problem is moving rapidly, and for the latest findings the *Proceedings of the First National Symposium on Sickle Cell Disease* should be consulted.

The *Proceedings* is a compilation of 500- to 800-word summaries of some 140 papers prepared for or presented at the symposium. The summaries were submitted at the time of the conference and generally contain ample references. The summaries were not refereed, but most of the authors show a considerable degree of self-restraint in interpreting the therapeutic implications of their findings. The summaries include interesting new findings on the relationship between sickle cell disease and zinc deficiency and the problems of nerve conduction abnormalities in patients given the otherwise effective cyanate treatment. The book also contains a list of references on sickle cell anemia for the period January 1970 to June 1974, obtained by a computer-based literature search. The summaries are organized according to the nature of the session in which they were originally presented: plenary sessions and sessions devoted to molecular, cellular, or clinical aspects of the disease. This arrangement aids the reader in finding items of interest to him and also conveys the breadth of the conference, which covered the full spectrum of approaches to the sickle cell problem. The book represents an excellent compromise between rapid publication of short abstracts, which generally contain only limited information, and the publication of a tailored monograph, which is a more lengthy process and risks producing a work that is somewhat outdated by the time it appears.

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Pituitary Histophysiology

The Anterior Pituitary. A. TIXIER-VIDAL and MARILYN G. FARQUHAR, Eds. Academic Press, New York, 1975. xvi, 248 pp., illus. $37.50. Ultrastructure in Biological Systems, vol. 7.

Pituitary morphology, both general and comparative, has been the subject of a number of recent publications that have concentrated on the fetal development, histochemistry, and ultrastructure of the gland, but the approach and subject matter of this collection of papers are refreshingly uncommon. This compact volume is a compilation of current work, much of it still in progress, that combines techniques of cell biology with elegant ultrastructural studies.

The three chapters dealing with in vitro culture methods for pars distalis cells are an exceptional contribution. The cellular heterogeneity of the pituitary and the complex hormonal milieu affecting the intact gland have limited morphologic analysis of secretory processes and prompted numerous attempts at culture. Tixier-Vidal reviews and analyzes the more conventional methods of explant and monolayer culture. Changes in subcellular organelles are correlated with specific supplementation of the medium with such hormones as synthetic thyrotropin- and luteinizing-hormone–releasing factors. Technical problems inherent in the culture methods, such as the preferential outgrowth of prolactin cells in tissue monolayers and the ubiquitous problem of fibroblastic overgrowth, are discussed. Perhaps the most exciting portion of the book concerns the studies of Farquhar *et al.* on successfully maintained, individually separated (dispersed) pituitary cells in vitro. Use of this method permits for the first time clear analysis of secretory function of specific endocrine cells without the problems inherent in whole organism, explant, or conventional tissue culture. The apparent physiological heterogeneity of rat somatotropes revealed by leucine pulse-labeling implies that there may be functionally different subpopulations of all specific endocrine cells.

Follicular cells, which historically have been misinterpreted as chromophobes in light microscopic studies, are studied in vitro. A discussion of their phagocytic capabilities by Farquhar, who first described these cells in 1957, makes enlightening reading for the investigator not directly involved with pituitary morphology who might have been unaware of their existence, let alone their potential significance in the biology of the gland.

Hymer comprehensively reviews the technology of separation of both intact cells and subcellular organelles, particularly secretion granules. Of great interest and potential usefulness is the possibility of density gradient separation of intact pituitary cells into groups of a single class. Although only partial success has been achieved, the method promises to make possible in vitro studies of large populations of a single cell type.

Olivier *et al.* report on a wealth of personal experience with the ultrastructure of human pituitary neoplasms (72 cases). The problem of the functional chromophobe adenoma, reviewed by Herlant in an excellent introductory chapter, is well illustrated. Presentation of the material in tables would have facilitated comparison of secretion granule morphology of tumor cells with that of the corresponding normal cell and might have more clearly expressed the variation in granule profiles in tumors of the same functional type. Follicular cells as components of the commonest pituitary neoplasm, the nonfunctional chromophobe adenoma, are mentioned, but the single electron micrograph does not illustrate the point convincingly. Profiles of small secretion granules in some apparently nonfunctional chromophobe adenomas may, as the authors speculate, represent fragmentary peptide synthesis such as is known to occur in some adrenocorticotropic-hormone–producing adenomas. It will be interesting to test this hypothesis using the elegant methods of immunoelectronmicroscopy reviewed by Nakane elsewhere in the volume.

This volume will be useful to mammalian or comparative morphologists, cell biologists, and clinical investigators. The brief and cogent reviews that introduce each chapter, particularly that of Herlant, put into perspective morphologic problems of the pituitary and their significance to the newer applications of cell biology and make this an ideal review for the student. Clear presentations of the technical methods employed and their limitations are exceptional features of the experimental reports.

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Molecular Virology

Early Interaction between Animal Viruses and Cells. KARL LONBERG-HOLM and LENNART PHILIPSON. Karger, Basel, 1974. x, 150 pp., illus. Paper, $35.75. Monographs in Virology, vol. 9.

This is a tightly packed and informative monograph by two investigators of long-standing and productive association with the field. The approach to the subject is patterned somewhat after an earlier review by Philipson (*Prog. Med. Virol.* **5**, 44 [1963]). The expanded scope of the present monograph reflects the enormous amount of new information that has become available in the intervening dozen years, particularly on the penetration of viruses into cells, the uncoating of the viral genome, and the early phases of virus-dependent or other host-cell macromolecular syntheses.

The discussion of individual virus groups in the section on uncoating of the viral gen-