ways difficult to obtain, and reliance on indirect evidence will continue to be an important part of community analyses. However, a "close" view of island species and their habitats and resource utilizations provides the best means of testing competing theories. Lack was a vigorous proponent of close views, and we can only regret that he is not able to devote his considerable energies and talents to additional studies of island bird communities.

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Metastatic Mechanisms

Fundamental Aspects of Metastasis. Papers from a symposium, Buffalo, N.Y., July 1975. LEONARD WEISS, Ed. North-Holland, Amsterdam, and Elsevier, New York, 1976. xx, 444 pp., illus. $53.95.

In the past, metastasis has not received the same amount of attention as other aspects of cancer research, but interest in this phenomenon is increasing. This book, although it is not, as its editor acknowledges, comprehensive in scope, serves two worthwhile purposes: it is an excellent source of references to the literature, and it clearly illustrates the lack of understanding of metastasis at the biochemical level.

Although the process of metastasis can be defined and broken down into a series of steps, suitable biological systems do not appear to be available to allow the systematic characterization of any one step in molecular terms. The book presents fascinating observations on cell deformability, cell locomotory behavior, cell-tissue interactions, interactions of circulating cells with the endothelium, and other such phenomena, but the analysis always stops short of a molecular characterization of the phenomenon under investigation. An enormous amount of information on cell surface changes during malignant transformation is given in two chapters, but the relationship between any of these alterations and the metastatic potential of the cell remains to be demonstrated. Nor is it at all obvious how such phenomena could be characterized in molecular terms or how such relationships could be demonstrated with the techniques currently available.

The development of biological systems suitable for experimental manipulation and biochemical analysis is perhaps the most important need in this field. In light of this need, two of the more interesting chapters are those by Fidler and by Nicolson on the derivation and properties of a series of melanoma cell lines that vary in their ability to colonize the lung when they are injected into the tail vein of a mouse. These preliminary studies are provocative and stimulating.

Perhaps the main problem in work on metastasis is that all the proper questions have not yet been asked, and until they are the answers will not be forthcoming. This book makes a valuable contribution by pointing out current deficiencies, and it may thus serve to stimulate further interest and thought in the experimental study of metastasis.

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Cellular Neurobiology

Cell Biology of Brain. W. E. WATSON. Chapman and Hall, London, and Halsted (Wiley), New York, 1976. xii, 528 pp., illus. $35.

Among the most impressive developments in neurobiology in the past decade has been the growth in our knowledge of what may be termed the cell biology of neural tissue. Although the morphology and functional properties of neurons and glial cells have always been of interest, until comparatively recently most neuroanatomists and neurophysiologists were so preoccupied with the connections of specific populations of neurons or with their electrical properties that they tended to lose sight of the fact that both neurons and glia share many of the features of other animal cells. Moreover, the structural complexity of the central nervous system seemed to deter all but the most ignorant or headstrong investigators from trying to apply molecular or cell biological approaches to the nervous sytem. Fortunately, several technical developments, including the identification of simpler models for study (especially in invertebrates), the development of successful methods for nerve tissue culture, improvements in microchemistry, and the perfection of intracellular labeling methods, have served to change all this, and a new era in neurobiology has been opened. So rapid and wide-ranging have been the developments in this area that it has been difficult to keep abreast, and the need for a broad-based review has become increasingly apparent. To a considerable extent this need is met by Watson's *Cell Biology of Brain*.

The breadth of the coverage of this volume can perhaps best be indicated by its chapter headings: "Brain as an epithelium," "The neuron as a cell," "Membranes," "Chemical transducers," "Excitation-metabolism coupling," "Plasticity," "Responses to injury," "Neurotrophism," and "Genetics of the nervous system." The coverage varies somewhat in both quality and comprehensiveness, and many chapters read like annotated bibliographies, every statement being documented by from one to 28 citations from the literature. This makes for rather difficult, and at times irritating, reading; the following example is taken not quite at random:

> In studying oxidative enzymes best agreement is obtained between measurement of mitochondria and of cristae (2352) on the one hand, and subjective histochemical assessment on the other. Both show high oxidative capacity in the choroid plexus (2162, 2357), less in ependyma (961, 962, 1292, 2094, 2162, 2232, 2772, 2910), and in neurons (962, 2056, 2057, 2162, 2910), and least in other glia (962, 2056, 2057, 3036).

At times one has the feeling that the author is using the literature in much the way drunken men tend to use lamp posts—not so much for illumination as for support. In other sections, where the author has allowed himself to address the subject directly without constantly shuffling through a stack of reference cards, the book reads more smoothly and is generally more interesting. At the same time one must admire the thoroughness with which the literature is reviewed. The bibliography, which comprises almost 200 pages and includes more than 3200 references, is likely to be one of the most useful features of the book, especially since it covers the literature through 1974.

It is easy in a work of this scope to identify weaknesses or errors of detail or emphasis. The book is in fact reasonably free of factual errors, and even typographical errors are surprisingly infrequent for a first printing. However, the illustrations are atrocious. Most are grossly simplified line diagrams, amateurish in execution and often wholly uninformative.

Despite this deficiency, Watson is really too modest in suggesting that the book is intended principally for honors and graduate students. All of us who work and teach in his field are likely to remain in his debt for a long time

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