Jensen, Johan Ludvig William Valdemar | Encyclopedia.com

(*b*. Nakskov, Denmark, 8 May 1859; *d* Copenhagen, Denmark, 5 March 1925)

mathematics.

Jensen's career did not follow the usual pattern for a mathematician. He was essentially self-taught and never held an academic position. His father was an educated man of wide cultural interests but unsuccessful in a series of ventures, and pecuniary problems were frequent. At one time the family moved to northern Sweden, where for some years the father managed an estate, and Jensen considered these years the most wonderful of his life. After they returned to Denmark he finished school in Copenhagen and, at the age of seventeen, entered the College of Technology, where he studied mathematics, physics, and chemistry. He soon became absorbed in mathematics and decided to make it his sole study; his first papers date from this time.

In 1881 Jensen's life took an unexpected turn. In order to support himself, he became an assistant at the Copenhagen division of the International Bell Telephone Company, which in 1882 became the Copenhagen Telephone Company. His exceptional gifts and untiring energy soon made Jensen an expert in telephone technique, and in 1890 he was appointed head of the technical department of the company. He held this position until the year before his death. He was extremely exacting, and it was largely through his influence that the Copenhagen Telephone Company reached a high technical level at an early time. He continued his mathematical studies in his spare time and acquired extensive knowledge, in particular, of analysis. Weierstrass was his ideal, and his papers are patterns of exact and concise exposition.

Jensen's most important mathematical contribution is the theorem, named for him, expressing the mean value of the logarithm of the absolute value of a holomorphic function on a circle by means of the distances of the zeros from the center and the value at the center. This was communicated in a letter to Mittag-Leffler, published in *Acta mathematica* in 1899. Jensen thought that by means of this theorem he could prove the Riemann hypothesis on the zeros of the zeta function. This turned out to be an illusion, but in occupying himself with the Riemann hypothesis he was led to interesting results on algebraic equations and, from such results, to generalizations on entire functions.

Another important contribution by Jensen is his study of convex functions and inequalities between mean values, published in *Acta mathematica* in 1906; he showed there that a great many of the classical inequalities can be derived from a general inequality for convex functions. Among other subjects studied by Jensen is the theory of infinite series. In 1891 he published an excellent exposition of the theory of the gamma function, an English translation of which appeared in *Annals of Mathematics* in 1916.

BIBLIOGRAPHY

A list of Jensen's papers is contained in the obituaries mentioned below.

Obituaries by N. E. Nørlund appear in *Oversigt over det K. Danske Videnskabernes Selskabs Forhandlinger Juni 1925- Maj 1926* (1926), pp. 43-51, and in *Matematisk Tidsskrift* B (1926), pp.1-7 (in Danish). see also G. Pólya, "Über die algebraisch-funktionentheoretischen Untersuchungen on J. L. W. V. Jensen," in *Mathematiskfysiske Meddelelser*, VII, 17 (1927), 1-33.

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