At the time, there were no laws giving the United States any authority over U.S. vessels discharging oil on the high seas. However, Texaco was in the middle of an advertising campaign saying, "We swim in it too" and that its "tanker operating procedure prohibited the dumping of oil at sea. Anytime. Anywhere." Lacking other legal options, Bill filed a complaint with the U. S. Federal Trade Commission on the basis of "false advertising," and the local press covered this. Bill said, "I usually don't do things like this, but this incident disturbed me so much that, as a citizen, I felt I had to do something."

In 1979, Bill became professor and chairman of marine science at the University of South Florida. Bill and Ann moved to a house on the water in sunny St. Petersburg. Bill did his time as chairman through 1982 and then returned to full-time research and teaching. Not long after, he was appointed "distinguished research professor," his title at retirement. Three more M.S. and three Ph.D. degrees were realized at USF under his direction, with topics ranging from stable isotopes, biogeochemistry, and hydrologic cycles to amorphous silica.

While at TAMU, Bill spent a sabbatical at the German Geological Survey in Hannover, Germany, as a U.S. senior scientist under the auspices of the von Humboldt Foundation. A second sabbatical (while at USF) as a Richard Montgomery Field Fellow with AGU took him and Ann to Washington, D.C., where he left a legacy of inspiration and progress related to AGU's education and outreach programs.

At the memorial service for Bill, former students and colleagues remembered him as a mentor, even more so as a good friend, as a scientist (with more than 140 publications), and as an environmentalist. Bill Sackett understood that an important part of learning to be a scientist is doing challenging things that can lead to mistakes, and he was willing to let students test the limits of their abilities, even if it meant more work for him down the line. Bill was unselfish with his time and knowledge, never using his students to advance his own reputation. He was both an outstanding scientist and an exceptionally kind person who will be missed by all who knew him.

—RICHARD A. FEELY and DAVID F. REID, NOAA, Seattle, Wash.; WILLARD S. (BILLY) MOORE, University of South Carolina, Columbia; and JAMES R. GORMLY, ExxonMobil Upstream Research, Houston, Tex.

SECTION NEWS

OCEAN SCIENCES

Carbonate Network Forms

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The Carbonate Network is a new Internet-based international network (www.carbonet.net) for carbonate researchers. The network aims to stimulate an increased exchange of knowledge among carbonate researchers from different geological institutions, and to provide a scientific forum for discussing carbonate-related issues.

The discussion forum (www.carbonet.net/forum), which is the essence of the Carbonate Network, includes information about meetings, publications, excursions, courses, Internet resources, and specific scientific topics (geophysics, sedimentology, geochemistry, paleontology, petrophysics, mineralogy, among others).

In the discussion forum, members can write about their latest publications, and raise and discuss questions and problems related to carbonates. The network relies on members posting carbonate-related messages of interest to parts of the network, or the entire network.

The network home page also includes carbonate-related links and short presentations by network members, including their fields of expertise, scientific interests, and contact information.

Visit the network home page to apply for free membership or to receive a monthly e-mail message. The Carbonate Network was formed by Andreas Olaus Harstad and Bjarne Rafaelsen. The home page was officially opened on 19 March 2004, and the network already includes nearly 60 members.

—BJARNE RAFAELSEN, University of Tromsø, Norway; E-mail: bjarne.rafaelsen@ig.uit.no

BOOK REVIEWS

Global Change and the Earth System

WILL STEFFEN ET AL.

Springer-Verlag, New York; ISBN: 3-540-40800-2 (hardback); 336 pp.; 2004; $129.

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The Earth system in recent years has come to mean the complex interactions of the atmosphere, biosphere, lithosphere and hydrosphere, through an intricate network of feedback loops. This system has operated over geologic time, driven principally by processes with long timescales. Over the lifetime of the solar system, the Sun has slowly become more radiant, and the geography of continents and oceans basins has evolved via plate tectonics. This geography has placed a first-order constraint on the circulation of ocean waters, and thus has strongly influenced regional and global climate. At shorter timescales, the Earth system has been influenced by Milankovitch orbital factors and occasional exogenous events such as bolide impacts.

Under these influences the system chugged along for eons, until some few hundred thousand years ago, when one remarkable species evolved: Homo sapiens. As individuals, humans are of course insignificant in shaping the Earth system, but collectively the six billion human occupants of the planet now rival "natural" processes in modifying the Earth system. This profound human influence underlies the dubbing of the present epoch of geologic history as the "Anthropocene."

This book attempts to assess what is known about human impacts on the Earth system. It was initially conceived as a synthesis of a decade of research undertaken through the auspices of the International Geosphere-Biosphere Programme, but quickly grew to comprise contributions from the larger global change research community. The structural framework of the book includes chapters on (1) the Earth system prior to human influence, (2) how humans are changing the Earth system, (3) the responses of the Earth system to human activities, (4) consequences for humans of changes in the Earth system, and (5) reflections on how best to study the Earth system so as to achieve sustainability. Interspersed throughout are "expert boxes" on special topics, authored by 47 guest contributors.

The book assembled from this blueprint falls short of its promise, but nevertheless is full of interesting material from cover to cover. Many of the expert sidebars are excellent short essays on important topics. But ultimately, the structure of the book, mothered and fathered by 11 authors, proves unmanageable, with

significant repetition of some subjects from chapter to chapter, along with notable omissions. I would have preferred a structure organized around major aspects of the Earth system, such as system energetics and forcings, the carbon cycle, and the hydrological cycle, inter alia.

