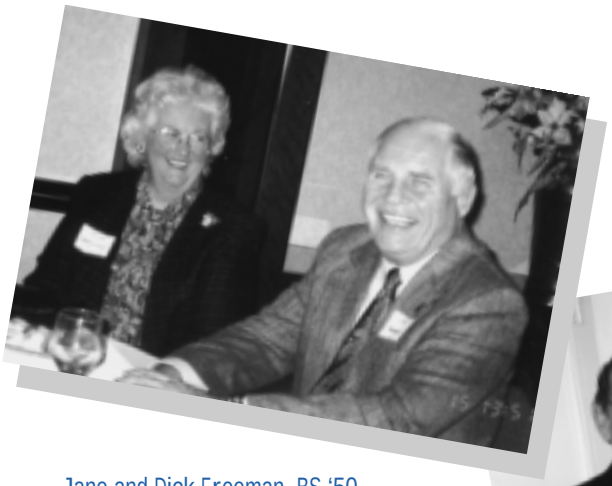
The next opportunity for alumni and friends to gather will be during Gala Week 1998. On Saturday, April 25th, the School will host an informal "Breakfast with the Professors," from 9 to 10:30 a.m. in Grissom 390. Alumni from the Classes of 1948 and 1973 will be celebrating their 50th and 25th anniversaries. In the evening, all alumni are invited to Professor Gustafson's Retirement Dinner, which will be held at the Radisson Inn Hotel. Please call for ticket information.

Lastly, whenever I heard the saying, "Still waters run deep," I never really knew quite what it meant. Not until I met Gus. I have been his office neighbor for the past two years. He has been a true joy to work with and I will miss his daily presence in the halls of Grissom. I thank him for his kindness and patience and hope that he enjoys his earned retirement!

Nan Claire Ross

AAE Reception
Long Beach, California

Joe Tinfina, MS '97, center, and fellow alumni.



Jane and Dick Freeman, BS '50.

Chuck Hartke, BS '56, and Ralph Merrill, BS '47.

Your Favorite AAE Memories

In the summer issue of Aero**Gram**, you were invited to forward to us some of your favorite AAE memories. Remembrances of a friendship with Roger Chaffee and Ed White and pranks in the wind tunnel are just a few of the AAE Favorite Memories submitted. Some names and words were changed to protect the innocent, but most appear in their entirety. Thanks to each of you who contributed!

"One of my favorite memories is the late nights spent at the computer labs working on assignments. It was hard and frustrating when the system crashed or you had to run across campus to find a printer that still had paper. Yet, there was a certain camaraderie with all the other students trying to get that program to run. Actually, it's like real life—everything that can go wrong will, but with the right attitude and diligent effort you can succeed. Now, if I could only explain to everyone why I work best at 2 a.m., I'd be doing O.K.!!

Kent McKesson, BS '91

Let me paint the picture for you. It was some time after mid-semester, and Dr. Lund had earlier in the semester assigned a computer programming project that was eating-up all of our free time since the due date for the project was fast approaching. Very late nights with all of us packed in the lab like rats were quite common, even expected. The stress that all of us were feeling could easily be cut with a knife.

One day in class, he moved on to talk about the application of non-dimensional–ization to aircraft modeling and testing. He began the class with, "You simply cannot take a model of an airplane at one-tenth the size; put it in a wind-tunnel at one-tenth the speed and multiply your results by ten to get the correct answer."

To which my whispered reply to the unfortunate C.V. Briggler sitting next to me in the front row was, "Wait! One-tenth the size and one-tenth the speed? You don't multiply by ten. You multiply by one hundred!"

C.V. had to endure my fits of stress-induced laughter and giggling for the remainder of the lecture. Dr. Lund even gave me a few puzzled glances after some of my more audible outbursts.

PS: This story still makes me laugh!

Fredrick R. Shaffer, BS '90

I entered a speech contest sponsored by one of the aerospace clubs and the prize was one of Professor Elmer Bruhn's autographed structure books. I won second place—but there were only two contestants.

Bob Bateman, BS '47, HDR '92

.....most of the students were able to arrange their class schedule so that all the Aero courses were sequential, and this reduced the number of times that the "run' to the airport had to be made. One semester a group of us were stuck with an Aero course followed by a EE course the next hour. We consistently walked into the EE course about ten minutes late, and the instructor believed it was intentional. Explanations about classes at the airport didn't do enough to smooth ruffled feathers, but a call from the AAE School did help calm the instructor enough so that we were not all given reduced grades for poor attendance.

