

Preface

Having been left to their own geological devices for the past 1860 million years the rocks and ores of Central Sweden were, after a short skirmish with stone age man (evidenced by flint implements north of Hällefors), the object of an intensive assault by the mining industry, starting in the sixteenth Century and continuing with varying degrees of enthusiasm and success until the present day. The high-tech approach of those early days – cheap labour, primitive working conditions and brute force – gradually became replaced by the automation and cost effective mining of modern Sweden. The region still retains the old mining name of Bergslagen, which encompasses the ore-bearing part of the 1.9–1.86 Ga Svecofennian of Central Sweden.

As is often the case, geoscience trundles along in the wake of industrial requirements. Early mine maps, drawn up by engineers rather than geologists, distinguished only ore, limestone, skarn, and leptite (felsic metavolcanite), as well as granite and diabase. Regional mapping started in the 1870s, and together with ore geology investigations, continued into the 1940s. This period produced several Scandinavian geological classics, including those written by Igelström, Törnebohm, Tegengren, Sundius, Geijer and Magnusson.

Dutch involvement in Sweden has a long history. The first Dutch Invasion founded the city of Gothenburg (1550), thus contributing to the establishment of modern Sweden. The second Dutch Invasion commenced in 1974, led by Professor I.S. Oen of the Geological Institute, University of Amsterdam, whose numerous MSc students and staff began a mapping and research project in Bergslagen. From the outset the project group had close links with the Swedish Geological Survey (SGU), whose geologists were also engaged in a large scale remapping of Bergslagen. In the following years a good working relationship and exchange of information was established, not only between Amsterdam and the SGU, but also with other Swedish research institutes and non-Scandinavians working in Bergslagen.

This special volume, dedicated to Professor I.S. Oen, celebrates this successful international scientific co-operation with nearly 30 contributions on various aspects of Bergslagen geology. The section on regional geology, stratigraphy and geochemistry includes papers dealing with the still controversial geotectonic setting and evolution of Bergslagen and Central Sweden, the implications of metamorphic and lithological variations across Central Sweden, descriptions of the volcano-sedimentary stratigraphy, and the geochemistry of the felsic rocks which form more than 90% of the region.

The section on ore geology, alteration and ore-forming processes contains a number of case histories of volcano-sedimentary Pb-Zn, Fe-Mn or epigenetic polymetallic mineralizations. Several papers deal with the petrography, mineralogy, geochemistry and thermodynamics of alteration processes which operated in the felsic metavolcanics underlying the mineralizations. One paper compares and contrasts Bergslagen with Broken Hill, Australia, while another looks at the tungsten mineralizations of Yxsjöberg and Sandudden in the light of a new classification of stratabound W-deposits. Two papers deal with Ni-Cu mineralizations in Bergslagen. A section of shorter scientific communications presents the first occurrence of stromatolites from Grythyttan, Raman probe data from a quartz sample from the Saxberget mineralization, and a summary of the INAA technique used to supply many Amsterdam researchers with analytical data.

This special volume, focusing on Bergslagen geology, is the Amsterdam contribution to IGCP Project 247 (Precambrian ore deposits and tectonics).

*Geological Museum
University of Amsterdam
Nieuwe Prinsengracht 130
1018 VZ Amsterdam
The Netherlands*

James H. Baker & Rob H. Hellingwerf