

Lindelöf, Ernst Leonhard | Encyclopedia.com

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(*b.* Heisingfors, Sweden [now Helsinki, Finland], 7 March 1870; *d.* Helsinki, 4 June 1946)

mathematics.

Lindelöf was the son of the mathematician Leonard Lorenz Lindelöf, who was a professor in Heisingfors from 1857 to 1874. He studied in Heisingfors from 1887 to 1900, and spent the year 1891 in Stockholm, 1893 and 1894 in Paris, and 1901 in Göttingen. He passed his university examination in 1895 in Heisingfors and then gave courses in mathematics as a docent. In 1902 he became assistant professor and in 1903 full professor of mathematics. From 1907 he belonged to the editorial board of the *Acta Mathematica*, and he was a member of many learned academies and societies. He received honorary doctoral degrees from the Universities of Uppsala, Oslo, and Stockholm, and he was also named honorary professor by the University of Helsinki. He retired in 1938.

At the beginning of his career Lindelöf published a remarkable work on the theory of differential equations, in which he investigated the existence of solutions (“Sur l’intégration de l’équation différentielle de Kummer,” in *Acta Societatis Scientiarum Fennicae*, 19 [1890], 1). He soon turned his attention to function theory, and in this area solved some fundamental problems in the theory of analytic functions. His primary field of interest, however, was in entire functions. He considered the mutual dependency between the growth of the function and the coefficients of the Taylor expansion. He also treated the behavior of analytic functions in the neighborhood of a singular point. The investigations concern questions which arise from Picard’s problem. Together with Phragmén he developed a general principle that he applied to function theory. His works are characterized by clarity and purity of method as well as elegance of form.

Lindelöf’s investigations of analytic continuation with the help of summation formulas had far-reaching results, which are set down in his excellent book *Le calcul des résidus*. In it he examines the role which residue theory (Cauchy) plays in function theory as a means of access to modern analysis. In this endeavor he applies the results of Mittag-Leffler. Moreover, he considers series analogous to the Fourier summation formulas and applications to the gamma function and the Riemann function. In addition, new results concerning the Stirling series and analytic continuation are presented. The book concludes with an asymptotic investigation of series defined by Taylor’s formula. The method of successive correction and the examination of this procedure following the studies of Picard and Schwarz is characteristic of Lindelöf’s work. His last works dealt with conformal mapping.

Lindelöf early abandoned creative scientific research and devoted himself enthusiastically to his duties as a professor; he was always available to researchers and colleagues. He laid the foundations for the study of the history of mathematics in Finland and trained many students. In an interesting festschrift published in honor of Lindelöf’s sixtieth birthday fourteen authors presented papers on function theory, diophantine equations, correlation theory, and [number theory](#).

Lindelöf devoted his last years mainly to publishing textbooks which were noted for their lucidity and comprehensible style. Of his publications, eight deal with the theory of differential equations, twenty-three with function theory, four with the theory of error in harmonic analysis, and five with other fields.

BIBLIOGRAPHY

A listing of Lindelöf’s mathematical works may be found in P. J. Myrberg, “Ernst Lindelöf in memoriam,” in *Acta Mathematica*, 79 (Uppsala, 1947), i-iv. Lindelöf’s major textbooks are *Le calcul des résidus et ses applications à la théorie des fonctions* (Paris, 1905; [New York](#), 1947); *Inledning till högre Analysen* (Stockholm, 1912), translated into Finnish as *Jolulatus korkeamman analyysin* (Helsinki, 1917, new ed., 1956), and German as *Einführung in die höhere Analysis* (Berlin, 1934); *Differentiaal- ja integraalilaskenta ja sen sovellutukset* (“Differential and Integral Calculus and their Application”), 4 vols. (Helsinki, 1920-1946); and *Jolulatus funktioteoriaan* (“Introduction to Function Theory”; Helsinki, 1936).

The festschrift, *Commentationes in honorem Ernesti Leonard! Lindelöf. Die VII Mensis Martii A MCMXXX Sexagenarii*, edited by his students, is in *Suomalaisen tiedeakatemian toimituksia*, ser. A, 32 (Helsinki, 1929).

Herbert Oettel