

**ChE** educator

## Robert A. Greenhorn of Purdue

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Do you know any chemical engineer who:

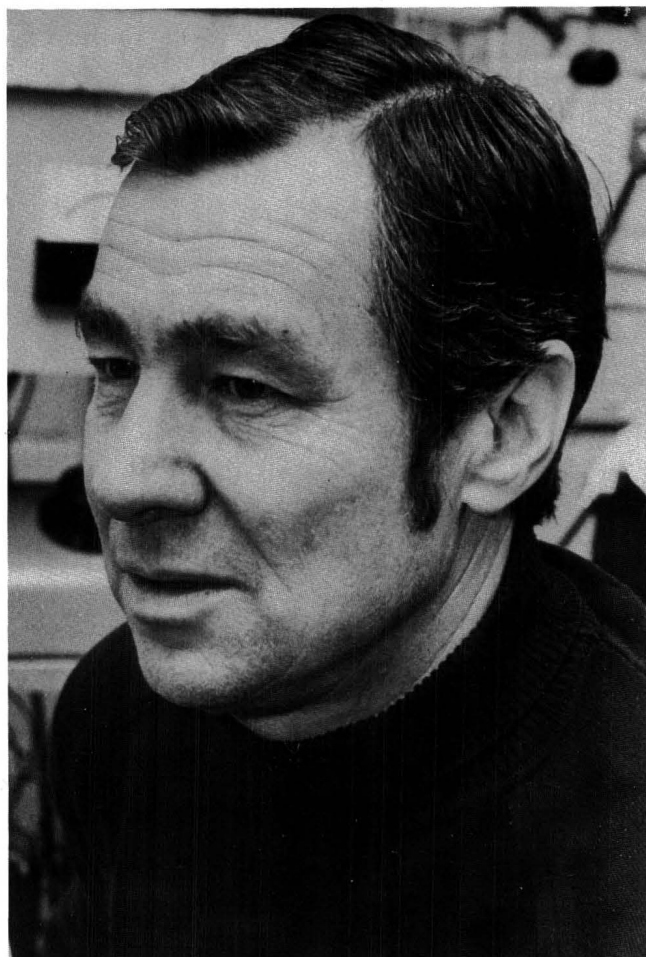
- a) Designed a flying submarine?
- b) Acknowledged in a text gratitude to a snooker table?
- c) Was shot down into the sea in combat?
- d) Painted his garage door in the style of Mondrian?

All of the above describes Bob Greenhorn, professor of chemical engineering at Purdue University.

a) While teaching in the Department of Theoretical and Applied Mechanics at Marquette, he became involved in the design of a flying submarine. (Bob adamantly maintains that it was a sinking airplane he designed, and that his competitors were designing the flying submarine. For those in the audience who are now thinking that it shouldn't be too difficult to design an airplane that will sink—the idea was that it would sink and then fly, not just the reverse.) At any rate, he still has a model of the resulting design. A prototype was never built, but it would have been interesting to see if he would have volunteered as a test pilot.

b) His interest in snooker is as long-standing as Andy Capp's and it led both to an inscribed snooker cue which was presented to him upon his move from industrial to academic life, and to the above mentioned vote of thanks to "Snooker Table Number 4 in the Purdue Billiard Room—where the emotions and frustrations associated with writing the text [*Transfer Operations*] found release."

c) Bob was a pilot in the U.S. Navy during the Korean War, flying P2V Neptune anti-submarine air-



craft from carriers, and was shot down in the China Sea. At the end of his Navy tour he held the DFC and three Air Medals. His interest in flying has remained undiminished, however, and to this day he is an enthusiastic private pilot, holding a commercial license with multi-engine and instrument ratings.

d) It was during his residency in Tulsa that he painted his garage door in the style of Mondrian. The garage door remained a garage door and was never appropriated by any recognized art gallery; however, the design, rotated and made three-dimensional, later appeared on the cover of *Transfer Operations*.

