

BOOK REVIEWS

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LEHMAN, JOHN T. [ED.]. 1998. **Environmental change and response in east African lakes**. Kluwer Academic. xix + 236 p. US\$110. ISBN 0-7923-5118-5.

The great lakes of east-central Africa have stimulated scientific curiosity for well over a century. Burton, Speke, and Livingstone's race to find the source of the Nile captivated public attention in the mid-19th century in the same way that the race to be first to the moon did in the 20th century. These explorers returned with collections that led almost immediately to organized scientific expeditions to the African great lakes. By the 1890s, the resemblance of Lake Tanganyika's heavily calcified and ornate molluscs to marine taxa had spawned speculation that this lake was a relict sea cut off from the ocean. Although this particular hypothesis was soon laid to rest—these molluscs were shown to have originated from good freshwater stock—the lakes have continued to stimulate and motivate investigators. Their phenomenally diverse and endemic faunas, which challenge our understanding of how evolution works, engendered a lot of research interest; and the fact that hominids evolved in this region during the lifetime of these ancient lakes added fuel to this fire. Most recently the possibility that modern hominids are altering the global climatic system has again focussed attention on these lakes, whose kilometers-thick sediments contain unbroken records spanning millions of years of history. These records could yield key information needed to validate atmospheric circulation models and predict our planet's future.

Long unbroken sediment records extending from the present into the deep past are rare on the continental crust. Ice caps, the only other repositories of similar age, are being plumbed on a nearly daily basis. Yet despite the fact that the biological and evolutionary glories of the ancient African lakes are vastly richer than the polar deserts, their microfossil-rich sediments have been barely tapped. This stasis is not from lack of interest. The International Decade for the East African Lakes, IDEAL (surely one of the most felicitous acronyms in the crowded scientific marketplace), is a small program which fosters interest among a multidisciplinary group of climatologists, geologists, biologists, geochemists, and limnologists. IDEAL's primary goals are to obtain long, high-resolution sedimentary records of climate change and ecosystem responses in east Africa and to acquire knowledge on the modern lakes to allow rigorous interpretation of those records.

Environmental change and response in east African lakes is the second book to emerge from the IDEAL program. The first (Johnson and Odada 1996) has proven to be a valuable overview of the African lakes at the initiation of IDEAL; it was comprehensive in scope, and offered excellent coverage of a broad range of topics. Lehman's book is more modest in scope, content, and size. It consists of an introduction by Lehman, which suggests some common themes that emerge from the following 15 original research papers. The papers are highly individual and quite eclectic, spanning historical climatology and hydrology, paleolimnology, paleomagnetism, sedimentology, limnology, isotope stratigraphy, and aquatic biology. While this breadth of topics is representative of the multidisciplinary nature of IDEAL, only African lakes fanatics (such as myself) are likely to sustain enough interest to work through them all. Further, to make sense of this material one must have access to original references, both for clarification of concepts and terminology and because many of the given facts are inconsistent among the papers. For example, on p. 8

one author gives the maximum depth of Lake Victoria as 92 m while on p. 61 it is given as 68 m (correct, depending on datum) and elsewhere 70 m (close enough!). On page 13, the dramatic rise in level of Victoria is accurately attributed to 1961–62 but by p. 71 it has slipped to 1962–63. Astute readers will be occasionally frustrated and confused—and especially so if the original reference materials are unavailable. On the other hand, there is unquestionably much good information and valuable data in these papers; and the sometimes-contradictory conclusions or statements among them are a sign of active scientific pursuit with the chase still on. Greater synthesis among this obviously close group of researchers will come as IDEAL progresses. Nevertheless, it is unfortunate that this is such an unfriendly book for generalists with poor library resources, because that is the situation of the many African aquatic researchers who would be interested in some or all of its contents.

Lehman's introduction makes the point that climate and environmental change impact African lakes and their sedimentary records. This is worth emphasizing because many limnologists from temperate climes still erroneously believe that climate is essentially constant near the equator. The climate of east Africa is actually very dynamic (Johnson et al. 1996); most recently (since 1960) it has entered a warm, wet period that may have influenced the response of Lake Victoria to cultural eutrophication (Hecky 1993). It is interesting to note that data in this book on Lake Albert and Edward show those lakes to be less productive than in earlier studies, despite sharing the same climatic trend and limnological tendencies as Victoria, whose productivity has increased dramatically during the same period. Obviously, climatic variability alone cannot account for the changes in Victoria. Thus, although lakes will and have changed when climates change, packing 20 million people into the Victoria basin can also cause changes—big changes. This aspect was not a primary focus of the researchers in this book, and remains to be evaluated and quantified.

This book is an important statement of scientific progress on the African lakes. However, at US\$110 (for 236 pp.) few individuals or libraries in Africa will be able to afford it. It would be cheaper to copy the whole book than buy it; so perhaps it will become a black market classic. To anyone considering buying it at the listed price, I would recommend first investing in the Johnson and Odada (1996) book; although the latter costs even more, the content is greater and it will likely be more enduring as a reference work.

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