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European Coal Geology and Technology

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Preface

Despite the major reduction in the coal mining industry that has taken place in Europe over the last decade, most European countries remain strongly dependent on utilizing coal for both power production and in the steel industry. There is an increasing tendency to import cheaper coal from sources outside Europe and this trend is likely to continue and even expand. However, the need to use indigenous coal is essential and by improving knowledge of coal geology and technology, more efficient and competitive use of existing proven and indicated reserves will be possible.

This volume contains some 40 papers describing new research into coal geology and coal technology. These have been grouped into five sections dealing with separate aspects of the subject, so that related papers are placed together in the volume. However, some important coal basins have been researched by several different techniques, and papers on these topics have been included in the appropriate different sections. For example, the Upper Silesian basin, one of the most important Upper Palaeozoic coal basins in Europe, is covered by six papers in four of the sections of the volume. Similarly, the North Bohemian lignite basin is described in four papers placed in four different sections.

Coal deposits from twelve countries are covered in the volume, with the majority of papers (34) covering deposits in Central and Eastern Europe. Nevertheless, the geology and technology described, despite having a geographical bias, is of general applicability. The deposits together with the associated concepts and methods may not be well known in the west so that the papers and included references should provide an invaluable data source. Thus the volume can be seen as a companion volume to *European Coal Geology* (Whateley & Spears 1995) which concentrated on coal deposits in western Europe. The present volume also describes new and important research in western Europe, updating the coal geology provided in the earlier volume.

Section One includes 11 papers describing **regional coal reserves, coal basin tectonics and stratigraphy**. The regions covered include Bulgaria, the Czech Republic, Romania, Sardinia, Siberia, and Turkey. Amongst these interesting accounts are a paper by the late **Professor Otto Kumpera**, which relates the coal accumulation in the Upper Silesian basin to processes related to foreland basin tectonics, and a paper by **Krs *et al.*** documents the waning effects of the Variscan orogeny in the Bohemian Massif by a detailed study of palaeomagnetism. **Dreesen *et al.*** describe an unusual coal basin in Sardinia in which coal forming environments are closely associated with carbonates and evaporites. The section also contains an important paper by **Pesek & Dopita** discussing the present and future energy requirements and associated environmental issues of the Czech republic, as an example of one of the developing eastern European countries.

Section Two covers various aspects of **coal petrology and palaeontology** in seven papers. These include papers describing unusual variations of coal rank with depth in Moravia (**Dvorak *et al.***) where coals remain at relatively low rank despite being buried beneath the Carpathian thrust sheets, and in South Wales (**Gayer *et al.***), where high levels of heat flow and reversals in rank increase with depth are attributed to fluid flow within the basin. Other authors describe the results of various analytical approaches to the study of coal petrology, including solid state ^{13}C NMR studies of fusinites (**Premovic *et al.***), Mössbauer spectroscopy of low rank coal lithotypes (**Kostova *et al.***), and biochemical analysis of lignite (**Stefanova & Magnier**).

Section Three deals with **mineral matter in coal and the environment**. The six papers include the sulphur contents of Pakistan coals (**Baqri**), of Yugoslavian lignites

(**Jankes *et al.***) and of a multi bed coal in the UK (**Cavender & Spears**). **Bouska *et al.*** discuss the sulphur isotopic composition of North Bohemian lignites and **Premovic *et al.*** present the results of vanadium analysis in Kentucky coals.

Section Four contains five papers concerned with **mining geophysics**. These include well logging techniques applied to the North Bohemian lignite basin (**Mach**) and the use of a deep gamma spectrometer (**Gregor & Tezky**). Seismic monitoring for rock bursts (**Holub**) and mining induced seismicity (**Kalab**) are two aspects of seismic investigation covered in the section.

The final **Section Five** includes papers describing **coal technology and coalbed methane**. Liquefaction is discussed in two papers; one by **Aleksic *et al.*** using direct hydrogenation of low rank coals and the other describing experiments on beneficiated coal fractions (**Barraza *et al.***). Desulfurization is also covered in two papers; one by **Asmatulu *et al.*** and the other by **Whateley *et al.***, both dealing with unusual techniques to treat high sulphur Turkish coals. Gassification and coalbed methane generation from mines is covered by **Douchanov & Minkova**, **Gryzbek *et al.*** and **Holub *et al.***, whilst **Boardman & Rippon** present an analysis of the influence of faults in coalbed methane production.

The editors would like to thank all the authors for submitting the papers which represent a selection of those originally presented at the Second European Coal Conference in 1995 in Prague. We would also like to thank the many geologists who reviewed the papers:

Mesdames & Messieurs Austin, Bouska, Brabham, Bright, Bryant, Cloke, Cole, Cornford, Davidson, Davies, Dopita, Drozdzewski, Ellison, Frodsham, Gayer, Gillespie, Glover, Goulty, Guion, Harris, Hathaway, Hemsley, Holub, Honek, Jelinek, Jones, Juch, Karayigit, Konecny, Kostova, Kropacek, Kumpera, McLean, Malan, Martinec, Miliorizos, Moore, Oplustil, Patrick, Pesek, Premovic, Querol, Rhodes, Rippon, Rosa, Simunek, Skocek, Spears, Spiker, Thomas, Turner, Wagner, Wakefield, Whateley.

Many of the papers were written by authors whose first language is not English and this represented a problem not only for the authors but also for the reviewers. Both worked very hard to produce the present results. We have been continually amazed at the language skills of European geologists and hope that any slight errors remaining in the texts do not detract from the value of the volume. Sadly, one of the authors, Professor Kumpera, died before completing the final version of his major work on the geology of the Upper Silesian basin. Although his widow, Anna Kumperova, continued with the drafting of the diagrams, the conclusions have been added by the editors who accept responsibility for any errors inadvertently produced. We would also like to thank David Ogden, the staff editor at the Geological Society Publishing House for his continuing support and editing of this volume.

Dr Rod Gayer, Cardiff
Professor Jiri Pesek, Prague

Reference

WHATELEY, M. K. G. & SPEARS, D. A. (eds) 1995. *European Coal Geology*. Geological Society, London, Special Publication, **82**.