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(*b*. Hamilton, Ontario, Canada, 14 May 1863; *d*. Toronto, Canada, 9 August 1932)

mathematics, education.

Fields was the son of John Charles Fields and Harriet Bowes. His father died he was eighteen. Fields matriculated at the University of Toronto in 1880 and received the B.A. in 1884, with a gold medal in mathematics. Johns Hopkins University awarded him a ph.D.in 1887. He was appointed professor of mathematics at Allegheny College in 1889 and resigned in 1892 in order to continue his studies in Europe. The next decade found Fields primarily in Paris and Berlin, where associations with Fuchs, Frobenius, Hensel, Schwarz, and Max Planck contributed to his intellectual growth. In 1902 he was appointed special lecturer at the University of Toronto, where he remained until his death. He was appointed research professor in 1923.

Fields's lifelong interest in algebraic functions is first evident in his papers of 1901-1904. His treatment is completely algebraic, without recourse to geomentric intuition. The Structure has both elegance and generality; its machinery is simple, its parts coordinated.

His involvement in mathematical societies was of an international nature. Fields was elected a fellow of the Royal Society of Canada (1907) and of London (1913). He held various offices in the British and American Associations for the Advancement of Science and the Royal Canadian Institute (of which he was president from 1919 to 1925). He was also a corresponding member of the Russian Academy of Sciences and the Instituto de Coimbra (Portugal). The success of the International Congress of Mathematicians at Toronto in 1924 was due to his untiring efforts as president.

Fields conceived the idea of establishing an international medal for mathematical distinction and provided funds for this purpose in his will. The International Congress of Mathematicians at Zurich in 1932 adopted his proposal, and the Fields Medal was first awarded at the next congress, held at Oslo in 1936.

BIBLIOGRAPHY

I. Orginal Works. Fields's writings include "Symbolic Finite Solutions by Definite Integrals of the Equation $d^m y/dx^n = x^m y$," in *American Journal of Mathematics*,**8** (1886), 178-179, his Ph.D. thesis; and *Theory of the Algebraic Functions of a Complex Variable* (Berlin, 1906), which establishes a general plan for proving the Riemann-Roch theorem. With the assistance of J. Chapelon, Fields edited the *Proceedings* of the 1924 International Congress of Mathematicians (Toronto, 1928).

Fields's papers are held by the Rare Books and Special Collections Department of the University of Toronto. They include reprints of some of his published speeches and papers, as well as notebooks of lectures and seminars that he attended in Berlin. In addition, the collection contains two bound volumes of notes made by students of the lectures of Weierstrass, *Theorie der elliplischen Functionen* (recorded by A.

Darendorff) and *Theorie der hyperelliptischen Functionen*(taken down by an anonymous auditor in the summer semester of 1887).

II. Secondary Literature. J.L. Synge,"Obituary Notice of John Charles Fields," in *Obituary Notices of Fellows of the Royal Society of London*,**2** (1933), 129-135 (with portrait), is quite extensive. It contains a full bibliography of Fields's publications (39 titles) and an analysis of the works by his former pupil and colleague, S. Beatty. It also includes the final form of his theorems leading up to and including the proof of the Riemann-Roch theorem. See also Synge, "John Charles Fields," *in Journal of the London Mathematical Society*,**8** , pt.2 (1933), 153-160. A short statement in *The Royal Canadian Institute Centennial Volume 1849-1949* (Toronto, 1949), William Stewart Wallace, ed., p. 163, gives evidence of Fields's personal dedication to the Royal Canadian Institute.

Henry S. Tropp