So many times I was picked up by one of my classmates while walking along State Street. I can remember Air Force Major Penn picking me up because his station wagon had nylon tires and the static build-up was heavy so that when I opened the door the charge grounded through me! But I was so happy to get the ride I never said anything. I think he could read my eyes though because I was always fearful about touching the door handle. So, a large thanks to those who picked-up their fellow classmates.

A large number of this class had Associate Professor Bob Robison as their teacher in Aerodynamics, Internal Aerodynamics, Flight Testing, etc., and enjoyed his sense of humor, his patience and his willingness to go the extra mile to put across the concept of air movement.

Thank you for the opportunity to put down some of the many things that I remember about our class.

Bob Rodgers, BS '50

.....I think I can let this one go because the statue of limitation just ran out on it.

During my junior year, we were required to take a compressible fluids along with the lab. The lab was great because, for the most part, it was done without supervision of the TAs! In one of the experiments, we were supposed to insert test objects into the supersonic wind tunnel and take pictures of the expansion and compression waves coming off the test bodies. My friend Mike Eckstein and I decided that an actual body might be more fun—a Han Solo action figure. Never was there a more interesting picture during that lab than that of Han Solo doing Mach 2 with a shock wave coming off his forehead and an expansion wave across his rear.

Don Bremer, BS '94

Roger Chaffee, B.S. and I were classmates and close friends in 1955-57 (Purdue's Chaffee Hall is named after him). We studied together often and partied some, too. After graduation, we both went to California to work for Douglas Aircraft in Santa Monica. Roger only worked the Summer of 1957 and then left for Navy pilot training to get married to Martha Horn (Purdue Homecoming Queen from Oklahoma City).

In 1964, Roger was at AFIT at Wright-Patterson AFB, Ohio, studying for a masters degree when he was selected as an astronaut. I was a civilian with the Air Force Flight Dynamics Lab at the time and was working on my Ph.D. at Ohio State. I joined Purdue's AAE faculty in 1967, the same year Roger, Gus Grissom, and Ed White (a next door neighbor at Wright-Patterson) were killed in the Apollo I fire. I knew Roger would make a good fighter pilot and astronaut; he was smart and loved to have a good time.

I still miss him.

Dr. Robert Swaim, BS '57, MS '59, (PhD '66, Ohio State)
Purdue Faculty Member from 1967-1978
Associate Dean and Professor Emeritus, College of Engineering Architecture, and Technology, Oklahoma State University

During the early days of the Aero school there was some tension between the Power Plant option with "Piston Joe' Liston and the Structures option with Professor Elmer Bruhn. Professor Sorenson from the Civil school was helping with Structure courses during World War II. He was sometimes referred to as "Smiling Phil" because he was so serious in getting as much accuracy as possible from the magnifier on his slide rule.

Students involved in this mix were Bob Bateman, who became a top executive with Boeing; Tom Parsons, a brilliant student and my room mate at the time; and Bill Sanker.

Vernon L. Arne, BS '47

Flo *"Power Plant Option"* Cain

Flo "Power Plant Option" (Klatt) Cain earned her bachelor's degree in 1951 from the School of Aeronautics, making her the first female to graduate in Power Plant option from the School. We chatted with Flo and her husband Richard, ME '50, at the January, Long Beach, California AAE alumni reception.

According to Flo, who describes herself as a Stone Age relic, "My professors were Joe Liston and Dr. Zucrow, among others. There were two required summer courses at that time, most shop courses were on campus—aircraft welding, foundry, and sheet metal—and the jet engine class, which was out at the airport. We disassembled a jet and put it back together."

Flo retired in 1988 after a 37 year career in engineering, with most of her career spent at Lockheed Missile Division and Rockwell Strategic Systems Division. She worked on hydraulic design and layout, structural analysis, was a liaison and reliability engineer, and a logistics supervisor. At the end of her career she was a project engineer in the nuclear effects department—the Minuteman Missile gamma testing.

Some of the honors and commendations Flo received during her engineering career include a NASA Commendation for work on the first space shuttle; recognition in 1971 as one of 32 Outstanding American Women from the American Mother's Committee; and listed in the International Two Thousand Women of Achievement, Who's Who in American Women, and the National Register of Who's Who.

Florine Klatt Cain was the first woman to graduate in Power Plant Option.

