

Sunday Petters

Textbook on the Regional Geology of Africa



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African nations depend mainly on mineral exports and consequently those that lack mineral resources are among the poorest nations. It is therefore true to say that among the most vital forms of technical aid that can be rendered to Africa is a textbook on African regional geology.

My mission to the Kolleg was to prepare such a text. The greatest tribute I can pay to the Kolleg for opening its doors to an African to perform this task is to reproduce part of the preface to the completed book. Besides, I find it rather convenient to do so because my time at the Kolleg has run out and I must return to Africa. But let me seize this opportunity to thank the staff of the Kolleg for their ardent support which enabled me to accomplish my mission. The fellows provided a most congenial intellectual atmosphere. As for future plans, well the future in Africa is very uncertain. But I hope to devote my time to seeing the book through press.

This book represents the first attempt in three decades to marshal out available information on the regional geology of Africa for advanced undergraduates and beginning graduate students. Geologic education in African universities is greatly hampered by the lack of a textbook on Af-

rican regional geology. This situation is exacerbated by the inability of most African universities to purchase reference books and maintain journal subscriptions. Besides, geologic information about Africa is so widely dispersed that a balanced and comprehensive course content on Africa is beyond the routine preparation of lecture notes by university teachers. Since geology is a universal subject and Africa is one of the largest landmasses on Earth with one of the longest continuous records of Earth history, there is no doubt that geologic education in other parts of the world will benefit from a comprehensive presentation of African geologic case histories. The scope of this text also addresses the need of the professional geologist, who may require some general or background information about an unfamiliar African geologic region or age interval.

Africa occupies a central position in the world's mineral raw materials trade. Because of its enormous size and great geologic age, the diversity and size of Africa's mineral endowment is unparalleled. Africa is the leading source of gold, diamond, uranium, and dominates the world's supply of strategic minerals such as chromium, manganese, cobalt, and platinum. Consequently, African nations from Algeria to Zimbabwe depend solely on mineral exports for their economic survival. The geologic factors which govern economic mineral deposits are stressed in this text.

The geological history of Africa spans 3.8 billion years, a record that is unique both in duration and continuity. Few other parts of our planet match the plethora of geologic phenomena and processes that are displayed in the African continent. To maintain its integrity a course on historical geology anywhere in the world must address the theory of Continental Drift beyond invoking past continuities between West Africa and South Africa. Past connections between West Africa and eastern North America must equally be explored, so also connections between northeast Africa and Arabia. The evolutionary transitions from reptiles to the earliest mammals and dinosaurs, and the evolution of Man are among Africa's unique contributions to the history of life. Although it lies today in the tropics Africa was the theatre of the Earth's most-spectacular glaciations. Even after the scene of continental glaciation had shifted to the northern continents only lately during the last 2.5 million years, Africa still witnessed spectacular climatic fluctuations during this period. Certainly students of archeology and paleoanthropology cannot overlook the Quaternary paleoenvironmental record of Olduvai Gorge in Tanzania, Lake Turkana basin in Kenya, the Nile valley, the Sahara, and southern Africa.

But since African examples have already been cited in standard geologic textbooks, I have often been asked why it has become necessary to revive the idea of a full-length textbook on African geology, 30 years

after this idea was abandoned by the geologic community. My simple answer, as already stated, is that the wealth of available geologic knowledge about Africa is so enormous and fascinating but so diffuse, that an attempt must be made to assemble and pass on this knowledge.