Although the hydrological cycle is discussed in bits and pieces and in varying contexts throughout the book, the disarray in organization is nowhere more apparent than in the fact that the term "hydrological cycle" does not even merit an entry in the index. I also found the selection of topics covered to be patchy and uneven. Perhaps the most notable omission was the absence of a substantial discussion of human demographics and population growth, past and future. The quintennial IPCC assessment scenarios are based in part on a range of twenty-first century population projections. Such an important factor in human-induced change, the number and geographic distribution of human beings that need food, water, and shelter, was given short shrift in this book. Groundwater, the largest fresh water reservoir on the planet, extremely important to agriculture, as well as being severely impacted by human activities, receives mention only in passing. Changing air quality and its impact on human health is alluded to only briefly.

Even with such deficiencies, there is much to commend in this book. The chapter on "planetary machinery" presents a well-structured discussion of the spatial and temporal variability and connectivity of the Earth system, the role of biological processes, and insightful commentary on slow and rapid change and system thresholds. Where water resources do move front and center, as in section 5.3.2, the discussion is excellent. And a tenacious reader, patiently following the topical threads that weave through the chapters, will be rewarded with a rich array of material.

The book is superbly produced, with myriad graphs and figures and excellent use of color. It will, like the IPCC reports, be an extraordinary resource for students, teachers, and researchers seeking insight and understanding of the many ways that we humans are tampering with the planetary environment that has sustained us.

—HENRY N. POLLACK, University of Michigan, Ann Arbor

The Tectonic and Climatic Evolution of the Arabian Sea Region

P.D. CLIFT, D. KROON, C. GAEDICKE AND J. CRAIG (EDITORS)

Geological Society of London Special Publication 195, London, U.K.; ISBN: 1862391114; 525 pp.; 2002; £120, $216.

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This multi-authored volume provides a sampling of current research into the geology of the Arabian Sea region. The editors emphasize the importance of this area as the Earth's best natural laboratory for studying relations between climate and the growth and erosion of an orogenic belt.

Uplift of the Himalaya and Tibetan Plateau is now believed to have altered global climate during the Cenozoic, and also to have affected the development of the region's monsoonal climate. The geological features of the region that make it a good area to study such processes include the excellent rock outcrops in the surrounding arid Arabian and Asian landmasses, the locally high rates of sedimentation which provide high-resolution sedimentological and geochemical information, and the monsoon itself, that imparts an annual time beat in some sedimentary successions. However, the region is very large and access is not always easy. Also, many areas are still poorly known geologically, such that this volume contains some papers on basic survey geology.

The book has its origins in a meeting on this topic held at the Geological Society of London in April 2001, and the editors have done well to assemble 26 papers from authors spread over 13 countries, mainly northwestern Europe and the United States, but also including the countries surrounding the Arabian Sea. It is well produced, with a mix of good-quality photographic, line, and color images.

Despite the above-mentioned specific aims of the editors, the breadth of this 525-page book is large, covering marine seismic and magnetic mapping and stratigraphy of the Arabian Sea, the regional geology of Iran and Pakistan, onshore and offshore sedimentology, and climate proxies.

Coverage of this large region is necessarily patchy, and the Arabian margin receives little attention.

The first half of the book comprises papers on the geological evolution of the Arabian sea floor and its Asian margins. This includes the spreading history of the Arabian Sea and the Somali Basin, the pre-collisional passive margin of Pakistan, and the emplacement of thick clastic wedges into the Arabian Sea subsequent to the Indian-Asian collision. One such wedge, the Indus fan, is studied from its possible predecessor in the Paleogene of Makran to its late Cenozoic development, where its deposits are interpreted to record tectonics in the Karakoram and the early development of the monsoon. Studies of Quaternary coastal and continental successions in the region include the sea-level history and paleowind systems of southern Arabia. Compressional tectonics of the Zagros and Makran are shown to relate to plate convergence rates, contrasting lithologies and detachment on the Hormuz salt, while geo-thermal modeling indicates a dominant conductive heat transport.

Continental margin Holocene successions are shown to house records of seasonal runoff variations, volcanism (as far away as Indonesia), and variations in upwelling related to monsoonal strength and seismicity. Present-day plankton records are shown to relate to temperature, nutrients, and monsoon-driven currents.

The book is rich in data, but it is not comprehensive in its coverage. The Arabian Sea region is not defined, and there is no map of the region to indicate the location of the 27 studies. My main gripe, though, is that there is no synthesis apart from the editors' useful introductory pages. I find the title a little ambitious because, while many papers consider aspects of the tectonic and climatic evolution of the area, there are no syntheses of these aspects. The reader has a lot of reading to do to extract information pertinent to the title and the stated aims of the book.

The index is useful, but not comprehensive. It is good on place names and geological units, but not so strong on listing topics or concepts (no entries for climate, erosion, sea level, uplift rates, collisional tectonics). The book is of value, in that it compiles local studies from the region, and if you do not find exactly what you want, then someone will surely have referred to it somewhere.

Who should buy this book at $216, or half this for those with the Geological Society of London or AAPG membership? Some libraries will, as will individuals and companies with a specific interest in this region, or those seeking background information on the links between climatic change and orogenic evolution in this unique part of the world.

—DAN BOSENCE, Royal Holloway University of London, U.K.