

## Stephen W. Dunwell

*Born April 3, 1913, Kalamazoo, Mich.; died March 21, 1994, Poughkeepsie, N. Y.; IBM engineer primarily responsible for the development of the first supercomputer—STRETCH, IBM-7030.*



*Education:* BS, electrical engineering, Antioch College, Ohio.

*Professional Experience:* IBM Corp., 1933-1976; Lt. Colonel, Army Security Agency, 1941-1945.

*Honors and Awards:* Legion of Merit, 1945; IBM Outstanding Invention Award; IBM fellow, 1966; Computer Pioneer Award, IEEE Computer Society, 1992.

Stephen W. Dunwell was born April 3, 1913 in Kalamazoo, Mich. His first contact with electronics came in 1928, when, while in high school, he designed, built, and operated an amateur radio station. He later attended Antioch College, Ohio, where he majored in electrical engineering. As part of a cooperative program with IBM, he entered the IBM student engineering program for graduate engineers in 1933 in Endicott, N.Y, and joined the company on a full-time basis the following year.

As a demonstration to IBM management of the possibilities for use of electronics in punched-card machines, he designed and built a machine which sorted marked cards. Also during that period, he designed and built the switching device used by Dr. Wallace Eckert of Columbia University for his experiments in the use of punched-card machines for the computation of the lunar orbit. In 1938, Dunwell was transferred to the IBM world headquarters in New York City, where he worked on the specification and design of future IBM products. During World War II he received a direct commission to the Army Security Agency, whose mission was cryptography and code-breaking, using IBM machines with attached relay calculators. He received the Legion of Merit for this work, and returned to IBM at the end of World War II with the rank of Lt. Colonel.

At IBM Poughkeepsie he was involved in the specification and design of a number of calculators, including the IBM-502-A, the 603 and the 604, and the Card-Programmed Calculator, known as the CPC. This was followed by work on the stored-program computers including the IBM-650, the Tape Processing Machine, and the IBM-702 and 705 (commercial data processing machines). Then, in 1958, he became the director of Project STRETCH, the stretching of transistor technology for both commercial and scientific applications. The project had three objectives: (1) provide components for commercial transistorized computers, (2) combine in one machine both scientific and commercial capabilities, and (3) establish the ground rules for the design of future IBM computers. Among the 22 ground rules so established were the 8-bit byte, a standard interface to peripheral equipment, and automatic error correction.

While the IBM-7030 (the actual “STRETCH” Machine) never became a commercial success, the transistors, the circuits, the packaging, the cooling, the design automation system, the diagnostic techniques, and the design ground rules that were developed for the project became the model on which IBM's successful 7080 and 7090 lines were based. Dunwell received an IBM Outstanding Invention Award for patents relating to STRETCH. In 1966 he was made an IBM fellow, giving him the freedom for pursuing any topic of research or development that he was interested in.

Between 1966 and 1976, when he retired from IBM, Dunwell had produced COURSEWRITER, the first time-sharing software marketed by IBM, and led a program which put in place a worldwide computer time-sharing

network offering computer-assisted instruction for the education of IBM field engineering. This network was the basis for the current RETAIN network, which provides for the exchange of engineering information, and the HONE network, which provides for the exchange of sales information.

After retirement, Dunwell and his wife, Julia McClure Dunwell, rescued and, for three years, operated Poughkeepsie's historic Bardavon 1869 Opera House, until it could be turned over to a professional management team. In 1980 they established a computer time-sharing company and laboratory to search for a universal computer language capable of replacing all computer languages now in use. This kept them busy until his death.<sup>1</sup>

## **UPDATES**

Portrait changed (MRW, 2012)

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<sup>1</sup> From the press release for the presentation of the IEEE Computer Society Computer Pioneer Award, 1992.