Thornton Fry and ATT

This file briefly introduces Thornton Fry, emphasizing his contributions to the mathematical community, in general, and, in particular, his important role with the AMS Semicentennial Celebration. The file also describes Bell Laboratories.

Appointed executive secretary of the Committee on the Semicentennial Celebration in July 1935, Fry was charged with “coordinating the activities of the various subcommittees.”¹ A resolution of gratitude to all who participated in preparations for the meeting was enthusiastically adopted by the AMS, and resolved:²

That particular thanks be extended to Dr. Thornton C. Fry … for his able leadership and untiring labors; That particular thanks be extended to the officials of the Bell Telephone Laboratories for their generosity in permitting Dr. Fry to devote part of his time to this task and to draw upon the extensive resources of that organization in many ways.

Thornton Carle Fry (1892-1991) was hired by the Engineering Research Department of Western Electric in 1916. He earned his Ph.D. in mathematics four years later at the University of Wisconsin based on work done at Western Electric on the applicability of asymptotic series that do not necessarily converge. The title of the dissertation, “The application of modern theories of integration to the solution of differential equations;” somewhat hides the major portion of its contents. The work was supervised by Charles S. Slichter. In 1925, the American Telephone & Telegraph Company (AT&T) consolidated with Western Electric Research Laboratories to form Bell Telephone Laboratories, Inc. Fry headed Bell Labs’ small but separate mathematics department. Three years later, he published the book Probability and its Engineering Uses, which contained an original treatment of blocking, queuing, congestion, switching machine models, and quality control in manufacturing. The reputation gained from this book induced MIT to hire Fry to teach a course based on the book.

The main purpose of Bell Labs, as it is generally called, was to design and support the equipment that Western Electric built for the Bell System, especially telephone-exchange switches. Several employees were assigned to carry out unfettered basic research, which was the prize attraction for mathematically trained scientists. At the time of the Semicentennial Celebration, the principal location for Bell Labs was in New York City, but during the 1940s it expanded to other locations across the Hudson River in New Jersey. For mathematicians, the most popular installations were at Murray Hill and Holmdel.
In 2005, Bell Labs vice president for mathematical and algorithmic sciences, Debasis Mitra, delivered a lecture at a conference at the Royal Irish Academy in Dublin on the bicentennial of William Rowan Hamilton’s birth. In his presentation “Industrial mathematics at Bell Labs: Past and present,” Mitra singled out three “luminary Bell Labs mathematicians,”\(^3\) namely Thornton Fry, John Tukey, and Claude Shannon. Fry worked for Bell Labs for 40 years.

Thornton Fry contributed to mainstream mathematics in two ways—helping establish *Mathematical Reviews* in 1939, and writing a notable paper for the *Monthly* on industrial mathematics the next year. In his role as director of the Office of Scientific Research & Development, he was also an important force in applying industrial research to the war effort in World War II. In particular, he played a key role in the development of the M-9 gun director for anti-aircraft fire control, an innovation that greatly helped the U.K. defend against V1 rockets. Fry was awarded the Presidential Certificate of Merit for these contributions in 1948. He retired from Bell Labs eight years later.

**Endnotes:**