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(*b*. Berlin, Germany, 26 October 1849; *d*. Charlottenburg, Berlin, Germany, 3 August 1917)

mathematics.

Frobenius was the son of Christian Ferdinand Frobenius, a parson, and Christiane Elisabeth Friedrich. He attended the Joachimthal Gymnasium in Berlin and then began his mathematical studies at Gottingen in 1867, completing them with a doctorate at Berlin in 1870. In the latter year he taught at the Joachimthal Gymnasium and moved to the Sophienrealschule the following year. In 1874, on the basis of his mathematical papers, Frobenius was appointed assistant professor at the University of Berlin. The next year he was made a full professor at the Eidgenossische Polytechnikum in Zurich. In 1876 he married Auguste Lehmann. Frobenius returned permanently to the University of Berlin in 1892, as professor of mathematics. Important publications led to his election to membership in the Prussian Academy of Sciences at Berlin in 1893.

Frobenius wrote many papers, a number of them of decisive importance. Several were done with other prominent researchers, particularly with Ludwig Stickelberger and Issai Schur.

Frobenius' major achievements were in group theory, which in the 1870's and 1880's, through the joining of its three historical roots—the theory of solutions of algebraic equations (Galois theory, permutation groups), geometry (finite and infinite transformation groups, Lie theory), and number theory (composition of quadratic forms, modules)—produced the concept of the abstract group, the first abstract mathematical structure in the modern sense.

Frobenius, who had become acquainted with the idea of abstract algebra in Berlin, through Leopold Kronecker and Ernst Kummer, made fundamental contributions to the concept of the abstract group in "Ueber Gruppen von vertauschbaren Elementen" (1879), written with Stickelberger, and in "Über endliche Gruppen" (1895). He exerted even greater influence on the development of group theory by means of the theory of finite groups of linear substitutions of *n* variables. This theory, which he and Schur completed in all its essential aspects, was conceived from the beginning as a representation theory of abstract groups. Its nucleus is the theory of group characters. Among the relevant works on this topic are "Über die Gruppencharaktere" (1896), "Über die Darstellung der endlichen Gruppen durch lineare Substitutionen" (1897, 1899), "Über die Komposition der Charaktere einer Gruppe" (1899), and "Über die reellen Darstellungen der endlichen Gruppen" (1906), written with Schur.

The representation theory of finite groups through linear substitutions was later to offer the possibility of surprising and important applications to difficult questions in the theory of finite groups, properly speaking, and, in the 1920's and 1930's, to grouptheory questions in quantum mechanics.

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H. Wussing