



Paul F. Chenea

PAUL F. CHENEA

1918–1996

BY CHARLES AMANN

DR. PAUL FRANKLIN CHENEA died in Wayne, Maine, on March 25, 1996. During the early part of his career, he gained recognition as a distinguished university educator and administrator, rising to the level of vice-president for academic affairs at Purdue University. He then moved into industry, where he spent thirteen years as vice-president of the General Motors Research Laboratories. He was born in Milton, Oregon, on May 17, 1918.

Dr. Chenea began his college education at the University of California, Berkeley. He graduated in 1940 with a bachelor's degree in civil engineering and became a project engineer with Contractors Pacific Naval Air Bases. His duties involved stress analysis and structural design. On January 17, 1941, he married Katherine L. Bullock.

That same year he joined the U.S. Army as a second lieutenant, serving with the Ordnance Department. His initial assignments placed him on the West Coast and in Alaska. He was later transferred to the office of the Chief of Ordnance in Detroit. He separated from the army in 1946 with the rank of lieutenant colonel.

Upon leaving the army, Dr. Chenea enrolled in graduate school at the University of Michigan. At the same time, he served as a part-time instructor to help the university to cope with a large influx of World War II veterans studying engineering under the GI Bill. He taught courses in statics, dynamics, strength

of materials, fluid mechanics, and vibration analysis. He earned the M.S. degree in engineering mechanics in 1947, followed by a Ph.D. in the same field in 1949. The topic of his doctoral thesis was "The General Theory of a Continuous Medium." He continued at the University of Michigan as an assistant professor and was promoted to associate professor in 1950.

In 1952 Dr. Chenea became a professor of engineering mechanics at Purdue University. From 1953 to 1956 he served as assistant dean of engineering and also head of the division of engineering sciences. In 1956 he was named associate dean of engineering, and the following year accepted the additional assignment of acting head of electrical engineering. During the 1958-1959 academic year, he was the Webster Visiting Professor in the Electrical Engineering Department at the Massachusetts Institute of Technology. Upon his return to Purdue, Dr. Chenea started a two-year assignment as head of the School of Mechanical Engineering, and from 1960 to 1961 served concurrently as head of the Division of Mathematical Sciences.

From 1961 to 1967 Dr. Chenea was vice-president for academic affairs. In that position he was involved in the selection and promotion of faculty, supervised the university libraries, guided the audiovisual center, and oversaw the development of Purdue's microwave television facilities. During the 1962 – 1963 academic year, he was also acting dean of the School of Science, Education and Humanities.

During his years in academia, Dr. Chenea participated on many national committees, often as chairman. Among the organizations he served were the American Society for Engineering Education, the National Science Foundation, the American Society of Civil Engineers, and the National Research Council. He was also a consultant to various government and industrial organizations. He authored or coauthored two books and a number of papers in the fields of engineering mechanics and engineering education. In 1959 he was awarded a patent on a separator for an antifriction bearing.

When Dr. Chenea formally left the academic world in 1967, Purdue President Fred L. Hovde said of him, "During the postwar years, no other individual has served Purdue University with

greater distinction and academic leadership than Dr. Paul Chenea. He goes . . . with the sincere thanks of the entire university constituency for his remarkable ability to generate and guide the process of continuous improvement of every function of this university with which he was directly or indirectly concerned.”

John W. Hicks, executive assistant to the president at Purdue, said, “The best way to get something accomplished was to tell Paul it hadn't been done yet.”

Felix Haas, Purdue's executive vice-president, said of Dr. Chenea, “He had outstanding intellectual qualifications and communications skills, and he understood what makes a university tick.”

Upon leaving Purdue, Dr. Chenea joined the General Motors Research Laboratories at the Corporate Technical Center in Warren, Michigan, as scientific director. In that position he was responsible for technical programs of both the mathematical sciences and the basic and applied sciences groups. In 1969 he rose to the position of vice-president of research, the post he held until his retirement in 1982.

In his first year as vice-president, Dr. Chenea articulated his management style: “Recruit first-rate talent. Indicate the direction you want them to go. Then get out of the way.” That was indeed the way he operated. He was proud of the fact that during his tenure, the population of Ph.D.'s on staff rose from ninety-eight to 344.

During the first year of his vice-presidency, he also said, “General Motors is irrevocably committed to finding solutions to automotive emissions at the earliest possible time. And in seeking solutions we will have no hesitation in using a power source other than the internal combustion engine, if it will meet the needs of our customers, at a price they can pay, and still solve the emission problem.”

