PREFACE

It has been now forty years since D.S. Coombs first defined and described the main characteristics of very low-grade burial metamorphism, opening a totally new field of research in metamorphic petrology.

To obtain a proper status, the new concept of a nondeformative, low-grade metamorphism, essentially characterized by mineralogical changes, had to fight numerous battles. Semantic, firstly, to mark its frontiers with alteration and diagenesis; conceptual, on the other hand, to convince those who refused to classify undeformed rocks as metamorphic or to demonstrate the others that most phenomena once explained by the existence of particular magmas, or attributed to late magmatic reactions, could be satisfactorily interpreted as the result of very low-grade metamorphism. The exclusive identification of metamorphism with deformation processes taking place at depth in mountain belts such as the Alps or the Himalayas was, and still is, deeply rooted in most minds.

In the last decade widespread and intense research on different expressions of very low-grade metamorphism has been carried out in many geological terrains. This research has afforded detailed mineralogical and chemical information essential for the interpretation of these terrains in terms of their thermodynamic control and their geodynamic evolution. Moreover, the role of the different physical and chemical parameters intervening in very low-grade metamorphism has been re-appraised and the criteria to evaluate and to test equilibrium largely discussed. The close link between rock composition and metamorphic mineralogy has also been established and several petrogenetic grids based on multicomponent systems and thermodynamic calculations have been proposed to define the P-T fields of the different facies of very low-grade metamorphism. In the last few years the application of modelling programmes supported by thermodynamic databases has given a major impulse in the quantification of the intensive parameters characterizing the different mineral associations and metamorphic facies.

The link between very low-grade metamorphism and geodynamics has been revealed in various regions, notably in New Zealand, the Andes and the Welsh Basin. Models have been presented in which the metamorphism develops as a result of enhanced thermal gradients generated by extensional processes accompanied by upwelling of mantle material.

The International Geological Correlation Project (IGCP) 294 'Very Low Grade Metamorphism', developed between 1989 and 1993, opened the possibility for a fruitful cooperation among different groups working on this subject around the world and represented a milestone in the evolution of this discipline. In this volume of the Revista Geológica de Chile a selection of the contributions to the International Symposium of the IGCP Project 294 held in Santiago de Chile in November 1993, is presented.

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