

it is fully integrated into wider plans involving wild populations and their habitats: many of the concerns about maintenance of appropriate genetic traits can be allayed if a population survives in some form in or near its natural habitat. □

Georgina M. Mace is in the Institute of Zoology, Zoological Society of London, Regent's Park, London NW1 4RY, UK.

■ The reintroduction of endangered mammals into the wild is also the subject of *Beyond Captive Breeding*, a volume arising from a symposium held at the Zoological Society of London in 1989. Edited by J. H. W. Gipps, the book contains sections on policy and politics, logistics, and ecology and genetics, ending with several case-studies. Published by Oxford University Press, £45. *Meant to be Wild*, journalist Jan Deblieu reports on biologists' attempts to return North American animals to their natural habitats through captive breeding. Published by Fulcrum, \$24.95. □

Thinly sliced

Philip Rubery

Molecular Activities of Plant Cells: An Introduction to Plant Biochemistry. By John W. Anderson and John Beardall. *Blackwell Scientific: 1991. Pp. 384. £49.50, \$99.95 (hbk); £22.50, \$49.95 (pbk).*

WHY is an illuminated mesophyll cell like a starving rat? Because it too performs gluconeogenesis, but in miniature. The cytoplasm of the mesophyll cell receives trioses from the chloroplast for conversion to sucrose. In the rat, glycerol from adipose tissue, and lactate and alanine from muscle, are recycled to glucose by the liver. The carbon, whether fixed from the air or freed from reserves, is protected from oxidation and exported as fuel to phloem or blood. Thus might ponder the 'general biochemist' while reading this introductory book, which is principally intended for plant-science students. Its focus is on primary productivity and the construction and renewal of cellular fabric, with emphasis more towards the energetics, mechanism and regulation of processes than the fine detail of structural molecular biology. Although avowedly introductory in scope, the exposition has firm chemical and quantitative foundations and is generally clear, logical and rigorous within its self-imposed limits. The style is not cluttered with latinate polysyllables and circumlocutions that are so often found in current biological writing, and is refreshingly free of jargon. A particular effort is made to use appropriate abbreviations and metabolic termi-

Human life defined, or defied?

S. A. Barnett

Encyclopedia of Human Biology. Volumes 1–8. Editor-in-chief Renato Dulbecco. *Academic: 1991. \$1,950, £1,250.*

ACCORDING to the art historian Kenneth Clark, authoritarian governments "live by lies and bamboozling abstractions" and therefore dislike encyclopaedias. Clark is referring to Denis Diderot's *Dictionnaire Raisonné* (published in 1751–65), an irreverent work of great historical importance which, in the Age of Enlightenment, was twice censored by the authorities. Today, despite the fact that many of us still enjoy reading and owning books, encyclopaedias are liable to be superseded by discs — floppy or hard. As the editor of this new venture writes, "New information appears daily at . . . an astounding rate". Hence, in the many fields of human biology, even

nology: the occasional lapse, such as calling GTP a trinucleotide, is thus more jolting than usual.

Inevitably the generalities of energetics and molecular machinery — well-trodden ground — are sometimes covered in rather a perfunctory way, but aspects particular to plant structure and metabolism stand out and will prepare students well for further insights — for example, that the complexity of plant cell walls may reflect a signalling as well as a structural role. Perhaps the most useful part of the book for me was the thoughtful treatment of assimilation, with clear and modern accounts of the complexities of C₃ and C₄ mechanisms, of the metabolic traffic between chloroplasts, mitochondria and peroxisomes during photorespiration, and also of nitrogen and sulphur processing. Any hazy preconception of an animal-orientated reader that chloroplasts are simply convenient intracellular milch cows, driven backwards by light, is soon dispelled. Indeed, the regulatory role of light, in metabolism rather than morphogenesis, is a pervasive theme, although I was disappointed that the discussion of control did not place more emphasis on system properties. The authors conclude with a useful account of organelle biogenesis, but their overall treatment of gene expression is too elementary to be free-standing for most types of student.

The metabolic filling in this sandwich has substantial value, and should satisfy the appetites of purchasers who are prepared for their bread to be rather thinly sliced. □

Philip Rubery is in the Department of Biochemistry, University of Cambridge, Cambridge CB2 1QW, UK.

the most authoritative surveys are likely to be soon dated. For this and other reasons, these eight volumes, presented by the publishers as "human life defined", are more likely to be disconcerting to users and reviewers than to tyrants.

The format and illustrations are excellent and encourage browsing; and the whole series has clearly been assembled with great labour and dedication. Articles are longer than those in most encyclopaedias. Each conveniently begins with a glossary and ends with a bibliography.

The glossaries are designed, the editor tells us, as lists of definitions. But the entries in most of the lists are not definitions but notes on words; and some are misleading or confusing, for instance, those for DNA, gene and nucleic acids under "Agronomy" and that for commensalism under "Animal Parasites". In other places too, a firmer editorial hand was needed. The vast topic of human aggression has six references, of which five concern work on monkeys and three are by the author of the article. Elsewhere are other signs of hasty writing. The first words of an interesting contribution with an odd title, "Affective Disorders, Genetic Markers", suggests an unconventional limitation of genetics: "The aim of genetics research is to understand the inherited biochemical basis of the disease state". More important, the crucial phrase "inherited biochemical basis" is not given the critical analysis it requires.

The philosophy behind the choice of subjects is difficult to make out. Of 84 articles in volume 1, 14 are on psychological topics and two ("Altruism" and "Bioethics") are primarily philosophical; these match expectation. But one ("Aqueous Two-Phase Systems") seems to have escaped from a work on physical chemistry. Most of the remainder have a strong medical component. Seven are on bone, from "Bone Cell Genes" to "Bony Pelvis of Archaic *Homo sapiens*"; two are on joints, "Articular Cartilage and the Intervertebral Disc" and "Articulations, Joints between Bones". "Animal Parasites" is followed by a very technical piece (one of many) entitled "Antibiotic Inhibitors of Bacterial Cell Wall Synthesis".

We might justly have expected at least one contribution under Anthropology between the last two. Inspection of the complete table of contents confirms the anthropological shortfall; it also shows a