The present needs the past to shape the future. As in many areas of life, heat treatments used in the past have to be studied to understand the present. The resulting conclusions can be used to shape the future. But how did heat treatment develop into a key branch of the economy in spite of its initial inadequacies? This question is the subject of this book, written by Professor Emeritus Dr.-Ing. Hans Berns and published by Härterei Gerster AG. It begins with the production of sponge iron in a bloomery hearth during the pre-Christian era and its subsequent carburisation as an essential requirement for hardening. During the Modern Period, in contrast, the high carbon content of the crude iron had to be painstakingly reduced to a level that allowed forging and hardening. The invention of mild steel in 1856 brought alloyed steels that could be hardened with thicker cross-sections, thus laying the foundations for modern hardening techniques. Härterei Gerster AG, a family business, has become the leading Swiss specialist for technical heat treatments mainly due to ongoing development cooperation with a number of academic institutions. Various development projects established a friendly relationship between Härterei Gerster AG and Prof. Hans Berns.

The History of Hardening

The author, Prof. Emeritus Dr.-Ing. Hans Berns, born 1935, completed his study of ferrous metallurgy and then worked in the stainless steel industry from 1959 to 1979. He received a doctorate in 1964 from the Technische Hochschule Aachen and his habilitation in 1974 from the Technische Universität Berlin. From 1979 to 2000, he held the Chair of Materials Technology at the Ruhr-Universität Bochum.