Extreme Value Theory

- The Extreme Value Theory (EVT) is extensively used for modelling very large and/or very small events.
- Usually the focus of the analysis is the estimation of very extreme quantiles or tail probabilities.
- It is widely used in several areas, such as environment, insurance, weather and hydrology.
- Extreme value theory is important for assessing risk for highly unusual events, such as 100-year floods.
- Several R packages have been developed for fitting models in this framework.

Extreme Value Theory

- The field of extreme value theory was pioneered by Leonard Tippett ($1902 - 1985$).
- Tippett was employed by the British Cotton Industry Research Association, where he worked to make cotton thread stronger. In his studies, he realized that the strength of a thread was controlled by the strength of its weakest fibers.
- With the help of R. A. Fisher, Tippet obtained three asymptotic limits describing the distributions of extremes. The German mathematician Emil Julius Gumbel codified this theory in his 1958 book **Statistics of Extremes**, including the Gumbel distributions that bear his name.

evir: Extreme Values in R

Functions for extreme value theory, which may be divided into the following groups; exploratory data analysis, block maxima, peaks over thresholds (univariate and bivariate), point processes, gev/gpd distributions.

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