

Book reviews

Viable ethics

The Ethics of Life (1998). Noble D and Vincent J-D (Eds). Paris: UNESCO Publishing, 238 pp, 135 SFF. paperback; ISBN 92 3 103422 7

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This is the second in a series of edited volumes dealing with philosophical aspects of physiology. Fourteen authors, drawn almost equally from the biological sciences and the humanities, provide a collection of essays on a seminar theme "Physiology and the Respect for Life"—a rather preferable title for the book to the somewhat baffling one chosen.

Physiologists in the late twentieth century undoubtedly feel threatened—firstly by molecular biologists, whose reductionist programme challenges physiologists' more integrative approach; and secondly, by public opinion (encouraged by increasingly vociferous advocates of animal welfare and animal rights), which questions the validity of physiologists' continued exploitation of animals. *The Ethics of Life* is an attempt to respond to the latter concerns, as the earlier book in the series (*The Logic of Life*) was to the former. The theme is perhaps best summarised by the editors' leading question: "By seeking to understand the mechanisms and nature of life, are we condemned to be disrespectful of it?"

Although this volume is based on papers delivered at a seminar, there is little sense of cohesion as each chapter appears to set its own agenda. Among the best is that of Tristram Engelhardt, whose closely argued defense of moral diversity is encapsulated in the remark: "The same tolerance that we expect of those who oppose abortion as immoral, as I do, we should also require from those who oppose particular uses of animals, which they find to be immoral, but which those engaging in these uses judge to be benevolent" (p. 36). Also particularly valuable are chapters by Gilbert Hottois, who distinguishes between the ethics of conviction (concerned with a purity of means, indifferent to consequences) and an ethics of responsibility (concerned with the uses of scientific knowledge), and Hans Ruh, who provides a refreshingly evenhanded analysis of the ethics of animal experimentation. Some of the other contributions are, however, less inspiring, and the overall result is rather disappointing. Crucial questions about the aims, methods and limitations of physiology needed to be addressed but few chapters do so directly.

What sort of justification might be advanced for extending our knowledge of physiology? It could be said to have broadened and deepened our appreciation of the phenomenon of life, freeing us from myth and superstition, and provided a more realistic (but how "realistic" we cannot say) vision of our own nature. And it has contributed to our ability to

live longer, healthier lives and to construct environments more attuned to human comfort and convenience. Physiological understanding thus underpins a modern culture which emphasises personal autonomy, the amelioration of the human condition, and the rejection of fatalism. Almost exclusively, its aim has been to define causal relationships deterministically, in physico-chemical terms: the body is treated as (or as if it were) a machine.

But, clearly, there are some significant limitations to this approach and its continued success. Firstly, unless we are mere automata, physico-chemical explanations must ultimately prove incapable of providing further insights. Secondly, parallel to the physicists' "uncertainty principle," the processes of intervention on which physiological inquiry largely depends must, ultimately, significantly alter the phenomena investigated. Thirdly, as similarities between human and nonhuman species become increasingly recognised, questions as to the ethical acceptability of exploiting animals in experiments (and in other ways) assume greater urgency. Challenges to physiology may thus be characterised as epistemological, practical, and ethical—and since the former two threaten to undermine the justification for physiology in terms of its claim to increase understanding, ethical considerations intrude at every point.

Indeed, ethical questions are even more pervasive than that. For physiology can no longer pretend that its *raison d'être* is the pursuit of knowledge for "knowledge's sake." And if its justification now lies, at least partly, in applications (whether for medical treatments or improving the productivity of farm animals), those applications (their worth, beneficiaries, risks etc.) must themselves feature in any ethical assessment of the physiological inquiries on which they are based. Globalisation sharpens the focus of such concerns and forces us to consider fundamental cultural differences concerning "respect for life," some of which are catalogued in this book in the comparative surveys of Hiroshi Yamashita and Albin Eser.

However, the book provides few ethical perspectives on such issues, or on ways in which physiologists' objectives might be pursued by alternative means. Indeed, consideration of humane alternatives to animal experiments, the so-called Three Rs (reduction, replacement, and refinement) receives only one (oblique) reference, in which Gyorgy Adam is as dismissive of such approaches as he is of "the modern trend of exaggerated compassion for animals and its extreme manifestation in the animal rights movement" (p. 158).

