The 1997 Charles Stark Draper Prize

The Charles Stark Draper Prize was established in 1988 as a memorial tribute to Dr. Charles Stark Draper, "father of inertial navigation." Instituted by the National Academy of Engineering with funding provided by Draper Laboratory, the prize honors innovative engineering achievement and its reduction to practice in ways that have contributed to human welfare and freedom. Awarded biennially, the Draper Prize consists of a cash award of approximately $450,000 and a gold medal.

The Nomination Process

Nominations of candidates for the Draper Prize, awarded to living persons from any country, are sought from members and foreign associates of the U.S. National Academy of Engineering, National Academy of Sciences, and Institute of Medicine; members and foreign associates of academies of engineering worldwide; members of recognized U.S. and international societies; and other individuals deemed eligible by the National Academy of Engineering who represent a broad spectrum of engineering disciplines.

For more information on the nomination process, contact the Public Affairs Office at the National Academy of Engineering at (202) 334-1237.

The Draper Prize to be Awarded Annually

Robert Hermann, chairman of the board of Draper Laboratory, announced plans in February 1998 to increase the award endowment so that the Draper Prize can be given annually starting in the year 2000. He said, "Draper Laboratory endowed the Prize in memory of its founder, Dr. Charles Stark Draper. The prize honors particularly those rare individuals who, like Dr. Draper, were able to take an idea, develop it, and put it into practice. It is fitting and appropriate that the Draper Prize double its efforts to recognize outstanding engineering."

NAE President Wm. A. Wulf added, "It is our hope that by awarding the Draper Prize on an annual basis, the NAE can help improve the public's understanding of the role that engineering plays in our daily lives."

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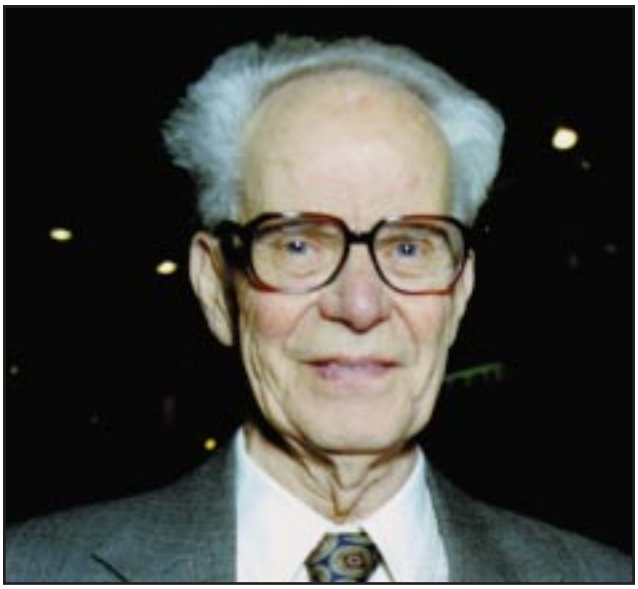

Vladimir Haensel, inventor of "Platforming" -- a revolutionary chemical engineering process essential in producing clean fuel for transportation and in supplying materials for the modern plastics industry -- was named the 1997 recipient of the Charles Stark Draper Prize. The award was presented by the National Academy of Engineering (NAE) at a Department of State Dinner on February 24, 1998. The 1997 Prize carries an honorarium of $450,000, its largest ever.

In the late 1940s, while working for Universal Oil Products Co. (now called UOP) in Des Plaines, Ill., Haensel sought to improve the way crude oil was converted into fuel. At that time, gasoline was produced by the thermal cracking of petroleum over a clay catalyst. This method produced only modest amounts of very low-octane gasoline, an inefficient fuel that caused knocking in high-compression engines and tended to form a gum that plugged them. To improve the effective octane rating of this fuel, lead additives were used. In the basic Platforming patents, Haensel proposed using platinum as a catalyst for the refining process, an idea that experts thought unrealistic for technical reasons and impractical due to the expense and difficulty in obtaining platinum.

