could be resolved by deep drilling in the vicinity of hydrothermal vents. None of the papers in this section appears to recognize the potential value of integrating theoretical calculation of high-temperature aqueous speciation and chemical mass transfer with the currently available experimental and field results.

In the section on mass balances and cycles, the overview paper, by Turekian, is particularly valuable because it discusses the results of the other papers in the section in the context of hydrothermal processes in the oceans. All the papers in the section contain new data and ideas. Von Damm *et al.* present new data on the chemistry of the 21°N vent waters. Welhan and Craig present data on the abundances and isotopic compositions of methane, hydrogen, and helium in the 21°N vent waters and conclude that the hydrothermal methane was extracted directly from basalt by the circulating seawater and hence has an abiogenic origin. However, a paper by Lilley *et al.* and one by Jannasch in another section both suggest that bacteria may play a role in determining the methane and carbon dioxide contents of the vent fluids. A paper by Simoneit is the only paper in the volume dealing with results from the recently discovered petroleum-bearing hydrothermal vents in the Guaymas Basin, Gulf of California.

The section on hydrothermal mineralization contains a paper on the currently active sulfide chimneys near 13°N (Hekinian *et al.*) and a paper on ancient sulfide deposits in the Mesozoic Tethys Ocean (Robertson and Boyle). Though the discovery of active sulfide mineralization in the ocean has been stimulating, the papers in this section clearly indicate that the present-day systems should be studied in much more detail before their significance with respect to ancient metallic ore deposits can be understood. This point is emphasized in the overview paper, by Skinner, which contrasts the tectonic settings and host-rock lithologies of the present-day rift-related sulfide deposits and those of the ancient massive sulfide deposits that appear to have formed in back-arc basins.

The value of this volume is that it deals with virtually every aspect of hydrothermal processes at sea-floor spreading centers, both modern and ancient, that has been investigated to date. Such broad coverage is possible because most of the research bearing directly on the hydrothermal processes is, as the editors point out, at an early stage of description and interpretation. In ten years' time it will probably not be possible to achieve such broad coverage in a single volume. I highly recommend this volume both to people who want an introduction to the field and to active researchers in it. The inclusion of readable color maps and illustrations and excellent photographs, both color (taken from submersibles) and black-and-white, helps to make the volume attractive.

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Honoring Munk

"It's the Water That Makes You Drunk." A Celebration in Geophysics and Oceanography—1982. In Honor of Walter Munk on His 65th Birthday. (La Jolla, Calif., Oct. 1982.) Institute of Geophysics and Planetary Physics, Scripps Institution of Oceanography, La Jolla, Calif., 1984. vi, 118 pp., illus. Paper. Scripps Institution of Oceanography Reference Series 84-5.

The title of this book comes from a story told by W. Markowitz at a dinner during the time of Walter Munk's preoccupation with problems of the earth's rotation. It is said that a logical scientist decided to determine the cause of drunkenness. On successive days, he consumed large quantities of scotch and water, bourbon and water, and vodka and water. Becoming very drunk in each case, he concluded that the water was responsible. Water may not have made Walter Munk drunk, but it has certainly provided him with a lifelong intellectual high, as this volume attests.

Munk's delightful autobiographical sketch at the beginning of the book gives glimpses of the great range and depth of his contributions to oceanography and geophysics. He writes modestly: "During my career I have worked on rather too many topics to have done a thorough job on any one of them; most of my papers have been superceded by subsequent work. But 'definitive papers' are usually written when a subject is no longer interesting. If one wishes to have a maximum impact on the *rate* of learning, then one needs to stick out one's neck at an earlier time." He has certainly done this. From his early work on wave generation in the '40's and wind-driven ocean gyres and earth wobble and spin in the '50's, to more recent contributions on radar clutter, swell propagation, internal waves, tides, and low-frequency oscillations and his present involvement with ocean acoustics, he has shown exquisite taste and consistent depth of perception. He himself does not say so, of course, but the other contributors do not hesitate to do so.

Klaus Hasselmann shows how Sverdrup and Munk's pioneering work on wave prediction has flowered in the subsequent 40 years; Christopher Garrett explores the dynamical processes that seem to be involved in determining the form of the celebrated Garrett-Munk spectrum of internal waves; Carl Wunsch entertains us by discussing the contrasts between the theoretical oceans, the laboratory oceans, and the real ones; Gordon MacDonald gives a more serious review of the greenhouse effect and acid rain, and Adrian Gill offers a less serious note on the tides of the euripus. An ode introduces Stanley Flatte's informal but informative account of internal wave tomography, and Roger Revelle explains why it is important to be lucky.

There are other contributions as well; this is a joyful publication honoring one of the deans of modern oceanography and geophysics. It is a delight to read and will be a treasure to keep.

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Books Received

Altered Endocrine Status during Aging. Vincent J. Cristofalo *et al.*, Eds. Liss, New York, 1984. xvi, 260 pp., illus. $44. Modern Aging Research, vol. 6. From a symposium, Philadelphia, April 1983.

Analgesics. Neurochemical, Behavioral, and Clinical Perspectives. Michael J. Kuhar and Gavril W. Pasternak, Eds. Raven, New York, 1984. x, 341 pp., illus. $82.50. Central Nervous System Pharmacology.

Broken Earth. The Rural Chinese. Steven W. Mosher. Free Press (Macmillan), New York, and Collier Macmillan, London, 1984. xiv, 317 pp. + plates. Paper, $8.95. Reprint, 1983 edition.

The Caffeine Book. Frances Sheridan Goulart. Dood, Mead, New York, 1984. xii, 210 pp. Paper, $8.95.

Deconvolution. With Applications in Spectroscopy. Peter A. Jansson, Ed. Academic Press, Orlando, Fla., 1984. xvi, 342 pp., illus. $69.

Ecological Communities. Conceptual Issues and the Evidence. Donald R. Strong, Jr., *et al.*, Eds. Princeton University Press, Princeton, N.J., 1984. xiv, 614 pp., illus. $60; paper, $22.50. From a symposium, Wakulla Springs, Fla., March 1981.

Lysosomes in Biology and Pathology, 7. J. T. Dingle, R. T. Dean, and W. Sly, Eds. Elsevier, New York, 1984. xx, 479 pp., illus. $125.

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The Psychopharmacology of Smoking. G. L. Mangan and J. F. Golding. Cambridge University Press, New York, 1984. x, 257 pp., illus. $49.50.

Quantum-Mechanical Tunnelling in Biological Systems. Don DeVault. 2nd ed. Cambridge University Press, New York, 1984. xii, 207 pp., illus. $44.50.

The Total Synthesis of Natural Products. Vol. 6. John ApSimon, Ed. Wiley-Interscience, New York, 1984. xii, 291 pp., illus. $44.

Transcription and Translation. A Practical Approach. B. D. Hames and S. J. Higgins, Eds. IRL Press, Washington, D.C., 1984. xviii, 330 pp., illus. Paper, $24. Practical Approach Series.