The aims and timeliness of this project are admirable: it is a pity that it fails to deliver more.

Latest installment of the endocytobiology serial *Eukaryotism and Symbiosis—Intertaxonic Combination versus Symbiotic Adaptation* (1997). Schenk HEA, Herr-

mann RG, Jeon KW, Muller NE, Schwemmler W (Eds). Berlin: Springer-Verlag, 530 pp. £76/\$129 hardback; ISBN 3 540 63375 8

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In 1980 a conference was convened to assemble researchers from disparate disciplines united by an interest in the process and consequences of intracellular symbiosis. From that time the *International Colloquium on Endocytobiology and Symbiosis* has taken place every three years and has spawned five volumes of proceedings entitled *Endocytobiology I-V*. The sixth volume, from the 1995 conference in Tübingen Germany, has now been published and is entitled *Eukaryotism and Symbiosis—Intertaxonic Combination versus Symbiotic Adaptation*. Throughout this period these volumes bear witness to a transformation in our view of symbiosis and its role in eukaryotic evolution. The present proceedings reflect the common acceptance of symbiosis as an active force in evolution by focusing more than ever on the molecular nuts and bolts of symbiotic associations, and their effects on the evolution of the partners.

Conference proceedings are very diverse by nature, but the *Endocytobiology* volumes are more than usually so because of the specific intent of the sponsoring society to bring various fields together. This volume is not an exception: it contains 45 papers by over 130 authors covering a host of subjects as far-ranging as organelle-to-nucleus gene transfers, organellar genome sequences, secondary endosymbiosis, mechanisms of protein targeting, hypercycles, methods for phylogenetic reconstruction, physiological interactions between lichen symbionts, endomycorrhizal fungi, and even sampling vertebrates for methane production. Most of the contributions report novel research findings, but there are also a number of review articles and theoretical papers, all divided into two general themes: symbioses resulting in new organelles, and adaptation phenomena in symbiotic systems such as lichens, endomycorrhizal fungi, bacterial symbionts, and so forth.

Authors in such a broad-based book have a special challenge to appeal to readers from equally broad backgrounds, especially since this book issues from a meeting

that took place in 1995 (the seventh conference already came and went in April of 1998). A 500 page compendium of narrowly-focused, out of date research reports covering a broad variety of topics is a woeful thought indeed, but many authors have risen to the challenge. Numerous papers that might only have been research reports for the specialist have been supplemented with literature reviews and discussion that put the subject into context and make them considerably more interesting and accessible to readers from outside the field. Moreover, most authors have conscientiously updated their contributions (at least until the spring of 1997), which mitigates the long delay in publication. Naturally, not all papers manage this as well as others. This is especially true of the second section on symbiotic adaptation, which contains numerous extremely specific research reports that are likely to appeal only to a narrow audience of informed specialists.

Another potential problem for the non-expert is the enforced use of a new vocabulary, which is mixed rather sporadically with more conventional terms. This is the result of a bold attempt by the editors to piece together a unified nomenclature to describe symbiotic interactions. Although this may have some lasting affect on the use of certain words, it is doubtful that all the terms will survive. In addition, many of these new terms seem rather gratuitous since they are intended to replace words that are not at all ambiguous (for instance “chondriome” for the mitochondrial genome), and others seem to be particularly poor choices (especially those that conflict with common usage). Altogether, the use of this new vocabulary probably detracts from the book for the present, but might be one of its lasting contributions (one never can tell what words will catch on).

As a whole, *Eukaryotism and Symbiosis* follows in the footsteps of its predecessors in the *Endocytobiology* series without significant departure. The book contains many useful reviews and reports, as well as a lot of colourful speculation (which is usually a highlight of *Endocytobiology* volumes). Researchers interested in symbiotic partnerships and organelle evolution will doubtless find something worth reading in this volume, but it is unlikely that the whole book will appeal to anyone. This is a book that your library ought to carry, so check it out.