Bob has been associated with chemical engineering at Purdue for twenty years, which is about one-third of the seventy-five years of chemical engineering at our institution. He started as an associate professor (1965), became a professor in 1967, and was head from

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1967 to 1973. He then held various other administrative positions in the university while continuing to teach and do research, and presently is Vice-President and Associate Provost. He directed and influenced the chemical engineering program at Purdue in several major ways, shaping it into what it is today. It is fitting to present a short sketch of him as part of the celebration of the Diamond Jubilee Year of our school, for by knowing him one gains much in knowing chemical engineering at Purdue.

Bob was born in 1928 in Oshkosh, Wisconsin, the second son and youngest child of Frederick and Sophie Greenkorn. Both parents were of vigorous health and lived long and full lives. Bob inherited their health and is an all-around athlete. He probably developed his vigorous style of life early, but we can only go back to his graduate student days, when his style was already developed. Besides his chemical engineering studies and research, he taught theory and operation of computers in the Mathematics Department. He completed his monumental generalized correlation of thermodynamic properties of fluids for his PhD thesis in two years, before meeting the minimum residency requirement. This he did by teaching chemical engineering as an instructor during the third year.

When Bob came to Purdue in 1965, he had already had a successful career in industry at Jersey Production Research in Tulsa and had taught at the University of Tulsa and Marquette University. The five years at Jersey Production Research saw a decisive change in Bob. He launched into transport and flow, made major contributions in porous media flow, and supervised large industrial experimental research. He became firmly established in this area, where he continues to do major work.

Under his direction as head, the School of Chemical Engineering underwent a remarkable expansion of the PhD program, supplementing the strong BS/MS program already in place. Bob conducted a vigorous recruitment program by approaching the best research groups in the country in the areas where he wanted faculty and asking for direct recommendations. In this way he obtained a number of individuals

around whom the greatly strengthened department was built. He developed quality and emphasis on research and graduate education, without sacrificing the large undergraduate program already in place.

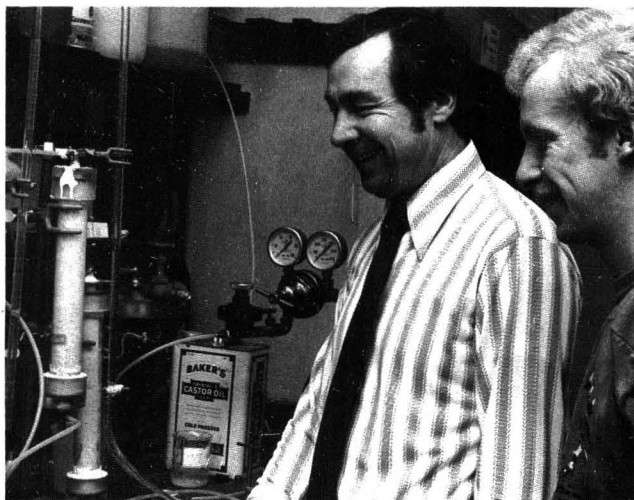
After his tenure as school head, he was asked to join the staff of the dean of engineering in the area of research coordination. His activity in the dean's office saw a remarkable expansion in the quantity of research dollars generated by the schools of engineering (in fact, the research budget for the schools of engineering went from \$5 million to \$22 million annually during this period). His work also improved procedures, making generation and submission of research proposals far easier, and he introduced quantitative models for research and education that were later adopted by a number of other schools on campus.

He served as director of the Institute for Advanced Interdisciplinary Engineering Studies from 1972-1975 while he was also the assistant dean of Engineering for Research as well as associate director of the Engineering Experiment Station. During this period he was called upon to change his chemical engineering orientation to serve as the acting head of Aeronautical & Astronautical Engineering. He has also been active in Purdue's environmental area as director of the Environmental Engineering Center from 1976-1978, following a one-year term as its acting director. From 1976 to 1980 he was Associate Dean of Engineering, Director of the Engineering Experiment Station, and Director of the Coal Research Laboratory.

