and Its Disorders") have a format similar to that of volume 1, but they are better books. Volume 2 presents an impressive array of papers from which the determined reader can get at least a taste of numerous and diverse aspects of clinical neurology. There are eight chapters on methods of clinical investigation, 32 on diseases of the nervous system, and eight on complex cerebral functions such as those involved in language, dementia, and pain. Many of these chapters are good introductory summaries and promise to be particularly helpful to basic neurobiologists interested in the clinical side of their field. Volume 3 is more focused. It offers 33 chapters on the auditory system, eight on central processes related to language, and ten on speech. Because of its narrower scope, this volume affords more satisfying coverage of its subject than do volumes 1 and 2, and by virtue of summarizing the work and views of a large gathering of leaders in the study of hearing and speech, it is a useful addition to the literature of neurobiology.

The questions loom: for whom were these volumes produced and to what end? Celebration or not, books should be appropriate and useful for an identifiable readership. One supposes that the organizers of this publishing project had answers to these questions in mind, but the product gives little evidence of it. As the foregoing remarks perhaps suggest, many of the reviews gathered in these volumes are too short (and therefore too selective) to be satisfying to professional neurobiologists, and at the same time the language of those papers and the amount of knowledge they presuppose on the part of their readers are serious obstacles for nonspecialists. It is unlikely that general readers—nonscientists—will be able, or inclined to try, to read these compendia. Nor do the volumes promise to be useful as textbooks. They are too fragmentary, too uneven, and too expensive for most educational purposes. Of course, a collection of nearly 200 review papers by as many authors is bound to include clearly written, informative, and engaging contributions. That is the case here. Aside from deserving to be placed in libraries serving life scientists, however, it is not clear what market these books may fit.

To celebrate the anniversary of NINCDS with an account of the achievements in basic neurobiology and clinical neurology that have been fostered by the Institute was a fine idea. But the account should have been a coherent, readable, and concise report directed to the congressmen and federal administrators who are responsible for mandating the funding and activities of the Institute and to the public who pay the bills. The excitement and the "take-home messages" of a quarter-century's research on the nervous system should have been communicated lucidly to those who are concerned today with the purposes and payoffs of federally supported research. That support is shrinking dangerously. One cannot help believing that effective exposition of the products of publicly funded research should help greatly to substantiate the mounting pleas for more money. The story these books could have told is spectacular, but they do not succeed in telling it satisfyingly at any level, nor do they speak to those whose appreciation of the silver anniversary of NINCDS we should most earnestly invite and ensure.

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Coastal Processes

Marine Sediment Transport and Environmental Management. Papers from a short course, Key Biscayne, Fla., Nov. 1974. DANIEL JEAN STANLEY and DONALD J. P. SWIFT, Eds. Wiley-Interscience, New York, 1976. xviii, 602 pp., illus. $35.

One of the most active and rapidly advancing fields in geological oceanography is the study of sediment transport in coastal waters between the shoreline and the continental slope. Part of this activity is in response to urgent questions that are being asked about such matters as sites for dumping dredge spoil and foundations for offshore structures. The activity is accelerated by the availability of a store of fairly solid understanding of sediment transport in laboratory flumes, rivers, and beaches that can be extrapolated (at least in principle) to the continental shelf.

In 1969, the American Geological Institute published a volume entitled *The New Concepts of Continental Margin Sedimentation*. We now have a second-generation product in *Marine Sediment Transport and Environmental Management*, like its predecessor an outgrowth of an AGI short course. Whereas the 1969 volume emphasized aspects of modern marine sedimentation that could be applied to the ancient rock record, the present volume is concerned with marine sediment transport as a here-and-now environmental concern. The 1976 volume contains not only mostly new information but a new outlook. Read today, the 1969 volume seems almost quaint.

In the first section of the new volume, five chapters by four authors cover steady shelf circulation, wind-driven currents, tides, and waves. The chapter on tides (H. O. Mofjeld) is classic stuff, and the one on waves (O. S. Madsen) gives a simple mathematical description based on much recent work. The chapters that deal with open shelf circulation (C. N. K. Mooers and A. Leetmaa) are general and uncomplicated statements of the problems and of some of the approaches that have been and are now being taken. Particularly valuable are statements of the limitations of the available tools and knowledge and a clearly and honestly conveyed message that we have a long way to go before we will have predictive models of the kinds of flows that affect sediment movement on the open shelf. This is a welcome antidote to the claims of those who mix a handful of available data with an overdose of assumptions and then tout the mixture as a reliable predictive model.

Sediment entrainment and transport are discussed in the second section by six authors in five chapters. P. D. Komar's treatments of boundary-layer flow in steady unidirectional currents and sand transport on continental shelves are largely mathematical—basic, concise, and easily followed. Komar outlines the available tools (giving references to the papers that contain further details), discusses how and where they might be applied, and appraises their limitations. He concludes, with regard to continental shelves, that "we are nowhere near a state of the art that permits quantitative predictions of sediment transport" (p. 122). Other chapters in this section are a complete and balanced summary of the state of knowledge (as of early 1975) of suspended-sediment transport and mud deposition on continental shelves by D. E. Drake, a turgid discussion of bedforms and grain sizes of bottom sediments by D. J. P. Swift and J. C. Ludwick, and an admittedly speculative but clear discussion of gravity flows (turbidity currents and the like) by G. V. Middleton and M. A. Hampton.