Not bad for the first in her high school to be allowed in machine shop—which "required a letter from my parents verifying my sincerity regarding engineering. See what I mean about the Stone Age?"

Belcher Leads EAAB

Bradley D. Belcher, BS '82, is the 1998 President of the Engineering Alumni Association Board (EAAB). Belcher, who has served on the Board since 1989, will lead an organization which represents more than 60,000 Purdue engineers worldwide.

According to Belcher, "The purpose of the EAAB is to establish and maintain goodwill between the University and it's engineering alumni, faculty, and students. Fundamentally, the association promotes the many benefits of engineering higher education."

Belcher, an IPT Leader at Allison Advanced Development Company in Indianapolis, is responsible for managing the design, fabrication, instrumentation, and testing of the mechanical systems for the LiftFan™ propulsion system for STOVL operation of the Lockheed Martin X-35 Joint Strike Fighter concept demonstrator aircraft. He has worked for the past 16 years in the area of fabrication, instrumentation, and testing of developmental gas turbine engines.

A charter member of the School's Industrial Advisory Council, Belcher is an Associate Fellow of the American Institute of Aeronautics and Astronautics, and was co-recipient of the 1994 *Aviation Week & Space Technology* Laurels Award for Aeronautics/Propulsion as a part of the ATEGG XTC-16/1 team. He is also the chairman for the AIAA Air-Breathing Propulsion Technical Committee.

We Remember

The following alumni have been reported to the School as deceased. Our heartfelt sympathy and prayers go out to their family and friends.

James L. Carnes, BS '49
David N. Fleek, BS '45
Henry C. Gordon, BS '50
Earl J. Holzhauer, BS '47, BS '48
Elwood F. McGuire, BS '46
Robert M. O'Mahoney, BS '48
Richard Phillip Peticolas, BS '49
Jerry D. Pierick, BS '60, MSIA '61
Robert Everett Smith, BS '52
Wilbur Allen Spraker, BS '46, BS '47, MS '48

Lost Alumni

We do not have accurate addresses or phone numbers on the alumni listed below. If you know their correct addres or phone number, please forward the information to: *aae-alumni@ecn.purdue.edu*, or to the School at 1282 Grissom Hall, W. Lafayette, IN 47907-1282. Alumni graduating before 1978 appeared in prior issues of Aero**GRAM**. Thank you for your assistance!

BS '79
Mostafa Pourmand
James Vanek
Michelle West

MS '79
Pui Leung

BS '80
John Bauer
Gary Cain
David Richards
Kenneth Smolana

MS '80
Steve Dimitriadis

PHD '80
Li Ko Chang

BS '81
Peter Clarke
Thomas Lewis

MS '81
Athanasios Asteriadis

PHD '82
Toshiaki Tsuchiya

BS '83
David Baker
Jerald Greenblatt
Eric Nottorf
Michael Wilson

MS '83
Simon Bourne
Rosemary Ryan

PHD '83
Carleton Moore

BS '84
J. Privette

PHD '84
Peter Pollock
Pin-Jar Yuan

BS '85
Kevin Edenborough
Douglas Hale
Chukwuemeka Ikenze
Scott McNabb
Michael Padgett
Nathan Pemberton
Ricky Theriault

MS '85
Adrian Morrison

BS '86
Sharon Gregory
Robert Sharp
Barry White

PHD '86
Alexander Chen

BS '87
Robert Bovard
David Crawford
John D'Angelo
Jeffrey Granger
William Johnson
Michael Moore