His outstanding performance in the dean's office brought him to the attention of the upper administration at Purdue, and he was asked to become associate provost and vice-president of the institution. Among his management duties as vice-president is the programmatic responsibility for all funded research at Purdue where current annual research expenditures are over \$80 million. He is the Purdue member of the Indiana University-Purdue University at Indianapolis management team. (About 40% of the teaching responsibility of the 23,000 students at IUPUI are in the Purdue School of Engineering and Technology and

Purdue School of Science.)

Another of his current responsibilities is participation in the business and industrial development of the state. He was a member of the Executive Planning Committee of the Indiana Economic Development Council which wrote the Indiana Strategic Economic Development Plan, "In Step With The Future."



**Greenkorn in the lab.**

He is currently a member of the board of directors of the Indiana Institute for New Business Ventures (IINBV). The IINBV promotes economic development through formation of new business enterprises in Indiana. He is also a member of the board of directors of Bemis Company, Inc., a major packaging company in Fortune's 500, and INventure, Inc., a new technology enterprise development company.

Despite many years of administrative responsibility, Bob's research has continued undiminished. His current research interests include: flow, mass transport, and reaction in spatially variable dispersed media—in porous media and in the atmosphere; equilibrium thermodynamic properties of fluids, and refining of coal. He is also involved in system modeling of the environmental flow of trace elements and simulation of universities.

He is the author of over 120 technical publications and four books, and holds several patents in the area of petroleum production. Bob is a registered professional engineer, a Fellow of the American Institute of Chemical Engineers, and a member of the American Association for the Advancement of Science, American Chemical Society, American Geophysical Union, American Society for Engineering Education, and So-

ciety of Petroleum Engineers of the AIME. He is also a member of the Accreditation Board for Engineering and Technology (ABET) and a Registered Professional Engineer in Oklahoma and Wisconsin.

He has acquitted himself admirably in teaching as well as in research and administration, and has won the Outstanding Teacher in School of Chemical Engineering Award, 1965-1966, and the Tau Beta Pi Outstanding Teacher Award, 1969. He is also the holder of the Shreve Prize for 1971 in the School of Chemical Engineering. He was recognized last year with a Distinguished Service Citation from his alma mater, the University of Wisconsin-Madison.

Bob has long been a sports enthusiast, both as a participant and as a spectator. He was named one of ten members of the Oshkosh High School Hall of Fame in 1984. The mayor of Oshkosh has also presented Bob with the key to the city on his specially named day. From being a competitive swimmer/diver in high school he progressed to track (discus and high-jump), football (running back and kickoff) and basketball (all West Coast Service Team) in the Navy at Pensacola, Seattle, and San Diego.

Until about a year or so ago, he was a regular member of a noon-time group at Lambert Gymnasium that played what was characterized by its members as "basketbrawl." A rag-tag group of assorted former college and professional basketball and football players, faculty members, lawyers, tavernkeepers, insurance salesmen, librarians, and various other geriatric athletes, this organization played enthusiastic basketball each noon (except for the occasional fistfight—there were no referees) for many years.

One group member played four years as a starting forward in Big 10 basketball without an injury—then he joined the basketbrawl group and was immediately incapacitated. The demise of the group was brought about, alas, not by old age or antagonisms, but by the rededication of the space by the university to newer and supposedly nobler purposes. Presently Bob is reduced to jogging for several miles each noon, but remains a faithful attendee at Purdue football and (particularly) basketball games. For outside interests he sings in a choir, plays the classical guitar, and is interested in art, astronomy, and the study of nature.

This has been an article about Bob and his activities, but we cannot close without mentioning the rest of the Greenkorns. Bob and Rosemary Greenkorn have been married for 32 years and have four children: David, Eileen, Nancy, and Susan. Purdue University and the West Lafayette community are fortunate to count them as associates and friends. □