Martha's revenge

David L. Hull

Biophilia: The Human Bond with Other Species.

By Edward O. Wilson.

Harvard University Press: 1984. Pp. 157. \$16.50, £13.20.

In this, his most recent book, E. O. Wilson presents three interrelated messages — that science provides a sort of knowledge that the humanities cannot produce; that genes are more important in making us what we are than many of us would like to believe; and that buried in our genetic make-up are a variety of propensities including a fascination for other living creatures and an unconscious longing for an environment such as the savannas in which we evolved. Wilson has pursued these themes before in a variety of guises — a general text, a philosophical treatise and, with C. J. Lumsden, dressed up in mathematical garb. In *Biophilia* he tries his hand at a more literary approach.

From its beginnings, science has found itself in conflict with not only theology but also the humanities, if for no other reason than theologians and humanists controlled the universities. Poets and literary figures complain that scientific knowledge destroys any genuine appreciation of nature; as Tennyson put this conviction, "Science grows and Beauty dwindles". Scientists, it is said, reduce the wonders of nature to a ceaseless war between selfish genes and explain humankind's higher faculties in terms of neurons and the hormone-secreting cells of the limbic system. Although scientists currently dominate the intellectual scene, defenders of the humanities retain some of their old feeling of superiority. Perhaps scientists can lay trans-Atlantic cables and unravel the molecular structure of the genetic material, but they can never hope to provide the higher sorts of understanding afforded by the humanities. Martha might well busy herself serving the guests, but Mary seated at her saviour's knee has the better part.

Wilson has written for his scientific audience several times over. In *Biophilia* he sets his sights on the great masses on the other side of C. P. Snow's great cultural divide, those readers who are more impressed by striking imagery than by scientific argument and masses of data. If humanists are the "shamans of the intellectual tribe, wise men who interpret knowledge and transmit the folklore, rituals, and sacred texts" (p.58), then Wilson will become a shaman. Here his style is consciously literary, a series of images designed to evoke the appropriate response in his reader. A peccary stolen from its natural habitat and tethered beneath the eaves of a rude hut becomes a "mute speaker trapped inside the unnatural clearing, like a

messenger to me from an unexplored world" (p.5). The mythical status of the serpent hints at the hold that our evolutionary past still has on us. The adventures which Wilson had as a young boy with snakes in the woods and pools around his home in the Panhandle of northern Florida illustrate the aversion and fascination which human beings have for snakes. His scientific description of the Bird of Paradise becomes a "metaphor of what humanists dislike most about science" (p.54).

For me at least, Wilson's attempts at this more literary style are effective. Everyone knows that the Sun is the ultimate source of energy for life on Earth. As Wilson puts it, "After the sun's energy is captured by the green plants, it flows through chains of organisms dendritically, like blood spreading from the arteries into networks of microscopic capillaries" (p.8). The most distinctive sound in the primary tropical forest, according to Wilson, is a "sharp crack like a rifle shot, followed by whoosh and a solid thump. Somewhere a large tree, weakened by age and rot and top heavy from layers of vines, has chosen that moment to fall and end decades or centuries of life" (p.27). To help his readers visualize the evolutionary process, Wilson contrasts various time frames. Everyone is familiar with organismic time: a leafcutter ant returns to its nest and drops the bit of leaf it has been carrying (a feat equivalent to a man running a four-minute mile while carrying 750 pounds). In biochemical time, organisms freeze in their tracks as a "nerve cell discharges: along the length of its membrane, the voltage drops as sodium ions flow inward" (p.42). At a level higher than the single organism, a leafcutter colony resembles a gigantic amoeba, a sort of super-organism. "Its foraging columns snake out like pseudopods to engulf and shred plants, while their stems pull the green pieces down holes into the fungus gardens" (p.36). In evolutionary time, even colonies lose their identity as they merge into an even more inclusive entity enlarging its territory, congealing into local populations, speciating and becoming extinct.

Wilson tries to give the humanities their just due. "The aim of art is not to show how or why an effect is produced (that would be science) but literally to produce it" (p.62). But with this one exception scientists can do everything that artists and writers can do and more. "Scientific innovation sometimes sounds like poetry, and I would claim that it is, at least in the earliest stages. The ideal scientist can be said to think like a poet, work like a clerk, and write like a journalist. The ideal poet thinks, works, and writes like a poet" (p.62). A poet can elicit images in us, but he "refuses to take us any further. If he goes on the precise image will melt into abstract descriptions; light and beauty will congeal into rows of formulas" (pp. 75-76).

