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Awards and Recognition, Iowa Academy of Science, 2001

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AWARDS AND RECOGNITION IOWA ACADEMY OF SCIENCE 2001

DISTINGUISHED IOWA SCIENCE TEACHING

Paul L Garvin

Dr. Paul Garvin enters his fourth decade in the Department of Geology at Cornell College and continues to inspire undergraduate students with his energy and enthusiasm for teaching and geology. He has fostered numerous undergraduate research projects and internships and developed innovative and highly successful courses for both geology majors and non-majors. Dr. Garvin has shown great foresight and adaptability to change in science education pedagogy. Hired by Cornell College before involvement of undergraduates in research was recognized as an essential component of undergraduate science education, he recognized the potential education impact of student research projects shortly after he arrived. In addition, Dr. Garvin incorporated inquiry-based learning experiences in courses and at all levels of the undergraduate curriculum. For his advanced classes in mineralogy and petrology, such implementation required the preparation and funding of several NSF grant proposals. The "teaching lab" pedagogical approach has not been restricted to upper level courses. Dr. Garvin developed Investigations in Geology, an introductory course restricted to freshmen, in which students identify the type, origin, and mode of transport and deposition of rocks from a local gravel quarry. This class, tremendously successful at developing students' appreciation for research methodologies, critical thinking, and field laboratory analytical techniques, has produced many Cornell geology majors.

In 1978, Cornell College changed its curriculum delivery system from traditional semesters to the One-At-A-Time or Block Plan, under which students take, and faculty teach, one course per month. For laboratory courses in the sciences, a typical schedule requires meeting every day for two to three hours. Teaching successful classes in a setting of total immersion requires energy, ingenuity, imagination, and willingness to constantly adapt the timing and content of the course material. Dr. Garvin viewed the change in the academic calendar as an opportunity. Rather than attempting to simply compress his courses into the new format, he completely reorganized them and developed a new one, the Investigations course.

Dr. Garvin has been exposing geology students to computer applications for several decades. To prepare Cornell College students for career opportunities, he began to teach himself the fundamentals of GIS in 1996. Since that time he has developed an adjunct course, open to students from virtually all disciplines. He has secured funding for additional computer hardware and software to support the program, organized and taught GIS seminars, and presented student co-authored GIS-based research at a regional meeting of the Geological Society of America.

One of Dr. Garvin's gifts is his ability to make hard work fun and to inspire his class to commit to solving problems. He is a model for science teaching in the 21st century.

DISTINGUISHED SERVICE AWARD

Wayne I. Anderson

Dr. Wayne I. Anderson recently retired from the University of Northern Iowa after 37 years in the Department of Earth Science. During this time he had a tremendous influence on a large number

of students in regard to their decisions to enter the field of geology or earth science. It is not uncommon to hear geologists or earth scientists who today are employed in academia or industry and who started their academic programs at UNI, state that it was because of the influence of Wayne Anderson that they entered the discipline. Dr. Anderson's love of the "field" is evident in his willingness to give of his time during weekends and vacations to organize and conduct field studies with his students.

Dr. Anderson served the Department of Earth Science (which he helped to establish) at UNI for 25 years as its Head. He has been active in a number of professional societies, serving as president of the National Association of Geology Teachers (twice), the Geological Society of Iowa (three times), the UNI Sigma Xi Chapter (twice), and the Iowa Academy of Science. He also served as Chair of the North-Central Section of the Paleontological Society. He has received numerous nominations for superior teaching by students and administration in the College of Natural Science at UNI. Perhaps one of the greatest forms of recognition is that Dr. Anderson has a microfossil named in his honor, in recognition of his work in his area of expertise.

Dr. Anderson's service to the scientific community in Iowa is especially noted in his book, *IOWA'S GEOLOGICAL PAST Three Billion Years of Change*. He is a well-recognized authority on the geology of Iowa. Dr. Anderson has written numerous articles for field trip guidebooks and led or co-led field trips for the Tri-State Geological Field Conference, the Geological Society of Iowa, the Iowa Natural History Association, and the Geological Society of America. He has also participated in presenting on a regular basis at Geological Society of America meetings, Geological Society of Iowa events, and Iowa Academy of Science Annual Meetings. Dr. Anderson leads by quiet example, often influencing people without their realizing it.

DISTINGUISHED IOWA SCIENCE TEACHING

Mark Schneider

Dr. Mark Schneider has been a member of the Physics Department at Grinnell College since 1987 and chair twice, most recently since 1998. Dr. Schneider's research interests include nuclear and medical physics. In response to demonstrable under-representation of women and U.S. citizen minority students in the natural sciences, he began to devise alternative teaching methods in the late 1980's. Dr. Schneider decided to employ the pioneering work of Priscilla Laws of Dickinson College in devising a new workshop as a way of making a student's first exposure to a college science course less a barrier to be hurdled and more a taste of how scientists actually work. From this came the New Science Project at Grinnell College with Dr. Schneider as its Director. The project has been jointly funded by NSF, the Lilly Endowment, and the GTE Foundation.

