## Plenary Lecture JULIUS PETERSEN AND JAMES JOSEPH SYLVESTER - THE EMERGENCE OF GRAPH THEORY

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Mathematics in Denmark was for centuries a rather sad story. Denmark is without world famous people in mathematics, unlike in physics and astronomy with Tycho Brahe, Ole Rømer, H.C. Ørsted and Niels Bohr, to mention the most famous. We would however like to think that things have changed and that mathematics in Denmark now does rather well. This being so, when did it change? It is of course difficult to point to a single year, but if we have to, then a good suggestion would be 1871. That year saw the appointment of two young friends at Copenhagen University and the Polytecnical School, Hjeronymus Georg Zeuthen and Julius Petersen. In their days Zeuthen was the clear number one , but today Petersen is probably the best known of the two. Petersen's claim to fame rests on his development of and contributions to two fields: elementary plane geometry and the theory of graphs.

The story of how the theory of graphs emerged is an interesting piece of history of mathematics, involving James Joseph Sylvester, who visited Sweden and Denmark in 1889. This led to Sylvester's collaboration with Petersen and to Petersen's famous paper "Die Theorie der regulären graphs" in Acta Mathematica in 1891. Petersen used the English word "graph" in his otherwise German language paper, because "graph" is an English word that he learned from its inventor Sylvester (who by the way is also responsible for mathematical words like matrix, discriminant, and many more). The story of Petersen and Sylvester, put into a broad framework, will be the topic of this lecture.