Do I agree with Wilson's main messages?

How good are the arguments he presents? Has he made the right distinctions? To ask these questions is to miss the intent of the book. It is to elicit images and appropriate emotional responses. The clearing of jungles in the Amazon to make room for bony white cattle "can be defended (with difficulty) on economic grounds, but it is like burning a Renaissance painting to cook dinner" (p.25). This is not an argument, but it does the job as well or, for most people, better. In *Biophilia* Wilson uses the traditional techniques of the humanities to get his messages across, and one of them is that the humanities are not good enough, that the truths afforded by science transcend those of the humanities. In this book Martha gets her revenge. □

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Ecosystems unlocked

Mark Williamson

Key Environments.

General editor John Treherne.

Sahara Desert. Edited by J.L. Cloudsley-Thompson. Pp.348. **Galapagos.** Edited

by R. Perry. Pp.321. **Madagascar.** Edited

by A. Jolly, P. Oberlé and E.R.

Albignac. Pp.239.

Pergamon: 1984. Each volume £14.95, \$23.95.

WHAT is a "key" environment? For this series it is taken to be one of international ecological importance which is now, or soon will be, under threat of disturbance or destruction. Eight volumes have been advertised so far, and three are to hand; the others promised deal with Amazonia, Antarctica and Malaysia, and there will be two marine ones, on the Red Sea and the Western Mediterranean.

Is it possible to "provide specialists, as well as those who have an interest in the conservation of nature as a whole, with the essential facts [for] practical and effective conservation action" in books of 300 pages written by 20 or so authors? Not really: what in fact has been achieved are reasonably comprehensive and on the whole stimulating accounts of standard natural history, that is, geology and climate, higher plants, vertebrates. The coverage of conservation or management as such is meagre, and there is certainly not enough information to build, say, even a crude model of the effects of different strategies. Rather, *Key Environments* is "a scientifically accurate, concise and well-illustrated series of accounts" which does indeed "summarise the present knowledge of the flora and fauna".

The format is uniform, 18 x 24 cm, well set out and structured, and with black-and-white photographs or line drawings to nearly every page. The reproduction of

many of the photographs is disappointingly murky and dark, however, and although there are quite a lot of maps, the editors on the whole seem to think basic geography uninteresting, or maybe so familiar as not to be worth much mention in text or index. The series certainly deserves a wide readership amongst professionals, but particularly professionals unfamiliar with the areas concerned, and also among the wider audience presumably attracted by the Duke of Edinburgh's name (and no one else's) on the cover of each of the books.

Perhaps because of my interest in islands, I learnt most from the volume on the Sahara Desert. The editor is moderately successful in getting his authors to stay within the 100 mm isohyet, shown roughly on p.22 and more exactly on pp.106 and 329. The major question over this enormous area of $9 \times 10^6 \text{ km}^2$ (about the size of the continental United States) is whether the desert is spreading south into the Sahel. The editor's introductory chapter, Warren on problems of desertification, Allan on oases and some of the biological chapters discuss the matter, and in particular the problem of detecting permanent changes in areas of most erratic rainfall. Williams on geology, Wickens on flora and Milburn on archaeology and prehistory put the problem in an historical perspective. Only Smith on climate seems to doubt that there is any real change or real problem.

For me, the most surprising information

—Advertisement—

Quaternary Extinctions

A Prehistoric Revolution

Paul S. Martin & Richard G. Klein

More than forty contributors present evidence for major theories—climate vs. overkill—about the disappearance of mammals and birds toward the end of the last ice age. 900 pages (7 x 10), illus. \$65.00 U.S., August 1984.

Darwin: Structure and Distribution of Coral Reefs

foreword by Michael Ghiselin
256 pages, \$7.95 paper, 1984.

People of the Desert and Sea

Ethnobotany of the Seri Indians

Richard Felger & Mary Beck Moser

Records a contemporary hunter-gatherer society's uses of more than 400 plants found in the Sonoran Desert and Gulf of California. About 450 pages (8½ x 10½) with more than 300 illus. \$65.00 U.S., December 1984.