Dr. Chenea pursued that promise. Thanks in large measure to his dedicated support, his researchers were able to make significant contributions to the production divisions of the corporation. To satisfy exhaust emissions standards, they provided important inputs on combustion-engine improvements, the ef

fects of fuel and lubricant compositions, the chemistry and physics of the oxidizing catalytic converter, and the next-generation three-way catalytic converter and its essential closed-loop electronic control system. In case such measures should come up short, alternative propulsion systems that avoided the intermittent combustion of the piston engine—such as the gas turbine, the steam engine, and various electric drive systems—were studied. Emissions reactions in the atmosphere, emissions transport, and air quality were studied to ensure that emission control measures were satisfying their intent.

When the 1973 oil embargo occurred, evaluation of alternative fuels was intensified. As fuel-economy standards were promulgated, researchers provided analyses of vehicle energy consumption, a better understanding of aerodynamic drag, and design techniques for reducing vehicle weight. The direct-injection gasoline engine became a subject of intense investigation. When one of GM's divisions embraced the diesel engine as an approach to improved fuel economy, studies of particulate matter and its health effects were undertaken. In addition to these many environment-centered activities, Dr. Chenea ensured that his researchers remained on the forefront in safety, transportation studies, computer technology, and materials.

Dr. Chenea was a good listener. His broad academic background enabled him to follow and evaluate the wide variety of projects being carried out at GM. Whenever possible, he encouraged the use of analytical approaches to problems. Expanded application of finite element analysis and advances in computational fluid dynamics marked his term. Within corporate constraints, he provided researchers with the facilities, instrumentation, and modern equipment needed to finish chosen projects. He strove to transfer fresh research technologies into the production divisions of the corporation as those technologies became ready.

Dr. Chenea served on the board of trustees for Rensselaer Polytechnic Institute, the Thomas Alva Edison Foundation, Hutzel Hospital in Detroit, and the Engineering Society of Detroit. He has been on the board of visitors at the Duke School of Engineering and on visiting committees for the engineering

department at the Massachusetts Institute of Technology, the School of Engineering at Oakland University, the Mechanical Engineering Department at the University of Michigan, the Division of Engineering at the California Institute of Technology, the School of Engineering at Purdue University, the School of Engineering and Applied Science at the University of Virginia, and the School of Civil Engineering at Princeton University. In 1969 Dr. Chenea was elected to the National Academy of Engineering in recognition of his contributions to creative machine and systems design. He served on the Academy's governing council from 1973 to 1975. He was also a member of the American Society of Civil Engineers, the American Institute of Physics, the Society of Automotive Engineers, the American Society for Engineering Education, and the Directors of Industrial Research. He was made an honorary member of the American Society of Mechanical Engineers and a fellow of the American Academy of Arts and Sciences, the Engineering Society of Detroit, and the American Association for the Advancement of Science. He was inducted into Sigma Xi, Tau Beta Pi, Chi Epsilon, Sigma Pi Sigma, and Pi Tau Sigma. He was a registered professional engineer in Michigan and Indiana.

Several honorary degrees were bestowed on Dr. Chenea: Sc.D. from Rose Hulman Institute, D.Eng. from Purdue University, D.Eng. Science from Tri-State College, D.H.L. from Clarkson College of Engineering, and D.Eng. from Drexel University. He received an Outstanding Achievement Award from the University of Michigan, a Distinguished Professional Achievement Award from the College of Engineering at that university, and was named a Distinguished Engineering Alumnus by the Alumni Society at the University of California, Berkeley.

Dr. Chenea was an avid reader and maintained a large home library. He and Mrs. Chenea were world travelers. As a wood-working hobbyist, he had a well-equipped home workshop. He also kept a collection of guns. He was an enthusiastic hunter of gamebirds. On occasion, guests at the Chenea home were treated to a meal featuring the fruits of his marksmanship.

When Dr. Chenea retired in 1982, Alex Mair, GM's vice-president in charge of the technical staffs, said, "Probably the most

significant technical advances that occurred during Paul's period were the highly successful use of catalysts and electronic engine controls to reduce exhaust emissions . . . (and) computerized methods for predicting and optimizing structural integrity and crashworthiness of GM vehicles.”

According to William G. Agnew, who served under Dr. Chenea as technical director, he brought excellent balance to his job, “bringing together a perfect blend of academic, scientific, and practical experience.”

Upon retirement, Dr. Chenea announced his intent to move to the Southwest. There, he said with characteristic humor, he wanted to “fish the streams empty and decimate the quail.” He and Mrs. Chenea built a new home on the edge of a forest near Prescott, Arizona. Mrs. Chenea died in 1992. Dr. Chenea finished his days in Maine. At the time of his death, he was survived by a daughter, Susanne Williams, of Northport, Michigan; a son, Paul, Jr., of Wayne, Maine; six grandchildren and two great-grandchildren.