MS '87
Dennis Cox

PHD '87
Shu-Gong Zhou

BS '88
Ahmad Hindawi

BS '89
Brock Alston
David Dippon
James Gausling
Aminuddin Ghazali

MS '89
Anthony Butler
Heejun Kim

PHD '89
Dzu Le

BS '90
Lisa Busse

PHD '90
Ching-Chywan Hwang
Kwang Yoon

BS '91
David Alspach
Philip Gnadinger
Thomas Runge
Cari Shepherd

MS '91
Cesar Enrico Santana

PHD '91
Steven Gordon
Wei-Chong Liao

BS '92
Michael Abbott
Brian Sandys

MS '92
Patrick Bosler

PHD '92
Minzhu Liu

BS '93
Bertram Hodge
Erik Nelson

PHD '93
Jordi Puig-Suari
Shan-Min Swei

BS '94
Tobey Yeiter

MS '94
Keith Coste

PHD '94
Seungbae Park

PHD '95
Pradipta Moulik

MS '96
Ah-Hock Law

Kolonay Wins Foulois Award

Dr. Raymond M. Kolonay, Ph.D. '96, is the recipient of the 1997 United States Air Force Foulois Award. According to the Air Force, Dr. Kolonay was nominated because of his "outstanding contributions to aircraft design in the transonic regime by developing an optimization technique that incorporates transonic flutter constraints in the design of the aircraft structures. He has developed a computationally efficient method for predicting transonic flutter, and through a semi-analytical design sensitivity calculation, has made it feasible to incorporate transonic flutter into multidisciplinary optimization." While a student at the School, Professor Henry Yang served as Dr. Kolonay's major professor.

Upcoming Events

GALA WEEK 1998

Come join the AAE Professors and Staff for an informal breakfast, Saturday, April 25th, from 9 a.m. to 10:30 a.m. in Grissom Hall 390. Tours of laboratories also available. Congratulations to the classes of 1948 and 1973, who are celebrating the 50th and 25th anniversaries of their college graduations! For more information about Gala Week, call (765) 494-9124 or e-mail: *aae-alumni@ecn.purdue.edu.*

April 23, 1-3 p.m.

Campus Retirement Reception for Professor Gustafson
Anniversary Drawing Room, Purdue Memorial Union

April 24, 1:30 p.m.-2:30 p.m.

1998 Distinguished Engineering Alumni Convocation
Fowler Hall, Stewart Center

April 25, 9-10:30 a.m.

Gala Weekend "Breakfast With the AAE Professors"
Grissom Hall, Room 390

April 25, 6:30-9:00 p.m.

Retirement Dinner for Professor Gustafson
Radisson Inn, Lafayette (Reservations Required)

May 17

AAE Graduation Reception,
Immediately following 2:30 p.m. ceremonies
Grissom Hall, Room 390

CLASS NOTES

We welcome you to read below in our *Class Notes* section to find out what is happening in the lives of your fellow alumni and friends. If space permits, we try our best to publish any short update you send us. (However, we do not publish engagements and divorces and possibly other miscellaneous tidbits.) To submit information for the Summer 1998 issue of Aero**Gram**, please complete a *Class Notes* information update form, located on page 12, and send it to the School address, attention Aero**Gram**, or e-mail to: *aae-alumni@ecn.purdue.edu*.

1940's

Rudolph F. Dufka, BS '46 - Retired Staff Systems Engineer after 43 year employment with former Martin-Marietta Corp.

1950's

Godofredo V. Cirineo, Jr., MS '56 - Retired Propulsion Specialist after 37 year employment with Boeing Commercial Airplane Group.

Robert R. Rodgers, BS '50 - Retired from Naval Air Warfare Center 8/93 and has been learning about computers the hard way ever since that time! Attended his son's (Bruce) U.S. Navy retirement ceremony on the Wasp 9/93.

1960's

William G. Holder, BS '60 - Retired U.S. Air Force Aerospace Supervisory Engineer. He is an active free-lance writer and has written books on the B-2 bomber, F/A-18 fighter, aircraft prototypes, and vertical flight characteristics.

G. Tom McKane, Jr., BS '66 - Appointed Sr. Vice President of Emerson Electric Co. and Chairman and CEO of EGS Elecrical Group.

William J. O'Neil, BS '61- NASA Jet Propulsion Laboratory Galileo Team received the 1997 AIAA Space Operations and Support Award.

David O. Swain, BS '64 - Named ISDS Executive Vice President, Phantom Works, Boeing Airplane Company, St. Louis, MO.

Wayne Willich, BS '60 - Retired executive from Boeing is now the Director of Manufacturing for Clear Medical.

1970's

Michael J. Corso, BS '71, JD '74 - Managing Partner, Henderson, Franklin, Starnes & Holt, P.A. Law Firm, Ft. Myers, FL. Practice includes defense of design professionals in malpractice lawsuits.

Gregory J. Harbaugh, BS '78 - Promoted to Manager, EVA Project Office; Continues his Astronaut affiliation, NASA, Houston, TX.

John L. Hudson, MS '73 - Colonel, USAF; Assigned to Pentagon 8/97, Office of the Under Secretary of Defense for Acquisition and Technology.

Ross M. Jones, BS '75 - Has recently been leading study of a new mission, MUSES-C, in collaboration with Japanese Space Agency ISAS, NASA's Jet Propulsion Laboratory. Received MS from MIT.