University of Arizona Press

1615 E. Speedway, Tucson, AZ 85719
Member of the Eurospan Group

was about the waters of the Sahara: not just the temporary waters after the rare rain, or the old and modern, engineered, oases, but the natural habitats that supported animals such as crocodiles in the Central Sudan until this century. Again, though, the publishers might have been more careful with the supporting material — the occurrence of crocodiles in the Oued Ihmirou in the mountains of the Tassili N'Ajjer (southern Algeria) is recorded on p.214, but not indexed under either species or place; the mountains are shown on maps on pp.327 and 332, the Oued nowhere (nor in the *Times Atlas*; and can you define an Oued? Would it help to spell it Wadi?).

The Galapagos volume is, not surprisingly, the most successful, as a research station flourishes there and many research workers visit the islands. Physical oceanography, sea birds, seals, inshore fishes and the protection of the marine environment are all covered, as well as the terrestrial aspects. Conservation is dealt with quite thoroughly in Hamann's chapter, "Threats to the Vegetation", and in Hoeck's contribution on the introduced fauna — cattle, horses, pigs, dogs and, as so often, cats, rats and goats are all found on the Galapagos, and there has been some success in containing some of them. But the two chapters on the "Path of Conservation" are very threadbare. Comprehensive this volume is not. The only invertebrate mentioned is the introduced fire ant, herons and such birds come in only casually, while the chapter on terrestrial plants is a scrapbook, including an update of the standard flora and the odd suggestion that there are no endemic plants in the British Isles. Sulloway's mistaken claim about Darwin's finches and the *Origin of Species* reappears. Nevertheless this volume contains a lot of useful information, much of it not available elsewhere in such accessible form.

Many of the authors of *Madagascar* are French or Malagasy, but the English is consistently good. The emphasis is on the vertebrates, especially mammals to which four chapters are devoted. The accounts of economics and conservation, and of nature reserves and nature conservation are much to the point. So this volume is in its way even better than that on the Galapagos, but the content is distinctly thinner.

Threats to natural environments usually come from man's activities, among them the introduction of alien species. Understanding the problems of natural ecosystems requires as much study of man's influence as of the ecosystems themselves, and to that extent the series is lacking. Perhaps later volumes will put this right. The three published to date are nevertheless outstanding accounts of important ecosystems. □

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Is it getting better all the time?

Lynton K. Caldwell

The Resourceful Earth: A Response to Global 2000.

Edited by Julian L. Simon and Herman Kahn.

Basil Blackwell: 1984. Pp.585. £14.95, \$19.95.

IN ANCIENT times he who brought bad news to the king risked being put to death for having offended royal dignity and raised doubt about the security of the realm. Today, bad news is no more welcome; *The Resourceful Earth* has been published in the belief that "the world is ready to turn its back on pessimism and is waiting to hear some good news". But in order to secure the plausibility of the "true good news", the "false bad news" must be exposed and refuted. The bringer of bad tidings offensive to the editors and sponsors of *The Resourceful Earth* was the *Global 2000 Report to the President* (1980), commissioned by President Jimmy Carter and released during his last few months in office. Herman Kahn and Julian Simon are the self-appointed executioners of that messenger of "gloom and doom", whose forecasts of bad times to come extend beyond the United States to the entire planet Earth.

The publishers declare that *The Resourceful Earth* challenges the conclusions of *Global 2000*, and presents scientific evidence that sets the record straight. The Executive Summary is more explicit:

The original 1980 *Global 2000 Report to the President...* is frightening. It received extraordinarily wide circulation, and it has influenced crucial governmental policies. But it is dead wrong. Now *The Resourceful Earth*, a response to *Global 2000*, presents the relevant reliable trend evidence which mainly reassures rather than frightens.

The aims of the book are thus twofold: first, to refute the "bad science" of *Global 2000* and, second, to reassure a public frightened and confused by that report's prophecies of global disaster. In achieving its objectives, *The Resourceful Earth* may be regarded as a one-quarter success and a three-quarters failure, a judgement which calls for explanation. The greater part of the book is not the work of Kahn or Simon; it consists of invited papers (some previously published), contributed by more than 20 authors of good repute in science and economics. Its chapters are heavily laden with statistical facts, many purporting to show that "aggregate global and U.S. trends are improving rather than deteriorating".

The failure of *The Resourceful Earth* is not primarily in the 21 contributed chapters, some of which do not actually support the editors' thesis (for example