Research focuses on aircraft safety

Even as security measures internationally endeavor to prevent terrorists from smuggling explosives onto aircraft, Dr. Roger Veldman '89 of the engineering faculty is conducting research he hopes will make a difference if the unthinkable does happen.

Dr. Veldman, an associate professor of engineering, is engaged in a multi-year, ongoing research effort to help aircraft better withstand internal explosions. His work has recently received funding from the Science and Technology Directorate of the Department of Homeland Security, the third in a series of federal grants in support of his work in the wake of the 9-11 attacks in 2001.

"The idea is, how can you make aircraft structures more robust if something does make it through the security system," he said.

"It's a continuation of the research I've been doing the past several years, this time looking at protective lining materials to better protect the structure," he said. "Can you come up with a material that's lightweight but still gives you the performance in energy absorption that you're looking for?"

Dr. Veldman, who has taught at Hope since 1998, has been investigating "aircraft hardening" since he was a doctoral student at Western Michigan University in the mid-1990s. His interest in the topic began while he was still an undergraduate, when a few days before Christmas in 1988 a bomb destroyed Pan Am Flight 103 over Lockerbie, Scotland. The loss of life moved him.

Dr. Veldman's research involves both conducting tests with explosives under controlled conditions at Batelle Memorial Institute's laboratories in Columbus, Ohio, and developing and evaluating computer models of the same situations.

The models, he noted, are an important complement to the testing. If models can be developed that accurately reflect the actual events, tests could ultimately be conducted more cheaply and quickly via computer.

Dr. Veldman's research has progressed through the years from exploring how simple sheets of aircraft aluminum react; to testing assemblies of sheeting and framework; to its current emphasis on determining lining materials that could absorb and deflect a blast near an aircraft's outer skin. He tested some such materials this summer, such as a honeycomb-shaped aluminum composite, work that will continue with the latest support.

As is the norm with faculty at Hope, Dr. Veldman pursues his research collaboratively with Hope undergraduates—in his case, typically a team of three students. Senior Becky Lathrop of Gladwin, Mich., has been working with the project since her sophomore year, in keeping with her interest in mechanical engineering. Involved initially in testing materials, she has more recently focused on the computer modeling.

She's appreciated the lessons she's learned for herself even while trying to find answers to scientific investigations of obvious relevance.

"Research has just been great for me," said Lathrop, who is completing her final two years at Hope as a Clare Boothe Luce Scholar, an award given to four female students majoring in the physical sciences at Hope through a grant to the college from the Henry Luce Foundation Inc. of New York City.

Research by Dr. Roger Veldman '89 into how to help aircraft better withstand internal explosions has received a series of federal grants since the 9-11 attacks in 2001. Above, Dr. Veldman, center, and student researcher Becky Lathrop show some of the materials they have tested to Congressman Pete Hoekstra '75 while he pays a visit to campus.

"It's really let me look into things outside of the classroom" she said of her research experience. "I've been through the entire experimental process that allows us to find answers and to adjust when what we find doesn't fit what we were expecting."

She has also appreciated the faculty mentoring that has been a part of the process. "It's been great to have an advisor who I also work with," she said.

Plus, the experience has illuminated her career choice.

"It also helps me to see which areas of research or engineering that I might be interested in. That's been really helpful," said Lathrop, who is interested in attending graduate school in mechanical or structural engineering. "I really enjoy what I have been doing, so that's definitely encouraged me to stick with it."

Biologist wins national award

Dr. Donald Cronkite of the biology faculty has received national recognition from the National Association of Biology Teachers (NABT).

Dr. Cronkite received the NABT's "Evolution Education Award," presented in recognition of "innovative classroom teaching and community education efforts to promote the accurate understanding of biological evolution." He was honored during NABT's National Professional Development Conference, held in Albuquerque, N.M., on Wednesday-Saturday, Oct. 11-14.

Dr. Cronkite teaches about evolution in a variety of the college's courses, including an advanced course specifically on evolutionary biology. He has also published several essays on evolution, and addresses the topic as a speaker in the Holland area, leading workshops for or presenting lectures to a variety of church and community groups about the issue of evolution. "What I'm up to is trying to find ways of reconciling the different points of view, and you have to talk to people to do that," he said.

Dr. Donald Cronkite

Long-time colleague Dr. Christopher Barney, who wrote a letter of recommendation in support of Dr. Cronkite's nomination for the award, praised Cronkite for his broad outreach as an educator.

"Through his courses at Hope College, his presentations to both the public and scientists, and through his writing, Don has helped many people to a deeper understanding of evolution and to an appreciation of the importance of the theory of evolution in explaining the origins and connectedness of all life on earth," said Dr. Barney, who is the T. Elliott Weier Professor of Biology. "Don's work in this area makes him an outstanding choice for the award."

Dr. Cronkite has received multiple national awards in recognition of his work as an educator, including from the NABT, which presented him with its "Four-Year College Biology Teaching Award" in 1995. In March of 2005, he was named the 2005 "College Teacher of the Year" by the Michigan Science Teachers Association. In 1991, he was one of only 700 faculty members recognized nationally with a 1990-91 Sears-Roebuck Foundation Teaching Excellence and Campus Leadership Award.

He has also received recognition from the campus community. In 1988, he was named a co-recipient of the college's Hope Outstanding Professor Educator (H.O.P.E.) Award by the senior class and served as Commencement speaker.

Dr. Cronkite, a full professor of biology and a member of the Hope faculty since 1978, is a specialist in genetics. In addition to evolutionary biology, his teaching interests include introductory biology, embryology, cell biology, genetics, the history of biology, and science and human values.

His publications include *A Problem-Based Guide to Basic Genetics*, currently in its fourth edition. He is currently a member of a multidisciplinary committee formed by the National Council of Churches to lead the U.S. ecumenical community's work over the next two years on issues of human genetic technology. For several years, he was moderator of the Christian Action Commission of the Reformed Church in America, the college's parent denomination.

Dr. Cronkite was academic director for the Woodrow Wilson National Fellowship Foundation National Leadership Institute for High School Biology Teachers from 1991 to 1997, and is profiled on the foundation's Web site concerning his involvement in the program. He has been a science curriculum consultant to 21 different colleges. With help from the National Science Foundation, he has been involved in forming high school-college partnerships to enhance science education at the secondary level. He has been active on campus in presenting workshops for his colleagues regarding the appropriate use of technology in teaching.

He also directed pre-college outreach programs at Hope which were funded by the Howard Hughes Medical Institute, including a sixth/seventh-grade science recreation program, a seventh/eighth-grade science demonstrators program and a ninth/10th-grade research club.