The third section (the longest and, to my taste, the least satisfactory) covers patterns of sedimentation in space and time. It begins behind the coastline and proceeds chapter by chapter (seven chapters in all) in a seaward direction. Komar's chapter on nearshore currents and beach sediments is a concise and analytical summary of material he covers in greater length in his new book (*Beach Processes and Sedimentation*, 1976), to which the interested reader will no doubt proceed for further details. Then follow

nearly a hundred pages of geomorphic and descriptive treatment of coastal and continental-shelf sediments, all by Swift in his customary inconcise style. (About one-quarter of the volume consists of articles of which Swift is sole or principal author.) Processes at the shelf break and farther seaward rate three chapters (by D. J. Stanley, J. B. Southard, G. Kelling, and J. W. Pierce) that are the most speculative in the volume. This is certainly not unexpected, because these processes are less accessible and have received much less attention than processes farther inshore. What we know about them is mostly inferred from the form and distribution of sediments on the bottom, and this kind of inference has many pitfalls because one can seldom assess the time scale of the inferred process. Early in their chapter, Southard and Stanley say they will "attempt to demonstrate that in terms of sediment transport the shelf break is almost as important a discontinuity as the shoreline" (p. 351). Their attempt falls short of the mark, but their chapter and the two that follow do convey fairly accurately the current state of understanding as long as readers ignore most of their assertions while looking critically at the kinds of evidence they present.

As editors, Stanley and Swift deserve a large measure of credit for putting this volume together, but their own contributions are not up to the general quality of the other chapters.

The fourth section of the volume gets down to some of the specific sediment-related environmental problems on the continental shelf, and its chapters are guides to those who manage and decide. D. B. Duane, in his discussions of beaches, harbors, and placer mineral deposits, outlines engineering methods and approaches; these are not presented in the amount of detail one would find in an engineering manual, but the account is sufficient as a summary for environmental managers of approaches and appropriate places to use them. H. D. Palmer's chapter on structures embedded within or supported by the continental shelf bottom emphasizes the sands that are the dominant material on most shelves and treats problems of foundation failure caused by combinations of external stresses, excess pore pressures, and scour. C. G. Hard and Palmer discuss ocean dumping and stress the point that material dumped at sea is often not so much thrown away as recycled by currents and organisms, sometimes (as in the case of some dredge spoil) back into the estuaries it came from. Hard and Palmer conclude with the upbeat hope that the materials we now dump at sea may some day prove too valuable to discard and that they may be recycled more intelligently than they are today.

Overall, this is a practical volume. For students as well as for those who have to make decisions about building or dumping things on the continental shelf, it provides clear and often specific impressions of what we do and do not know and plenty of fruitful ideas on where to go next to get enough information to build the predictive models that we do not yet have for marine sediment transport. One measure of its success will be the speed with which it becomes outdated.

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Cell Structures

Microtubules and Microtubule Inhibitors. Proceedings of a symposium, Beerse, Belgium, Sept. 1975. M. BORGERS and M. DE BRABANDER, Eds. North-Holland, Amsterdam, and Elsevier, New York, 1975. x, 554 pp., illus. $45.95.

The papers in this volume are organized into major sections on the structure and chemical properties of microtubules, microtubule functions, and the use of new pharmacological agents to study microtubule-related processes. A predominant emphasis is the use of antimitotic agents to illuminate the role of microtubules in cellular phenomena, with a number of papers describing the effects of drugs such as colchicine, vinblastine, and podophyllotoxin on secretion and intracellular transport. The papers vary considerably in scientific quality and in some cases take such a specialized view of the research problems they deal with as to be essentially meaningless to a general reader. In addition, it is difficult to make connections among the papers, although Dustin's excellent summary partially does this for the reader. The book also lacks a subject index. The collection does, however, include papers that make interesting and novel contributions, and it calls attention to the work of a number of European laboratories that are taking different approaches to the study of microtubules and their functions. On balance, specialists will probably find that, although the papers must be read critically, most are useful.

The section of the book devoted to the structure and biochemistry of microtubules covers the substructure, chemical composition, and in vitro assembly of microtubules, as well as the interaction of tubule protein with antimitotic drugs and its association with various enzymatic activities. Amos's paper on optical diffraction of electron microscopic images, which is concise and well written, provides a good focal point for understanding the organization of subunits in the microtubule lattice and their possible interactions with other proteins or antimitotic drugs. The paper by Luduena *et al.* on cross-linking presents heretofore unpublished work on the substructural organization of the tubulin subunit as a heterodimer and, together with the excellent review by Wilson *et al.* of the pharmacological properties of the microtubule protein, provides a good background on the chemistry of the molecule. The papers by Bryan *et al.*, Jacobs *et al.*, and Engelborghs *et al.* are all concerned with studies on the assembly of microtubules in vitro and, while well written, are so detailed that they will be of interest mainly to those engaged in similar research. Research on phosphorylation and phospholipids and on phosphodiesterase activity associated with microtubules, discussed by Quinn and Lagnado, respectively, is detailed work that has not generally been considered in describing the properties of the tubulin molecule.

A large number of papers (21) are included that discuss the functional aspects of microtubules. These range from reviews of past work to presentations of data that have not previously appeared in print. Topics covered include secretion, intracellular transport, neuronal differentiation, microtubule-membrane interactions, and immunofluorescent localization of tubulin. Malaisse *et al.* review their more recent studies on microtubule-mediated insulin release, including characterization of the effect of a new drug, R 17934. The paper by Ginsel *et al.* is an interesting electron microscopic documentation of the role of microtubules in the secretion of the external cell coat in intestinal tissue. Petzelt *et al.* discuss the characterization of microtubule protein in liver and describe a new technique for determining its distribution in assembled and soluble states. The role of microtubules in phagocytosis and lysosomal fusion is summarized in a well-referenced paper by Malawista, and the conflicting views on the role of microtubules in pigment granule migration are excellently presented by Schliwa. Various novel approaches to studying the quantitation of microtubule protein and the control of its assembly during brain development are described by Nunez *et al.*, who present evidence for the appear-