The Great Mineral Fields of Africa

Preface

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In deciding on a theme of relevance to Africa that would contribute to the “Resourcing of Future Generations Initiative” of the IUGS and would in this way provide a legacy project for the 35th International Geological Congress in Cape Town, South Africa, the topic of **The Great Mineral Fields of Africa** seemed to be an obvious choice for a special issue of *Episodes*. A large variety of minerals have been exploited in diverse parts of the continent for thousands of years and legends of rich gold deposits first attracted outside interest to Africa. There are more ancient workings in Africa than on any other continent. Mining activities were modernised and greatly expanded during the colonial era and several major new mineral fields were established. Further mineral deposits await discovery and Africa is still a prime exploration destination and one of the last major sources of minerals for future generations.

The continent boasts some of the world's greatest mineral fields and deposits. Amongst these are the iconic gold, platinum, chrome, copper and diamond fields in addition to manganese, iron ore, uranium and many others, with energy minerals such as coal, oil and natural gas, as well as high technology metals including columbium, tantalum and the Rare Earth Elements (REE's) starting to take centre stage. We are immensely proud of this remarkable heritage which has assisted, in no small measure, in placing many African countries on the map with viable economies that have been “kick-started” by mining. The 35th IGC has afforded us the opportunity,

through this publication, of showcasing to the worldwide geoscientific community, many of the mineral superlatives of the continent.

The chapters in this volume have been arranged in such a way as to link mineral fields and individual mineral deposits with the geological and geochronological framework of the continent, which the major deposits have been shown on the map in chapter one. Updated reviews of the geology, resources and origin of mineral deposits are presented, with commentary on extensions and the possibilities of locating completely new mineral fields, based on existing mineralisation models.

The 35th IGC publications committee, under the leadership of the co-president, has been involved with the planning and solicitation of papers for this volume for three years. Over 30 authors and co-authors have contributed and have played a pivotal role in capturing the story of Africa's minerals. Thirty referees have ensured the scientific integrity of the various contributions while our guest editor has done an outstanding job in ensuring scientific accuracy, consistency and linguistic flow of the contributions. The final touches have been added by our colleagues at the Geological Society of India, Bengaluru. We are extremely grateful and would like to express our sincere thanks to all involved for the many hours of hard work devoted to making this volume the success we know it will be.

This project would not have been possible without the generous support of our major sponsor, Pangea Exploration,

who have been at the forefront of mineral deposit discovery in Africa in the past and continue to spearhead exciting new developments. Their specific expertise in early exploration and appraisal, mining finance and project de-risking has resulted in a number of gold, coal, vanadium, copper, mineral sand, tin and niobium deposits having come into production or currently being developed in South Africa, Mozambique, Kenya, Tanzania and Democratic Republic of Congo. Many of these deposits are discussed in this volume. We would like to extend our sincere thanks and appreciation to them for

Richard Viljoen is Co-President of the 35th IGC. Subsequent to extensive research studies in Archaean terrains, he spent most of his career in the mining industry. He was an Honorary Professor at the University of the Witwatersrand and is now a consultant for VMI / Bushveld Minerals. He is a fellow of five international and national Geoscience Societies and is the recipient of a number of awards including the Draper medal of the Geological Society of South Africa and the Lindgren award of the Society of Economic Geologists.

having had the foresight which has enabled us to showcase many of Africa's mineral treasures.

The contribution of Dr. Chris Jennings, a pioneer in modern diamond exploration techniques in Africa and in Canada, towards the production of the publication, is also gratefully acknowledged, as is the considerable support of VM Investment Company / Bushveld Minerals, with regard to typing of some of the manuscripts and preparation of maps and diagrams, along with the Council for Geoscience. To all of them, we extend our sincere appreciation.

Mike Wilson has worked as an exploration geologist for more than 40 years, in both South Africa and Zimbabwe. He has worked on a wide range of minerals, from Archaean-hosted gold, nickel and emerald mineralisation, through Proterozoic sedimentary-hosted copper and other deposits. During a 14 year spell at the South African Council for Geoscience (previously Geological Survey), Mike was the principal contributor to and compiler and editor-in-chief of the benchmark publication 'The Mineral Resources of South Africa', as well as a book on 'The Occurrence of Diamonds in South Africa'. He edited portions of World Bank sponsored publications on mineralisation in Mozambique and Madagascar, before being asked to edit this special volume on 'The Great Mineral Fields Africa'. Mike is a Fellow and former Vice President of the GSSA and serves on its Research, Education and Investment Committee.