ISSN: 0378-102X
www.ucm.es\JIG

Journal of Iberian Geology 30 (2004) 5-6

Journal of Iberian Geology
AN INTERNATIONAL PUBLICATION OF EARTH SCIENCES

Foreword

Prólogo

C. Casquet

Dpto. Petrología, Universidad Complutense de Madrid 28040 Madrid, Spain (casquet@geo.ucm.es)

The term Ossa-Morena Zone was coined by the German geologist Franz Lotze in 1945 to refer to one of the geological regions into which he subdivided the Iberian Variscan basement. This division was based on stratigraphic, palaeontological and palaeogeographic evidence and has successfully persisted with only minor modifications. The Ossa-Morena Zone extends in a NW-SE direction from southern Portugal into south western Spain and is bounded on its SW side by the South Portuguese Zone and on the NE side by a Central Iberian Zone which combines Lotze´s East Lusitanian – Alcudian and Galaico – Castilian zones.

Despite its good accessibility and the fact that it has been the site of major mining activity since Neolithic times, the region never received as much attention as other sections of the Iberian massif as, for instance, the northwest of Spain. Much of the work carried out until the late 1970s addressed ore-forming processes and mining exploration, as well as regional stratigraphic, palaeontological and structural aspects, quite often in the context of doctoral theses presented at Spanish universities and abroad. However, the complexities of this fairly large area, and the paucity of reliable geochronological and geophysical data, have hindered a full understanding of the region, which still awaits much detailed and regional surveying.

In the early 1980s, a first synthesis was published in a book dedicated to the memory of Professor José María Rios. This book, which was sponsored by the Spanish Comisión Nacional de Geología and published in 1983 by the Instituto Geológico y Minero de España (Geological Survey of Spain) constituted a landmark. Remarkably, the book included for the first time plate tectonics concepts for an understanding of the pre-Alpine geological evolution of the Iberian massif. The prevailing model at the time was that of a Variscan fold belt resulting from continental collision, and preceded, in the case of the Ossa-Morena Zone, by northeastward subduction of the South Portuguese Zone.

Quality mapping of large regions of the Ossa-Morena Zone began to be available in the 1980s as a result both of the progress of the MAGNA project for the 1:50,000 geological mapping of Spain, which was coordinated by the Instituto Geológico y Minero de España, and the surveying of the Portuguese part by the Serviços Geológicos of Portugal. Furthermore, detailed works on igneous petrology, geochronology, structural geology, palaeontology and stratigraphy were published in those years, particularly by researchers in Spanish and Portuguese universities. At the end of the decade, an image had emerged of the Ossa-Morena Zone as a complex mobile belt resulting from rejuvenation of a late Proterozoic – early Cambrian "Cadomian" orogen, during the late Palaeozoic "Variscan" Orogeny, with a notable extensional passive margin phase in between. These findings were reviewed in a book on the Pre-Mesozoic Geology of Iberia coordinated by Professors David Dallmeyer and Enrique Martinez (1990). The book was a second landmark in the geological knowledge of the Ossa-Morena Zone and became the basis for further research in the 1990s. The poly-orogenic character of the Ossa Morena seemed to explain successfully the diversity of magmatic rocks encountered as well as the variety of palaeogeographic environments inferred from the stratigraphic and palaeontological evidence.

In the 1990s and early 2000s, much work focused on specific topics and considerable new information became

available, including geochronological and geophysical data. The terrane concept was applied to the Ossa-Morena Zone for the first time and in consequence the problem of the true location, and kinematic significance of its boundaries, became the central point of debate, particularly with reference to the controversial northeastern boundary. Both Los Pedroches batholith and the Tomar-Badajoz-Córdoba shear zone are being investigated with regard to this boundary. In the south, the Acebuches ophiolite allegedly represents the suture between the Ossa-Morena Zone and the still enigmatic South Portuguese terrane, which is host to the well-known Iberian Pyrite Belt. Moreover, whether or not the Ossa-Morena Zone constitutes a sigle terrane or it is to be regarded as a composite terrane with strike-slip faults separating smaller continental blocks is another open question. The timing and form of accretion of the Ossa Morena terrane to the mainland Central Iberia Zone is discussed in different ways by the different authors. A controversy has arisen as to whether the accretion took place as a part of the Cadomian cycle with a later reactivation of the suture during the Variscan orogeny, or if it is purely Variscan in age. In connection with the latter controversy is the problem of the transition from the Cadomian to the Variscan cycles, still subject to much debate and for which both absolute dating of early Palaeozoic igneous and metamorphic rocks and stratigraphical and palaeontological evidence from passive margin strata are providing noteworthy new evidence. Structural and geophysical works are contributing to the unravelling of the kinematics and deep structure of the mobile belt. Particularly relevant is the recent IBERSEIS deep seismic reflection profile, which reveals the internal geometry of the Variscan orogen and raises many new questions as to the exact location of the terrane boundaries and the significance of a mid-crustal enigmatic reflective body underneath the entire Ossa-Morena Zone. The metallogeny of the Ossa-Morena Zone, which has been the subject of local intepretations may now be viewed in terms of a unified Variscan model in which transpressional deformation during oblique accretion of the South Portuguese Zone is regarded as playing a significant role in creating structures suitable for large fluid flow and magma emplacement.

This volumen is addressed to show the most up-to-date geological knowledge of this area at this time, just past the turn of the century. The contributions are intended to transmit both new facts and current theories. It is hoped that this thematic volume will constitute another landmark for the geological knowledge of the highly interesting and intriguing Ossa-Morena Zone.

Madrid, February 2004