studies because of its natural synchrony. Sauer contributes a splendid review of gene expression in *Physarum* and adds a stimulating hypothesis for transcriptional control in the cell cycle. This is followed by a fine chapter from Howell on the regulation of protein synthesis in *Chlamydomonas*.

There are also chapters on regulation of specific enzyme induction, *Petite* mutation in yeast and, somewhat out of the mainstream, a discussion by Hoffman of epidermal proliferation in lower vertebrates. Finally, the somewhat brief, experimental article by Rao and Sunkara on cell fusion is full of provocative statements and interesting data. (A full critical review of cell fusion data would be very valuable.)

I enjoyed reading this book and commend it to all biology libraries. The editors tell us that it will provide material for a textbook on the cell cycle. I offer, with due humility, some comments; a unified textbook should of course be more uniform in style. They will, I hope, rectify two crucial omissions even though "cell cycle regulation is too broad a subject for one volume". The kinetics of the cell cycle and of cell proliferation have provided major insights and will continue to do so in the future; they should be discussed. Even more regrettable is the omission of a discussion of cell cycle genetics. The elegant and informative work of Lee Hartwell and Paul Nurse on yeast and even the considerable, preliminary genetic work on animal cells is a major new excitement in cell cycle studies. They are essential to a contemporary discussion of cell proliferation and the cell cycle.

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Hemispheric asymmetry

Asymmetrical Function of the Brain. Edited by M. Kinsbourne. Pp.581. (Cambridge University Press: Cambridge and London, 1978). £18.

STRUCTURAL and functional differences between the left and right hemispheres of the human brain have been investigater intensively by experimental psychologists, neurologists and others for the past fifteen years, and such work continues to proliferate. As research on this topic is still very much in progress, no book on hemispheric asymmetry can offer definitive interpretations at the moment; the best that can be hoped for (and it would of course be valuable) is an up-to-date survey of current knowledge and future prospects. Unfortunately, Professor Kinsbourne's book cannot offer this. Many of the chapters were completed several years ago, as is evident from the absence of recent references in their bibliographies, as well as from the fact that preprint versions of some chapters have been in circulation for a number of years. One chapter, indeed, was written in 1968, revised and expanded in 1970, and had a two-page postcript added still later, alluding to some of the work done since then. Clearly, there has for some reason been a delay of some years between the completion of many of the chapters and the appearance of this volume on the booksellers' shelves; and this means that much of the book is already out-of-date.

The fifteen chapters themselves are very uneven in quality. Two are extremely long, occupying nearly half of the book between them. One of these, 126 pages devoted to research on the relationship between the report of a tachistoscopically exposed row of letters or other items and the position in the row of the reported item or items, scarcely mentions hemispheric asymmetry, concentrates too much on the author's own research, and was completed in 1970, with no subsequent revision. The other long chapter, a 118-page survey by L. J. Harris of sex differences in spatial ability, is excellent: penetrating, scholarly, exhaustive, and an ideal companion piece to the same author's recent survey of sex differences in the growth and use of language. There is a useful chapter by Nebes reviewing the results of split-brain studies; this is an expanded version of his article on this topic in the *Psychological Bulletin*. It suffers from paying too little attention to the fact, pointed out to me by E. K. Warrington, that all of the split-brain patients whose performance has been studied in any detail showed evidence of brain injury at birth; one would therefore expect them to develop abnormal patterns of hemispheric specialisation; thus, serious difficulties arise if one wishes to infer anything from these patients about hemispheric asymmetries in brains which have developed normally.

The editor of the volume has in several previous publications proposed an interpretation of hemispheric asymmetry effects in terms of asymmetry of attention; a subject whose attention is biased towards his left hemisphere will perform better with material presented to this hemisphere (via the right visual hemifield or right ear) than to the other. The occurrence of, for example, right-hemifield superiorities in visual tasks requiring verbal processing is said to occur because the requirement for verbal processing creates an attentional bias towards the left hemisphere. Conversely, a non-verbal visual task, creating an attentional bias towards the right hemisphere, will show a left-hemifield superiority. A direct way of testing this attentional interpretation of hemispheric asymmetry effects is to arrange matters so that the subject cannot know in advance whether his task will be a verbal or a non-verbal one; under such conditions there cannot be a preparatory bias towards the hemisphere appropriate to the task. It follows from the attentional bias theory that randomly intermingling the two types of task in an unpredictable way will eliminate hemifield differences for both types of task. Such experiments have in fact been carried out: by Geffen, Bradshaw and Nettleton in 1972 (verbal or non-verbal matching of letter pairs), Berlucchi *et al.* in 1974 (letter-matching and face-matching) and Bryden and Allard in 1976 (randomly varying typefaces, some of which favour the right hemisphere and some the left). In all three studies, selective previous preparation of one or other of the hemispheres was impossible; in all three studies, the appropriate hemifield effects nevertheless still occurred. As these three findings would seem to devastate any attentional interpretation of hemispheric asymmetry effects, one would have expected Professor Kinsbourne to have mentioned them when reiterating this interpretation in his contributions to this volume; but he does not do so.

Because so much of this book was written so long ago, much that is of vital importance for an understanding of the brain's asymmetrical functions is simply not dealt with. One neurological example is the Scandinavian work on hemispheric asymmetries in regional cerebral blood flow during verbal activity; one psychological example is the crucial work of Morais and Bertelson on dichotic listening.

Furthermore, in spite of the long delay in the appearance of this book, it shows signs of being very hastily put together. The subject index is absurd. It is three pages long; the entries concerning spatial ability ignore the 118-page chapter on this topic; and there are no entries for handedness, left-handedness (though there is one for paw preference!), reading, writing, faces or sex differences, to mention but a few obvious omissions. There are, however, index entries directing the interested reader to discussions of the Kalahari Bushman, the flute, the bassoon, the 'cello, and the dowel rod.

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