Gabriel Kron, 1901–1968

Dr. Gabriel Kron, internationally known engineer, mathematician, and former member of the General Engineering Staff at General Electric, who passed away in Schenectady on March 25, 1968, will long be remembered by the engineering world for his outstanding contributions in the field of non-Euclidean geometry and tensor analysis. He compared in stature to Steinmetz, and his career was highlighted by many significant accomplishments and contributions in the field of electrical engineering.

A native of Hungary, Dr. Kron came to the U. S. in 1921 and worked his way through the University of Michigan in three years to earn his degree in electrical engineering. When he received his citizenship papers in 1926, Dr. Kron set out on foot to circle the globe. It was during the many hours of walking in his two-year trip around the world that he formulated the basis for his theories on the non-Riemannian dynamics of rotating electrical machinery.

Dr. Kron was the author of several books and more than 50 technical papers, and his classic paper entitled, "Non-Riemannian Dynamics of Rotating Electrical Machinery," won for him the Montefiore Prize from the University of Liège, Belgium, and became the basis of his theories covering all types of rotating machines and power systems. The pioneering work of Gabriel Kron demonstrated convincingly the superior organizational powers of the matrix-tensor notation in network theory. Kron emphasized not only the conceptual elegance of this notation but also its virtually automatic way of handling the tedious bookkeeping chores of network analysis. He thereby laid the logical and procedural foundations necessary for programming a digital computer to analyze networks—that is, both to compile and to solve the network equations automatically.

Dr. Kron's work in interconnected power systems led to study of general methods of subdividing large systems for more economical calculation. His work forms the basis for most methods of determining system losses in connection with economic dispatching. This procedure, "Diakoptics," has also found wide use in many other branches of engineering, including structures, aerodynamics, control systems, and nuclear reactors.

Dr. Kron's most recent work, prior to his retirement from General Electric in 1966, was on forecasting and optimizing, which had caused him to investigate the seemingly far-afield subject of n-dimensional networks, which appears destined to become still another promising field for future research.

His influence extended far beyond his extensive writings and his personal assistance to individual engineers; it was felt in the great amount of related research among mathematicians and physicists, as well as among engineers; it had an acknowledged effect on the activities of the Research Association of Applied Geometry of Tokyo; was reflected in the Tensor Club of Great Britain, founded to promote further application of tensor analysis; and it is found in university courses in Network Topology, Energy Conversion, and System Engineering, and in the trend toward the teaching of engineering as a unified discipline.

Dr. Kron's many honors and awards include Doctor of Science, *Honoris Causa*, University of Nottingham, 1961; Montefiore Prize, University of the Liège, Belgium, 1935; Coffin Award, General Electric Company, 1942; Master of Science in Electrical Engineering, Honorary, University of Michigan, 1936; Patron and Honorary Member of the Tensor Club of Great Britain; and Honorary Member, Research Association of Applied Geometry, Tokyo.

Dr. Kron's rare example of imagination, energy, and perserverance in his chosen career, coupled with the fundamental importance of his contributions, places him in the rank of Steinmetz, Fortescue, and Kennelly as a pioneer in the field of electrical engineering.