

books like this one will tell us, very enjoyably, that there is work to be done. ■

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More on numbers

What is Random? Chance and Order in Mathematics and Life

by Edward Beltrami
Springer, \$22, £15.50

Imaginary Numbers: An Anthology of Marvelous Mathematical Stories, Diversions, Poems, and Musings

edited by William Frucht
Wiley, \$27.95, £22.50

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Light from underground

Mosaic Evolution of Subterranean Mammals: Regression, Progression and Global Convergence

by Eviatar Nevo
Oxford University Press: 1999. 413 pp.
£95, \$175

Hynek Burda

Across the globe, at least 285 of 4,629 species of mammals, representing 11 families, spend most of their lives in moist, dark, oxygen-poor and carbon-dioxide-rich burrows, deprived of most of the sensory cues available above ground. These mammals have become fully specialized for a unique way of life in which foraging, mating and breeding take place underground.

Although most subterranean species have been known to scientists for a long time, their biology has remained largely unstudied. This may be explained by their cryptic way of life and the related problems of keeping, breeding and monitoring them, and also by the fact that scientists tend to be more attracted by animals confronting environments and problems above ground that seem far more complex than those encountered below ground (sensitive vision compared with blindness, echolocation compared with human-like hearing, long-distance navigation/maze orientation across tens of metres, thermoregulation in the cold/life in a thermally buffered burrow). Although many specimens of moles (insectivorous subterranean mammals) and mole-rats (subterranean rodents) have been deposited in museums, not even the morphology of their digging specializations has received the attention it deserves. The convergent evolution of subterranean mammals, one of the most remarkable examples of convergence, is rarely mentioned in textbooks.

The 'sleeping beauty' of subterranean

New in paperback

Constructing Quarks: A Sociological History of Particle Physics

by Andrew Pickering
University of Chicago Press, \$26, £18.50

Great Feuds in Science: Ten of the Liveliest Disputes Ever

by Hal Hellman
Wiley, \$15.95, £9.99

Science As A Way of Knowing: The Foundations of Modern Biology

by John A. Moore
Harvard University Press, \$18.95, £11.95

Warmth Disperses and Time Passes: The History of Heat

by Hans Christian von Baeyer
Random House, \$13.95, £11.99

The Gospel of Germs: Men, Women and the Microbe in Modern Life

by Nancy Tomes
Harvard University Press, \$16.95, £10.50

Making Sense of Illness: Science, Society and Disease

by Robert A. Aronowitz
Cambridge University Press, £11.95, \$29.95

Nature Wars: People Vs. Pests

by Mark L. Winston
Harvard University Press, \$15.95, £9.95

The Handicap Principle: A Missing Piece of Darwin's Puzzle

by Amotz & Avishag Zahavi
Oxford University Press, £11.99, \$16.95

Consilience: The Unity of Knowledge

by Edward O. Wilson
Abacus, £8.99, \$14

The Woman That Never Evolved

by Sarah Blaffer Hrdy
Harvard University Press, \$16.95, £10.50

Social Mindscales: An Invitation to Cognitive Sociology

by Eviatar Zerubavel
Harvard University Press, \$15.95, £9.95

Blind Watchers of the Sky

by Rocky Kolb
Oxford University Press, £8.99

The Anti-Depressant Era

by David Healy
Harvard University Press, \$17.95, £10.95

mammals, and their importance for science, has been awoken by Eviatar Nevo of the University of Haifa, Israel. His contribution to the growth of our knowledge of subterranean mammals has not only inspired others; he has himself co-authored at least 20 per cent of all published studies.

Growing knowledge, and the landmark dates of Nevo's major contributions (1969, 1979, 1989), seemed to predestine 1999 as a further important year, and the time was right for his book to appear. Undoubtedly, Nevo is the most competent person to write it. And the expected monograph, which went unpublished for several decades, has at last appeared.

The book describes and analyses the 40 million years of global evolution of subterranean mammals and its implications throughout biology. Although the underground habitat is in many respects relatively simple, monotonous, stable and predictable, it is in others very specialized and stressful. Consequently, the evolution of subterranean mammals involves dramatic and complex adaptive structural and functional changes that are both regressive (degenerative) and progressive (compensatory). This mosaic convergent global evolution of subterranean mammals is an example *par excellence* of comparative studies in evolution at all organizational levels, from the molecular to the

organismal, oriented by natural selection.

The book is filled with information. The reader will find not only an up-to-date overview of subterranean mammals and their evolutionary problems, but also detailed information and references to general aspects of sensory and behavioural ecology, morphology, physiology, genetics and immunogenetics. This is all based on Nevo's 50 years of studies and experience, and on careful, critical and thoughtful study of hundreds of articles and books. The book provides excellent texts for seminars and courses. It is richly illustrated, and there are more than 1,800 entries in both the index and the well-balanced bibliography. The book is a 'must' for all students of subterranean mammals, and will be very useful to evolutionary biologists.

Considering the hitherto catalytic effects of Nevo's work, I would like to bet that the number of studies dealing with subterranean mammals will rise dramatically in the coming years (indeed, there is great potential for surprising discoveries), and that there will quickly be a need for a second edition. No doubt, subterranean mammals will soon be burrowing their way into the textbooks of the future. ■

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