Frederick Bedell

April 12, 1868 — May 3, 1958

Frederick Bedell's long teaching life of 45 years was given entirely to Cornell University. Beyond that active professional life, he enjoyed a score of years of happy retirement and had passed his ninetieth birthday when a cerebral hemorrhage brought to a close the life of the last surviving member of the group that had guided Cornell's Physics Department through its first decades of significant growth.

Coming to Cornell in 1890, just after graduation from Yale University, Bedell won his advanced degree in Physics in 1892, the very first year that the Ph.D. degree was given in the Physics Department, then developing rapidly under the guidance of Professor E. L. Nichols.

Little is known about his parents and his early life, probably because his innate modesty kept him from talking to his associates about himself. An article about him, written in his most active period (Electrical Review, 1914), tells that he was born in Brooklyn; that his father was an iron manufacturer; that as a boy he lived in Montclair, N. J.; that he took the classical course at Yale, winning honors in Physics and ranking third in his class of 150 men. He referred to his work at Yale in a letter that he wrote only a few years ago expressing his impatience with red tape and administrative routine, which he was happy to have been spared. He said, "I never had knowledge at Yale of any registrar or dean, nor until graduation did I ever know my grade in any class or examination. I only knew that if I failed I would be notified. How very simple.!"

The impulse that brought Bedell to Cornell to study came from his reading a thesis by a Cornell graduate student—he felt that he "wanted to do that kind of work." He came when, as he recently wrote, "the battle between direct and alternating currents in the distribution of electrical power was coming on." He chose that field for his studies, his researches, and his teaching. His title in the Physics Department was Professor of Applied Electricity. The students who elected his course on Alternating Currents or Aerodynamics were drawn from both the Physics Department and the Engineering School, and he was voted, by the Faculty of Mechanical Engineering, a member of that faculty as far as the supervising of graduate work was concerned.

Throughout his whole career at Cornell, Professor Bedell was in close touch with the development of Electrical Engineering in this country. He served as Vice-President of the American Institute of Electrical Engineers in 1917-18, after having served as Manager during 1914-17. He also was a member of many principal committees of the Institute. His most important contributions in Electrical Engineering were in experimental investigations

and theoretical studies in connection with alternating currents. In his first paper before the Institute in 1892, he introduced the use of '*j*' as an operator in the solution of alternating current problems. This and other papers, developing analytical and graphical methods for solving alternating current problems, formed the first systematic treatise in its field. Bedell and Crehore's "Alternating Currents" was an outgrowth of this work and was for many years a standard text on the subject, receiving world-wide circulation in several languages. This book laid the foundation for much that is now basic in curricula in Electrical Engineering, and the principles first enunciated therein have been included in nearly every book on alternating currents that has since appeared.

Bedell wrote two other books on alternating currents: in 1896, "Principles of the Transformer"; later, "Direct and Alternating Current Testing." He presented papers before the Physical Society of London and the British Association for the Advancement of Science, and was a member of international congresses: in Chicago in 1893; and in St. Louis in 1904. In 1942, after his retirement, at the A.I.E.E. convention in Vancouver, he gave a paper on the history of alternating current wave form, just 50 years after the first paper (by Bedell and Crehore) on the same subject before the Institute.

Among the physicists of this country, his name was long associated with "The Physical Review." This journal, originated at Cornell by Professors Nichols and Merritt, was begun in 1892. Bedell, newly appointed Assistant Professor, was at once made a member of the editorial board of the Review and assisted in the preparation of its very first number, issued in 1893. This board of three editors continued to publish the Review for twenty years, with the financial backing of the University; and when the journal was then given to the American Physical Society and made the society's official organ, Bedell continued for another ten years as managing editor.

The use of airplanes in World War I turned Bedell's thought in a new direction. The result: a textbook on "The Airplane and the Principles of Flight" and a lecture course on that subject. Later he made a study of audition, with especial concern over the problems of the deaf. The result: the invention of a "bone conduction" hearing device which, held between the teeth, enabled the deaf to hear their radios.

In his study of alternating current wave forms, working with oscilloscopes, Bedell patented various improvements on the oscilloscope, being the first to stabilize the figures seen on the screen and the first to show several curves simultaneously. His work in this field continued for a number of years after his retirement.

Science could be said to be a part of the Bedell family life. First, Bedell married Mary Crehore, sister of the engineer who was co-author of "Alternating Currents." Of their two daughters Eleanor is the wife of Robert C.

Burt, an engineer in California, while Caroline is a physician and the wife of a physician, Dr. Henry M. Thomas of Baltimore. Professor Bedell is also survived by his second wife, Grace Bedell, who was with him in Pasadena during most of his years of retirement.

Professor Bedell was a quiet, unassuming teacher, warm, receptive, and always ready to listen to a student and to give advice when asked. Toward his associates and friends he displayed a kind thoughtfulness that stemmed from his innate sense of truth and justice. These qualities made him a gracious host in his home and a helpful counselor on matters of concern to the department of which he was for so long an active member.

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