EBERHARD HOPF

Eberhard Hopf attended the University of Berlin where he received his PhD in 1925, and his Habilitation in 1929. From 1926 to 1930 he was a member of the Astronomisches Recheninstitut and worked at the Einstein Tower. From 1930 to 1932 he was a Rockefeller Foundation International Fellow, studying at Harvard and Cambridge Universities. He was Assistant Professor of Mathematics at Massachusetts Institute of Technology from 1932 to 1936, and Professor of Mathematics at Leipzig from 1936 to 1944, and at Munich from 1944 to 1947. In 1947, he was appointed to the Courant Institute at New York University as a visiting professor. He joined the mathematics faculty at Indiana University in 1949, and, subsequently achieved the rank of Research Professor in 1962, retiring in 1972 as Research Professor Emeritus. He was an editor of the Indiana University Mathematics Journal from 1951 through 1981. He was a member of the American Mathematical Society, and the Deutsche Mathematiker-Vereinigung, and was also an elected member of the Academies of Sciences of Saxony and Bavaria.

In the course of his career, Eberhard made fundamental contributions in several branches of pure and applied mathematics—most notably in partial differential equations, the calculus of variations, ergodic theory, integral equations, hydrodynamics, and astrophysics. There are few people now working in applied analysis whose work has not been influenced by that of Eberhard. The Hopf Maximum Principle is one of the keystones of the present-day theory of elliptic differential equations. Likewise, his joint work with Norbert Wiener on convolution equations on the half-line initiated several important chapters in the development of operator theory, as well as systems theory, and is today a basic tool in theoretical engineering. Again, his existence theorem for weak solutions of the Navier-Stokes

equations with nonhomogeneous boundary conditions was the breakthrough that initiated a flurry of research on the Navier-Stokes equations in the 1950's, and it remains one of the highlights of that theory. Indeed, his work on turbulence is one of the chief inspirations behind the ongoing effort to create a mathematically sound and physically illuminating theory of turbulence in viscous media.

It should be particularly noted here that Hopf's presence at IU contributed importantly to the healthy interplay between pure mathematics, applied mathematics, and mathematical physics for which this university has been distinguished since the time of Chairman Tracy Thomas, who was, in fact, instrumental in attracting Hopf to Bloomington. In general it may be said that the main thrust of Hopf's work aimed at elucidating the relations between the theories of partial differential equations, differential geometry, and topological dynamics.

Born: Salzberg, Austria April 17, 1902
Died: Bloomington, Indiana July 24, 1983
Years at IU: 1949-1972

See also The Eberhard Hopf Fellowship in Applied Mathematics