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Australian Journal of Ecology

Edited by D. Anderson, School of Botany, University of New South Wales, and to be published quarterly from January 1976

Blackwell Scientific Publications

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Everything caudal to the eyes

Handbook of Sensory Physiology Vol. VII/3: Central Processing of Visual Information. Parts A and B. Editorial Board: H. Autrum, R. Jung, W. R. Loewenstein, D. M. Mackay, and H. L. Teuber. (Springer: Berlin and New York, 1973.) Part A: pp. xi+775; part B: pp. viii+738; DM 248 each.

Not one book but seventeen (at the latest estimate), and each one so weighty that a single hand can hardly lift it. That is the *Handbook of Sensory Physiology*. It will probably exceed 13,000 pages with more than 4,000 illustrations and is undoubtedly intended to be a definitive statement of the progress of research on sensory systems. The list of authors is massively impressive, the production lavish, and the coverage catholic almost to the point of being indiscriminate.

Volume VII is devoted to vision and I am particularly concerned with Volume VII, Part 3, two large tomes which tackle the *Central Processing of Visual Information*. It is edited by Richard Jung, the father of the Freiburg school of neurophysiology, where work on the visual cortex began 25 years ago with the explicit motive of seeking explanations for perceptual phenomena in physiological terms. That theme is well represented in these books, which cover everything in the visual system caudal to the eyes.

Professor Jung opens Volume VII, Part 3, Part A, Section 1, Chapter 1 (believe it or not) with an encyclopaedic account of the successes of his own approach to the visual system, particularly concerning the role of so-called 'B' (brightness) and 'D' (darkness) neurones in determining the perception of brightness and contrast. This chapter alone is about 150 pages long and together with two other chapters of 100 pages or more (by Grüsser and Grüsser-Cornehls on movement perception, and van der Grind *et al.* on temporal transfer properties) it dominates the first book.

In Part B there are five especially valuable comprehensive chapters: Sprague *et al.* give a much needed, up-to-date account of the functions of visual projections to the tectum; Freund covers the physiology of the lateral geniculate nucleus; Brooks and Jung do the same for the visual cortex; and Szentágothai reviews the structure and ultrastructure of both the geniculate body and the cortex in two chapters that are as pleasing to the eye as they are to the rest of the nervous system caudal to the eyes.

It is the major reviews that give this work its historical importance, of

course, but I enjoyed the books more for some of the shorter, more personal chapters on specialised topics: MacKay on the stability of the visual world, Levick on spontaneous and maintained neuronal activity, Gross on the inferotemporal cortex and Brindley on stimulation of the human visual cortex.

All these and many other fine chapters make the books indispensable for any library of physiology. Not that the whole venture is without fault. In general, the books suffer dreadfully from the lack of overall organisation that so often mars multi-author works. In fact, the degree of overlap and even straightforward contradiction between chapters, and the whimsically random systems of referencing make the books frustrating to read. The few chapters on visual processing in lower animals, although excellent in themselves, seem an incongruous sop to comparative physiology. Where is the essential review on the analysis of visual information (not just colour vision) in insects, spiders, octopus, crayfish and so on?

Finally, I am disturbed at the price: £45 for 800 pages. I believe that books of this sort ought not to cost so much; the libraries that will have to take the whole series are going to have to pay a vast sum. It raises in my mind doubts about the role of purely commercial enterprises in the essential business of disseminating scientific results.

Colin Blakemore

Into the cell

The Cell Nucleus. Edited by Harris Busch. Vol. 1, pp. xxiii+667; vol. 2, pp. xxiii+564. (Academic: New York and London, July 1974.) \$45.00; £21.60 each.

DR BUSCH has courageously attempted to collect together all the important knowledge about the eukaryotic nucleus and it has required 59 authors, many of whom have made fundamental contributions to their subject, to write the 39 articles. It is interesting to draw comparison with a similar major work, the six volumes on *The Cell* (Academic: London, 1959-64) which were almost exclusively devoted to the cytoplasm; and with a slim volume, *The Cell Nucleus* (Butterworth: London, 1960). Our knowledge then was quite primitive, but at about that time two fundamental observations were made which have led to the development of important new techniques and thus to many of the discoveries now described.

First, Marmur and others showed that it was possible to separate the two strands of the DNA molecule and then to reassociate them, a process depending on pairing between complementary sequences of the nucleotide bases. This