James W. Livingston, Jr., BS '78 - Retired from US Air Force; currently Senior Engineer, Space Applications Corporation, Santa Ana, CA.

1980's

Paul T. Connolly, BS '87 - Senior Analytical Engineer, Math Modeling and Test Data Analysis in support of RD-180 Liquid Rocket Program, Pratt & Whitney, West Palm Beach, FL.

Edward L. Haletky, BS '88 - President, AstroArch Consulting, Inc., Austin, TX.

Elliott David Keen, BS '86 - HVAC Software Engineer, Delco Electronics Corporation, Kokomo, IN.

Hilary G. Knight, BS '82 - Senior Aircraft Configuration Designer, Boeing Phantom Works, St. Louis, MO. Son, Robert William, born January 18, 1997.

Steven M. Marsh, BS '85, MS '88 - Trajectory Analyst and Day-of-Launch Winds Monitoring System Operator, Titan IV Program, Lockheed Martin Corp.

James A. Passman, BS '87 - Principle Engineer/Scientist, Space Shuttle Solid Rocket Motor Program, Thiokol Corp.

William R. Patton, BS '85 - LCDR, U.S. Navy. Graduated from U.S. Naval Test Pilot School 12/96 and is now a project test pilot for the Joint Primary Aircraft Training System (JPATS), the S-3B and ES-3A Test Team, and the T-34 Test Team.

1990's

Francisco J. Andolz, BS '93 - Systems Engineer-Launch Integration for Lunar Prospector, Lockheed Martin Missiles & Space, CA. Travelled to Cape Canaveral in January 1998 for launch.

Markus B. Heinimann, BS '92, MS '94 - Recently completed his PhD at the School and is now a Fatigue and Damage Tolerance Engineer, Product Support Group, Cessna Aircraft Company, Wichita, KS.

Peter Laing, MS '93 - Sr. Design Engineer, Military Team of the Gas Turbine Fuel Systems Division, Parker Hannifin Corp.

Robert W. McCracken, BS '94 - 1st Lt. U.S. Marine Corps; Completed first stage of naval flight training; going to Meridian, MS or Kingsville, TX for jet training.

Kent W. McKesson, BS '91 - Manufacturing Engineer, Guidance Control Systems, AlliedSignal Aerospace.

Brett Newman, PhD '92 - is an Assistant Professor of Aerospace Engineering at Old Dominion University.

John C. Peeples, BS '95 - Engineer at Boeing in Seattle, WA.

Gregory E. Wood, BS '92 - Captain, USAF, Launch Controller, Delta II Rocket Program, Cape Canaveral, AFS, FL. Unit is tasked with satellite and vehicle integration plus launch of all Global Positioning System satellites on board the Delta II booster. Earned a MS in Space Operations, 12/96, Air Force Institute of Technology.

Contact Us!

As an alumna or alumnus of our School, you are our best ambassador. If you know of someone interested in earning an undergraduate or graduate degree in aeronautical and astronautical engineering, we want to know!

Please encourage them to contact us at:
Counseling Office, School of Aeronautics & Astronautics
Purdue University, 1282 Grissom Hall
West Lafayette, IN 47907-1282
(765) 494-5152.

Bridges Returns as "Old Master"

Major General Roy D. Bridges, Jr., right, shown here with Professor Sullivan, was invited back to campus last fall as a Purdue University Old Master. The Old Masters Program's goal is to invite successful alumni to share their tips on success with the student body. Bridges, who served as a NASA astronaut in 1985, was named in March 1997 to head the NASA John F. Kennedy Space Center.

Second Annual Fall Space Day

by Lillie Fisher

Above: Astronaut Harbaugh

Left: Aspiring young astronauts use candy to construct a Mars Rover.

NASA Astronaut and Purdue graduate Greg Harbaugh, BS '78, encouraged more than two hundred aspiring young astronauts to follow their dreams during his opening remarks at the Second Annual Fall Space Day, held on November 1, 1997. The participants, school children in grades three through eight, attended the all day workshop which was organized by Students for the Exploration and Development of Space (SEDS), American Institute of Aeronautics and Astronautics (AIAA), and Purdue Student Engineering Council (PESC). More than seventy teachers and parents accompanied the students.

When Professor John Sullivan, Head of the School of Aeronautics and Astronautics, asked the students at the opening session, "How many of you want to go to Mars?," most were eager to blast off!