Emphasizing learning by discovery and a group workshop model rather than the traditional lecture model, the New Science Project has three components. First, entering students from under-represented groups are invited to a pre-orientation week to familiarize themselves with the campus, provide some hands-on science experience, and build a support network among their peers. A Science and Mathematics Learning Center has been established to support all Grinnell College students wanting guidance and help in any science or math course. This has proved integral to the success of the

New Science Project. The final component has been to invite the involvement of the students, who are in the introductory physics course, in ongoing faculty research. Students who have an opportunity to participate in actual research early in their studies not only learn about physics but actually do physics.

The most visible effect on students has been a significant increase in the number of women who become physics majors. During an eight-year period prior to the New Science Project, the average number of male physics majors was 10 and that of females was 1. At present, the majority of physics majors in the class of 2002 are female. Meanwhile, the total number of male students has remained stable. The number of U.S. minority students, not of Asian descent, who have become physics majors has increased from an average of one major every five years to one major every year. Also, Dr. Schneider's teaching methods are now being adopted by other science faculty members at Grinnell College.

Dr. Mark Schneider is a teacher on many levels, from the directly personal attention given to individual undergraduates, to his teaching in the classroom, his influence in the physics department and the science division at Grinnell College, and finally to the nation at large.

DISTINGUISHED IOWA SCIENTIST

Richard G. Baker

Dr. Richard Baker retired from The University of Iowa in the Department of Geoscience after a thirty year career during which he significantly advanced the understanding of vegetation and climate change in Iowa and across much of the Midwest. He is known internationally for his contributions toward reconstructing past environments in central North America and has published prolifically on a wide range of paleoenvironmental issues, served on a variety of international and national committees, and collaborated with numerous researchers.

Dr. Baker's scientific accomplishments reflect decades of unyielding commitment and hard work. He is author of over 40 peer-reviewed manuscripts in books and journals including *Science*, *Geology*, *Geological Society of America Bulletin*, *Quaternary Research*, *Ecology*, and the *Proceedings of the Iowa Academy of Science* as well as countless abstracts. He has served on several distinguished national and international committees, chaired the advisory panel for the North American Plant Macrofossil Database at the National Geophysical Data Center and is a fellow of both the Iowa Academy of Science and the Geological Society of America.

Aside from publications geared toward the scientific community, Dr. Baker has impacted general audiences through a variety of outreach efforts. He has served as president of the Johnson County Heritage Trust, been a board member of the Iowa Chapter of The Nature Conservancy, been a member of the Louisa County Ecological Advisory Committee and been the manager of three prairie preserves. Since his retirement, Dr. Baker has maintained an energetic research

program, continuing to actively oversee graduate students, write grant proposals, publish papers, and collect data. Only a passionate scientist would spend part of his retirement drilling a 10-meter sediment core by hand in a Kansas marsh—in the winter!

EXCELLENCE IN SCIENCE TEACHING AWARD PHYSICAL SCIENCE CATEGORY

Shannon Harrison McLaughlin

Ms. McLaughlin has educational excellence running in the family—her most important mentor being her father, a school administrator of high standards himself. Shannon has a local/national perspective on teaching physics—serving on a national committee of dedicated physics teachers who lead an innovative approach to physics teaching. She has presented ideas and methods born of broad collaborations at national and local conferences.

As a teacher, Ms. McLaughlin is for students first, physics second at Norwalk High School. She recognizes that communication is paramount in understanding her students' unique needs and her own professional effectiveness. She listens and learns from students how best to approach topics. Ms. McLaughlin's creative teaching techniques in physics model an important aspect of student growth—enhancing their own creativity. One successful approach she uses has students designing roller coasters over the course of physics, applying concepts learned along the way to improve their designs. Shannon devotes herself to improving her teaching and sets high personal goals. She expects (and more importantly, supports) the same of her students.

EXCELLENCE IN SCIENCE TEACHING AWARD EARTH AND ENVIRONMENTAL SCIENCE CATEGORY

Scott R. Schoneberg

Mr. Schoneberg is not only a talented and dedicated science teacher and dynamic member of the faculty at Des Moines Central Campus, but he is also extremely involved in improving science education beyond his own four walls. Scott has made numerous presentations to teacher groups on technology and earth science teaching methods. He is an active member of several organizations that promote science teaching, and he works with other teachers to bring curricular innovation to their own schools.

In the classroom, Mr. Schoneberg believes in every student, varying his teaching techniques like prescriptions for unique student needs. He enacts a team approach between students, their parents, and their teacher. He emphasizes that school is about much more than achieving a grade, but about learning and understanding for future success. An intense project-approach that empowers students to identify and pursue questions highlights Mr. Schoneberg's teaching.