of coverage is uneven. However, this is probably due more to the imbalance in available material than superficiality on the part of the author.

The principal conclusions that emerge from this book are: (i) All organs are capable of repair. Repair is achieved through cell proliferation, enlargement, differentiation, movement, recognition, and death, as well as through the synthesis of intercellular materials. The extent to which each of these tools is used, if at all, is determined largely by the organ in question. Since these tools are also the ones used in development, the study of tissue repair may shed light on the mechanisms bringing about embryogenesis. (ii) Except for a few organs such as the skin, we have a very poor description of tissue repair. (iii) Modern molecular biology has still to make its impact on the problems of damage-induced growth. It is time for such investigation to begin.

This book also allows us to evaluate the impact of two other experimental approaches to the problem of tissue repair which have been used to a considerable extent. The first is histochemistry and the second electron microscopy. In the reviewer's opinion it is clear that histochemistry has contributed very little of fundamental importance to our understanding of damage-induced growth. Electron microscopy has been valuable in filling in important details, for example, in cell identification.

The author presents ideas and interpretations that I disagree with, and I suspect that other readers may find themselves disagreeing with him on specific points, or points of view. I would have preferred a more balanced discussion of the role of stimulators and inhibitors in the control of damage-induced growth. I think there should have been a summary at the end of the book attempting a synthesis of the problem of tissue repair in the various organs studied and its relationship to the problem of growth control. But no matter what one finds to disagree with, it will be secondary to the overall feeling of gratefulness to the author for bringing together and organizing such a vast array of facts.

This book is not only useful for the developmental and cell biologist, surgeon, or pathologist, but it is of value for anyone who wishes to get a good overall understanding of the current status of the biological bases of tissue repair.

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Cybernetic Biology

Neurological Control Systems. Studies in Bioengineering. LAWRENCE STARK. Plenum, New York, 1968. xx + 428 pp., illus. $17.50.

Stark has thought considerably and deeply about the topics of his book, yet I find it less stimulating than I expected. Part of the problem undoubtedly arises because the book is fundamentally a collection of edited reprints, arranged in a sort of phylogenetic order of subject. This leads to redundancy and some obscurity in the text, where much is taken for granted. There are few biologists who can read about "Wiener kernels" with any insight, and the others would find Stark's explanation of the relevant techniques for signal analysis inadequate. To an engineer, perhaps, the profusion of Bode plots means more and is even possibly exciting.

I find it hard to understand the exact rationale for some of the experiments described, although I am sympathetic to the applications of systems theory to problems of biological organization. For example, in the first section of the book the light responses of photoreceptor neurons in the crayfish are described in some detail. In particular the impulse patterns from the two photoreceptors in the sixth abdominal segment were recorded and compared under conditions of *constant illumination*. No, or in some cases small, correlations were found between the two pulse trains. I cannot understand, however, why correlation should be expected except under conditions of changing illumination—which, indeed, are the conditions that evoke a behavioral response from the animal. The data are then used to restrict the description of the neural code used by the crayfish—an extrapolation which must be invalid.

Autobiography has a new vogue in scientific literature. Stark's book is often autobiographical and therefore idiosyncratic, so that it unfortunately invites comparison with others of the genre, for example, K. S. Cole's brilliant and exciting *Membranes, Ions and Impulses.* The strongly autobiographical approach is probably successful only when the author can look back at continuous work in a field that has already shown enduring achievements, such as the description of the action potential by the Hodgkin-Huxley equations. I do not think that that stage has been reached by work on the human operator, to whom most of the book is devoted; he has been described, inevitably in limited, essentially linear regions. So although there is much that is interesting and useful to be found in the details of the human operator that Stark presents, there is nothing that is new in the book and little that is novel in the synthesis.

The book is full of data which are undoubtedly needed by theorists of muscular control systems but which by themselves are unsatisfactory for less committed students. The conclusions drawn and the discursive sections themselves are often redundant although individually interesting. This is not so much a book as a compendium, not a closed account but a progress report. In other words, all the details, but not the essence, are readily available. This is not to decry the worth of the book: the details and not the essence are often overwhelmingly important. Interpretations of news are better avoided; the living is more interesting, though less explicable, than the dead.

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Enzymology

Flavins and Flavoproteins. Proceedings of the second conference, Nagoya, Japan, 1967. KUNIO YAGI, Ed. University of Tokyo Press, Tokyo; University Park Press, Baltimore, 1969. xii + 286 pp., illus. $17.50.

Immediately preceding the 1967 International Congress of Biochemistry in Tokyo, a group of experts working with flavin nucleotides and flavoproteins assembled in Nagoya to assess the current status of their field. Their experimental findings (up to date as of that moment), their conclusions and speculations, and even their disagreements are all faithfully recorded in this volume, which will serve as a standard work on this specialized subject.

Although such books as this one reach limited audiences, their importance as part of the foundation for a larger discipline (enzymology, in this case) cannot be overemphasized. The continuity of the symposia upon which these reference works are based is now in jeopardy owing to the travel restrictions being imposed by granting agencies, and this should be a matter of concern for all scientists.

The formal papers (23 in number) in this symposium fall into three groups, and, indeed, it might have been preferable if they had been published in this