

## THE MATHEMATICAL WORK OF OLIVER DIMON KELLOGG

Oliver Dimon Kellogg was born on July 10, 1878, at Linnwood, Pennsylvania. His untimely death on August 26, 1932, from an unlooked-for heart attack while climbing, came as a heavy blow to all those who were privileged to know him as colleague and friend. His quick, generous nature and unusual charm of personality were united with a versatile and original mind. The full story of Kellogg's many successful efforts to help others would be an extraordinary one, only to be guessed at by those who knew him intimately; and, in order to judge his mathematical achievements, it is necessary not only to consider his published work but to take into account his modesty and his readiness to share nascent ideas with others.

His interest in mathematics was aroused as an undergraduate at Princeton, largely through contact with H. B. Fine and E. O. Lovett. After securing an A.B. degree in 1899 with high honors in mathematics, he stayed on for a year of graduate study as J. S. K. Fellow and obtained an M.A. degree in 1900. His appointment was then extended for a second year, which he spent at the University of Berlin.

At the end of this period Kellogg, eager to engage in serious research, went to Göttingen. Within a few months, Fredholm's preliminary communication *Sur une nouvelle méthode pour la résolution du problème de Dirichlet*, before the Swedish Academy of Sciences, had made known the explicit solution of a large class of linear integral equations. This discovery seemed to promise an answer to all the outstanding linear problems in analysis, such as the Dirichlet problem and the Riemann problem of monodromic groups. However, Fredholm's intention of taking up such applications was never realized because of the extraordinary rapidity and skill with which Hilbert and his students plunged into the field. Thus Kellogg, inspired by the lectures of Hilbert, began to occupy himself with some of the problems suggested, in particular with the Dirichlet problem for plane regions bounded by a finite number of regular curves meeting at "corners," when Fredholm's solution was no longer directly available.

Kellogg's first paper was a note (1)\* in the Göttinger Nachrichten of 1902 in which he provided a direct proof of Fredholm's fundamental inversion formula. His interesting doctoral thesis of the same year, entitled *Zur Theorie der Integralgleichungen und des Dirichlet'schen Prinzips* (2), was written in close connection with Hilbert's lectures and was thought of by Kellogg as containing only a "kleinen Beitrag." After receiving his Ph.D. degree in January, 1903, Kellogg remained in Germany until the fall; in the two following years he was instructor in mathematics at Princeton. During this period he wrote two short papers (4), (5) which were published in the *Mathematische Annalen*. The first of these was in part a "Neubearbeitung" of his dissertation, while the second attempted to solve the monodromic group problem of Riemann along

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\* See (1) of the bibliographical list below. Numbered references are to that list.