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On common ground in Scandinavia

Chris Stillman

The Caledonide Orogen — Scandinavia and Related Areas. Edited by D.G. Gee and B.A. Sturt. Wiley:1986. Two volumes, pp.1,266. £150, \$214.50.

LIKE most scientists, geologists work within a paradigm, and their main paradigm for the past quarter-century has unquestionably been the theory of plate tectonics. One of the fundamental concepts of this theory involves the formation of orogens — mountain belts — by the spreading and closing of ocean basins. The Caledonide Orogen evolved through the Palaeozoic period by the movements of North American, Baltic and European continents around a proto-Atlantic ocean; a full understanding of its development thus requires correlation of the rock units and their history throughout these extensive and now widely separated regions.

The decade 1974–1984 saw the flowering of one of the International Geological Correlation Programme's most successful ventures. This was Project 27, "The Caledonide Orogen", the objective of which was to establish a geological frame of reference for the whole orogen by encouraging researchers to get together and pool their knowledge. A series of annual meetings was arranged in each of the participating countries in turn, at which all concerned could meet, compare notes, deliver papers and visit the actual geological locations. In August 1981, Uppsala was the venue for the meeting at which the Scandinavian Caledonides were displayed, and the papers read there form the basis for this beautifully presented two-volume work.

This is a fine example of the bookmaker's art — a lavish production, with excellent illustrations and extremely useful maps (the best being a 1:2,000,000 tectono-stratigraphic map of the Scandinavian Caledonides) — but its main value lies in the fact that it is the first major compilation of modern work on the Scandinavian Caledonides to become widely accessible. Rocks belonging to this orogen dominate Norway and much of Sweden; traditionally, the view taken on their geological history was determined by the perspective from either side of the national boundary (a point effectively made by the cartoon from 1896 illustrating the nappe controversy, here used to preface the section on regional geology). Until recently, publication in national and local journals tended to perpetuate the differences, hence the need for a comprehensive, integrated review. It is our good fortune that the review arose from an international

meeting, the proceedings of which could be published in clear English and made widely available to geologists throughout the world. We are doubly fortunate in that the editors represent both traditions; they have succeeded in pulling together a stylistically uniform and coherent review, and have produced a major step forward in Scandinavian geology.

Nevertheless, for all that the two volumes are a thorough and accurate reflection of how things stood in 1981, time has moved on. The whole style of approach to the problem has begun to change. Even before the publication of these books, awareness was growing of the logical improbability of achieving the orogen-wide correlation that was the *raison d'être* of the Project. Many now favour a way forward by applying terrane analysis, a strong hint of which is given in a short contribution by Duncan Keppie entitled "The Appalachian Collage". This, perhaps, increases the value of the books — in a subject which changes its ground rules so frequently, it is often difficult to achieve a correct perspective for judging the publications of previous years, but through the consistency of direction applied by the editors this compilation has a built-in spirit level.

The volumes are properly focused on Scandinavia, with 62 contributions dealing with the geology of the Scandinavian Caledonides, but the regional context is not forgotten and 22 other papers add wider-ranging though not particularly representative reviews. Indeed, while Greenland and Britain are obviously related areas, the addition of Sardinia, Kazakhstan and Mongolia is bizarre. The main body of the Scandinavian contributions is arranged with regional reviews followed by sets of papers on stratigraphy, structure, igneous rocks and metamorphism, each with introductory chapters. A final section includes various interpretations of the general tectonic evolution of the mountain belt. The reader wishing to obtain an overview need do little more than read the regional reviews and the introductory contributions to the subsequent sections. For the specialist, there is ample material in many of the individual papers, which are not just bare outlines of conclusions but properly present the supporting data. Access to the contents is greatly facilitated by the excellent subject index.

Those wondering whether or not to purchase this work should bear in mind that although the cost is great, so are the rewards. The coverage is high and wide, and the books themselves are handsome. Geologists around the world can learn much from them, and they may yet provide the seed for many more ideas on Caledonide orogenesis. □

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