In 1947, Haensel developed a simple method that was much more efficient and produced a remarkably higher-grade fuel. His method also produced more gasoline from the same amount of petroleum. Platforming (short for platinum reforming) uses a platinum-based catalyst to efficiently convert petroleum into high-performance, cleaner-burning fuel, eliminating the need to add lead to gasoline and cutting emissions. A gallon of high-octane gasoline produced through the Platforming process provides 35 percent more mileage. The process has reduced this nation's reliance on foreign oil, broadened the world's long-term energy outlook, and saved billions of dollars in transportation costs. The trademarked process also generates large quantities of "aromatic hydrocarbons," which are the raw materials used to manufacture plastics. Previously, the plastics industry relied on the toxic processing of coal tar to obtain aromatic hydrocarbons.

"The Platforming process has touched all of our lives in countless ways," said NAE President Wm. A. Wulf. "Because of Platforming, today's fuel for cars, trucks, and practically all other forms of ground transportation is vastly more efficient, environmentally friendly, and easier and cheaper to produce than anyone thought possible just a few decades ago. And because of Platforming, we can rely on plastic for manufacturing our medical devices, automobiles, synthetics for clothing, and tape for video and audio recording."

"Haensel has created what can only be called a revolution in mobility," said Paul Jennings, chair of the Draper Prize committee and professor of civil engineering and applied mechanics at the California Institute of Technology, Pasadena. "Indeed, the standard of living and safety of people in the United States and throughout the world is highly dependent on individual mobility. Whether it's an ambulance or emergency vehicle responding to a crisis, the continual supply of fresh food to grocery stores, or the ability of people to expand their employment options, the access to efficient personal transportation that Haensel's innovation created is key."

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1995 Draper Prize

The 1995 Draper Prize was awarded to Drs. John Pierce and Harold Rosen for their pioneering inventions in communications satellite technology. In the 1950s while working at Bell Laboratories, Pierce developed theories on passive (reflective) and active (repeater) satellites. Pierce tested his theories of passive satellites with the 1960 launch of the NASA-funded Bell Labs Echo project; in 1962, he and his Bell Labs colleagues launched Telstar I, the first active communications satellite. Rosen made satellite technology commercially viable by enabling satellites to achieve geosynchronous orbit, whereby a satellite orbits at the same speed as the Earth's rotation. This enables the satellite to remain above a particular point on Earth 24 hours a day, making it practical to build fixed ground stations. Rosen's theory of geosynchronous satellites became reality in 1963 with the launch of Syncom II.

1993 Draper Prize

The 1993 Draper Prize honored John Backus for the invention of FORTRAN, the world's first higher-level computer language. Backus began work at IBM in 1950, where within a few years, he and a group of colleagues under his direction developed FORmula TRANslation. The FORTRAN language contained a compiler, or translator, that made computers much easier to use. The compiler converted binary machine language into words, resulting in a computer language that was so easy to understand that nonspecialists could learn and use it.

1991 Draper Prize

The 1991 Draper Prize was awarded to Sir Frank Whittle and Dr. Hans von Ohain for development and reduction to practice of the turbojet engine. Unaware of each other's efforts, von Ohain worked in Germany and Whittle in England during World War II. Whittle's 1928 thesis discussed gas turbines and jet propulsion, and his 1930 patent application outlined the concept of the modern turbojet engine. Delayed by funding difficulties, Whittle got a test model running in 1937; his design's first successful flight was in 1941. Von Ohain was able to quickly get commercial backing for his research, and by 1937 he had successfully tested an engine in his workshop; his design's first successful flight was in 1939.

1989 Draper Prize

The first Draper Prize was awarded to Jack Kilby and Dr. Robert Noyce, who independently of one another invented and developed the monolithic Integrated Circuit (IC). Achieved in the late 1950s, the monolithic IC (semiconductor chip) provided an alternative to using wire and solder to connect transistors, capacitors, and resistors, which had seriously limited the size and capability of previous systems. While at Texas Instruments, Kilby applied ICs for the first time to computers and military technology (the Minuteman missile). He also helped to develop the hand-held, solid-state calculator, and was the inventor of the semiconductor gate array. Noyce cofounded Fairchild Semiconductor in 1957, which provided ICs for the onboard computer of the Gemini space capsule. In 1968, Noyce cofounded Intel Corp. He later became President and CEO of Sematech.