

Marius Sophus Lie Biography

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Biography

Marius Sophus Lie was the youngest of many children of a Lutheran pastor. Lie's education was uneventful and though he studied mathematics and science at the University at Christiania (now Oslo) he graduated without having decided what career to pursue. He earned a living tutoring and began to study the works of the French geometer Jean Victor Poncelet (1788-1867) and the German mathematician and physicist Julius Plücker (1801-1868). He was particularly fascinated with geometry along the lines of Plücker's theories. In fact, Lie considered himself to be a student of Plücker although the two never met.

Lie won a scholarship for study abroad in 1869 and journeyed to Berlin, Germany, where he studied with Christian Felix Klein (1849-1925). The friendship between Klein and Lie was subsequently important to the careers of both men as they developed the importance of group theory in geometry. In 1870 Lie worked on the concept of the contact transformation in which there is a correspondence between lines and spheres that satisfies special properties.

Political events surrounding the outbreak of the Franco-Prussian War kept Lie from concentrating on his work. Klein left Paris and Lie decided to hike to Italy. En route, Lie was arrested as a spy and spent a month in prison before being released through the intervention of his Parisian friends. He eventually returned to Norway, where he finally received his Ph.D. Continuing his work on transformation groups, he discovered the famous Lie groups. Not only did his theory show that a majority of the known methods of integration could be introduced all together by means of group theory, his Lie groups later came to play an important role in quantum theory.

Research into the properties and principles of geometry were to occupy Lie throughout his career. In Norway, however, Lie was isolated, and few students were interested in his work. To reintegrate himself into the mainstream of mathematical activity, Lie took on Klein's vacated position in Leipzig, Germany, where the intellectual climate was more favorable. Work came to a stop, however, when Lie suffered a nervous breakdown. He recovered but never fully regained his health. Lie's friends in Norway encouraged him to take another teaching position at the University at Christiania, but the year after he moved back, 1899, he died of pernicious anemia.