The event offered interactive workshops designed to help students learn more about careers in the field of space exploration. The principles of flight were learned in the rocketry session by testing model rockets; School participants discovered what comets are made of as they mixed dirt and dry ice together to form miniature comets; and using candy for building materials, they designed their own edible Mars Rover.

At the end of the workshop, a grade school student asked Astronaut Harbaugh, "Do astronauts dream in space?" No doubt two hundred future astronauts left Fall Space Day dreaming of their first flight.

A Fall Space Day Web Page has been established to offer continued information for students and teachers: *http://aae.www.ecn.purdue.edu/~aiaa/aiaa.html*. The site includes the activities and lesson plans from the workshop and photographs of the activities.

The Fall Space Day was sponsored by AlliedSignal, Inc., NASA Indiana Space Grant Consortium, United Technologies Corporation, and the School of Aeronautics and Astronautics, in addition to many local businesses and companies.

Fall Space Day Student Committee members included Mike Burke, Cassandra Forthofer, Kim Hay, Alicia Howard, Matt Lowrey, Cindy Mahler, Greg Roth, and Sherri Spreadbury.

Design Winners

With gratitude to Thiokol for their sponsorship, the following students were winners in the Spring 1997 design competitions:

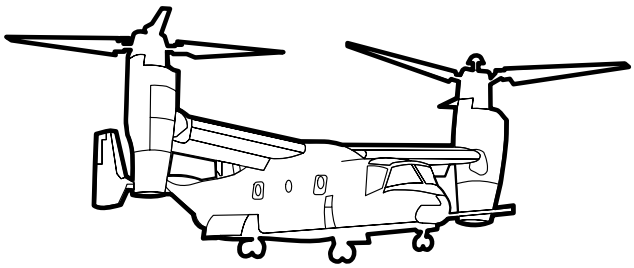
Sophomore Design Class 251

Michael Harmon
David Johnson
Aimee Pilacik
Audrey Powers
Michael Troup
Christopher Wright

Senior Design Class 451

John Jameson
Russell Kiser
Jason Myers
Matthew Starr

Students Receive Awards



Kerrie Benish received the Society of Women Engineers Judith Resnik Memorial Scholarship for the 1997-98 academic year.

Brandon Robertson was awarded a NASA Johnson Space Center Co-op Achievement Award for recognition of outstanding achievement.

Dave McKinley became a Mercury Scholar when he was awarded the 1998 Astronaut Scholarship Foundation Award. The foundation was established in 1984 by the six then-surviving members of America's original Mercury Seven astronauts and Mrs. Betty Grissom, widow of the seventh, together with William Douglas, MD, The Project Mercury flight surgeon, and Henri Landwirth, a long-time friend of the astronauts. The $7500 award is based on undergraduates and graduates who have demonstrated mental ability, self-discipline and high creative drive in the science or engineering field.

Dave McKinley, recipient of a 1998 Astronaut Scholarship Foundation Award.

Class Notes Information Update Form

Your friends and former classmates want to know what is happening in your life! Please jot down personal news that you want to appear in the next edition of **Aero**GRAM and forward it to: School of Aeronautics and Astronautics, 1282 Grissom Hall, West Lafayette, IN 47907-1282, or send us e-mail at: http://www.aae-alumni@ecn.purdue.edu

aer•o•gram (âr/ə gram/), n. an airmail letter.

A newsletter published twice a year for the alumni and friends of the School of Aeronautics & Astronautics. Please send inquiries to Nan Ross at:

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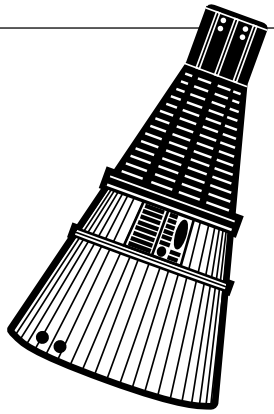

Faculty Roster

Professors
M. J. Corless
J. F. Doyle
T. N. Farris
A. E. Frazho
A. F. Grandt
W. A. Gustafson, Associate Head
K. C. Howell
J. P. Sullivan, Head
C. T. Sun
T. A. Weisshaar
M. H. Williams

Associate Professors
D. Andrisani
G. A. Blaisdell
S. H. Collicott
H. D. Espinosa
S. D. Heister
J. M. Longuski
A. S. Lyrintzis
M. A. Rotea
S. P. Schneider

Assistant Professor
W. A. Crossley

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