pictorial description of the brain depended, in part, upon the rediscovery by artists in the 15th and 16th centuries of the laws of representational drawing.

The earliest known brain illustrations, presumably based on descriptions carried forward from Antiquity, date from the 11th century. Later Medieval illustrations, more ideograms than illustrations in the modern sense, depict ventricular theories of brain function. Accurate representation of the brain effectively began, as so much else in anatomy, with the publication in 1543 of Vesalius' *De Fabrica*. Subsequent illustrations by later anatomists demonstrated halting progress, as well as occasional regression to Medieval ideograms. In addition to illustrating the main line of neuronatomical progress, Drs. Clarke and Dewhurst also devote chapters to the evolution of modern concepts of ventricular anatomy, and to the strange case of the rete mirabile, based on a misunderstanding of Galen.

With the 17th century, we are recognizably into the modern era, highlighted by the accurate and attractive illustrations, some by Christopher Wren, from the work of Thomas Willis. In the 19th century, a major impetus toward a highly detailed anatomy of the brain surfaces was provided by the rise of phrenology, leading indirectly to those studies of cerebral histology which still serve as the basis of our ideas of the anatomical organization of the cerebral cortex.

The final chapter on modern aspects of cortical localization is the weakest in the book, due, in part, to the necessity for extreme compression of many complicated and detailed data from clinical observations and experimental studies.

Drs. Clarke and Dewhurst have performed a valuable service in bringing together these interesting and beautiful illustrations in the history of brain anatomy. This book shows how haltingly, and with what great effort, our modest knowledge of neuroanatomy has been gained. Regrettably, many typographical errors were overlooked in the production of this otherwise very handsome book.

"An Illustrated History of Brain Function" demonstrates that, just as modern neurophysiology is unthinkable without electronic technology, an accurate topographical neuroanatomy required the technical developments of Renaissance drawing, and the turn of mind that gave rise to them; these technical developments were necessary not only for the neuroanatomical discoveries, but also in order to have a language in which to communicate them.

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**Computer Diagnosis and Diagnostic Methods.** Edited by John A. Jacquez. Charles C Thomas, Springfield, Illinois, 1972. XIV, 397 pp. $19.75.

This book is the result of the second conference on computer diagnosis held at the University of Michigan in 1971 and includes nineteen papers whose purpose was "to review the present status of algorithmic methods of diagnosis and the role of computer assisted diagnosis in patient management." Since the late 1950's, the possibility that computers might in some way help in the diagnostic process has been actively pursued in many centers. Approximately 100 projects, relying primarily on Bayesian statistics, have attempted to simulate or assist medical diagnosis, viewing this as either a task of classification where the goal is to decide into which category a patient belongs or one of sequential decision making where the computer
must decide what to do next—stop and make a diagnosis, seek further information through questioning or laboratory tests, or begin treatment.

One of the difficulties has been the lack of statistical information regarding the interdependence and incidence of symptoms for each disease category. Gustafson presents a summary of his methodology by which he has attempted to extract this information from physicians who are experts in their respective fields. He describes his system at the University of Wisconsin where patients with suspected thyroid disease are interviewed by computer and the summaries and recommendations then sent to the physician. It is an isolated task and his results are only preliminary. The paper by Allen Ginsberg describes his approach to the problem of a pleural effusion. His project is one of the most sophisticated and attempts to include many of our value judgments in calculating a diagnostic strategy and treatment regimen.

To date, one of the major impacts of computers has been to force physicians to refine their thinking and definitions of disease. They have made quite obvious the consequences of many clinical decisions, the usefulness of much clinical folklore, but most importantly have drawn attention to the diagnostic process itself, a much neglected topic in medical education. Barnet and his group describe their work in the use of computers for medical education where clinical problems are presented as they may actually present in real clinical situations. The astute clinician is revered not merely for his accuracy in making the final diagnosis, but for his clinical judgment in efficiently interviewing the patient, concentrating on the relevant symptoms and deciding the necessity of each test, considering the risk and cost to that particular patient. To the extent that this process can be clearly defined, it can be mechanized by computers, but in evaluating such a system, we have every right to apply the same standards, not just percent right or wrong, as we apply to physicians. No general system has yet met these criteria.

Diagnosis is an extraordinarily complex process and an expensive process to perform on a computer. The problems of health care facing us are not primarily a lack of sophisticated diagnosis, and for the near future, computer diagnostic systems, even when improved, will remain a luxury. Though this book covers a significant spectrum of the work in computer diagnosis, it is not comprehensive. For the most part, it consists of extracts of work the authors have published elsewhere, yet it gives the reader a flavor, but not the basic content, of a very challenging and exciting field.

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Coagulation. Current Research and Clinical Applications. Edited by Gottfried Schmer and Paul E. Strandjord. Academic Press, New York, 1973. x, 238 pp. $9.00.

The field of coagulation has expanded logarithmically such that a week’s Gordon conference covers only a few aspects in depth. This newest addition to coagulation literature includes selected topics as they were presented in a 2-day symposium.

The first section introduces the biochemistry and pathology of coagulation; the text reads easily and several of the summary illustrations are quite useful as teaching material. Perhaps most informative, however, are discussions relating to patient