

Fatigue

4.2 History of discoveries in fatigue

1829	W.A.J. Albert first discusses the phenomenon on observing the <i>failure</i> of conveyor chains in Clausthal coal mines.
1839	The term <i>fatigue</i> becomes current when J.-V. Poncelet describes metals as being <i>tired</i> .
1843	W.J.M. Rankine recognizes the importance of <i>stress concentration</i> in his investigation of railroad axle failures following the Versailles accident.
1859	Sir W. Fairbairn is granted a small sum of money to report to the UK parliament on his work in ascertaining by direct experiment, the effects of continued changes of load upon iron structures and to what extent they could be loaded without danger to their ultimate security.
1860	The first systematic investigation of fatigue life by August Wöhler. Wöhler's study of railroad axles leads him to the idea of a <i>fatigue limit</i> and to propose the use of <i>S-N curves</i> in mechanical design.
1903	Sir J.A. Ewing demonstrates the origin of <i>fatigue failure</i> in microscopic cracks.
1910	O.H. Basquin clarifies the <i>shape</i> of a typical S-N curve.
1939	Invention of the <i>strain gauge</i> at Baldwin-Lima-Hamilton catalyses fatigue research.
1945	A.M. Miner popularizes A. Palmgren's <i>linear damage hypothesis</i> (1924) as a practical design tool.
1954	L.F. Coffin and S.S. Manson explain <i>fatigue crack-growth</i> in terms of plastic strain in the tip of cracks.

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