

This is an intriguing combination of clinical and research application.

In medicine, as in industry, progress must oft-times await the appearance of requisite instrumentation. On occasion, however, the type of instrumentation developed directs subsequent progress. The introduction of the Clark electrode led us away from saturation as the standard of oxygenation and made tension measurements the prime arbiter instead. Although knowledge of blood oxygen content is also important to the clinician, this variable is not commonly measured because simple, reliable direct techniques are not readily available.

A chromatographic technique for the rapid determination of blood oxygen, carbon dioxide, carbon monoxide and nitrous oxide, with the further capability of measuring blood nitrogen if so desired, is described in this section of the Symposium. Similar techniques have previously been described and utilized. However, the instrument industry has failed to show any enthusiasm for making instruments for this commercially available, presumably because they are well served by the present demand for electrode systems. As was pointed out at the Symposium, the impetus for such commercial development will have to come from the physician, especially the respiratory physiologist, for whom the measurement of blood nitrogen is so important. The intensivist might also be expected to add his voice to the demands for a rapid, accurate measurement of oxygen and carbon dioxide content. Unfortunately, this is a small, rather select, group and its influence in the large world of commerce is likely to be proportional to its numbers rather than their importance.

To the "Perry Mason" generation the ability of the forensic pathologist comes as no surprise. However, the papers by Dr. A. S. Curry of the British Home Office Central Research Establishment and D. J. Blackmore of the R.A.F. Institute of Pathology describing the use of gas chromatography, and other techniques, in this field are fascinating and should give pause to those who demand instant diagnosis in poisoning cases. The final paper in this Section, dealing with chromatography of the benzodiazepines, is of interest not only because of the current popularity of valium (Diazepam) but because, in demonstrating different breakdown products in rats and mice, it yields a possible explanation for the species variation seen with so many drugs.

In summary, this volume is not a "must" for the average clinical anesthesiologist, although he may find the second section of interest, nor need it be fitted into the busy schedule of the student for the Anesthesia Boards. For the medical researcher who is fortunate enough to have a qualified chemist in his laboratory and prefers to leave technical problems entirely to him, it will provide an excellent, up-to-date reference source for him to check. For the man who, due to circumstance

or desire, takes an interest in technique as well as results, there is much of value, especially in the discussions, and for the chromatography aficionado the presentation by Professor Martin in itself makes the book worthwhile.

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Research and the Individual. Human Studies.

By HENRY K. BEECHER. Boston, Little, Brown and Company, 1970. Pp. 538, no illustrations. \$15.50.

A patient is a human *is a human*, and not a patient is a patient *is a patient* best describes the message in this book by the distinguished Dr. Beecher, Professor of Anesthesia at Harvard University. The ever-increasing scope of experimentation on human beings is a crucial aspect of medicine, and the author has admirably defined its guidelines, restraints, and degrees of freedom. Undoubtedly, the use of humans in experimentation reached its most objectionable and clamorous climax with the Nazis in World War II. The Nuremberg Trials that followed drew worldwide attention to these atrocities; the Nuremberg Code that evolved listed criteria to be followed when clinical experimentation is proposed.

Although in early times criminals were subjects for medical experimentation (*cf.* Ptolemy in Egypt, Fallopius in Pisa, Calen in Rome, etc.), other segments of society have also become involved. Involvement frequently reaches the bedside of ill patients, where new drugs, new diagnostic techniques, new operative procedures, or the transplantation of various organs must be investigated. The author describes many experimental situations where humans have been used with varying degrees of success and failure, and varying degrees of acceptable ethics.

So intense has been the impetus and interest in medical research that only gradually has an awareness of ethical problems arisen and been given consideration. Indeed, the first symposium on this subject, involving the multidisciplinary approach of the scientist, physician, lawyer, and administrator, was held as recently as 1948! Subsequently, the injection of live cancer cells into patients who were not informed as to the nature of this injection, the Kefauver drug legislation, the U.S.P.II. requirement (1966) that a local committee must pass judgment on any grant application involving humans, and the writings of Dr. Beecher have gradually, with other events, focused the public's attention on this problem. In this milieu have developed probing questions of ethical and moral and legal considerations for research when human subjects are used. The author carefully develops the concept of consent, informed consent—and how does one really inform a patient of all possible risks, complications,

and procedure, simultaneously being certain that the patient understands? It seems most tenable to accept the definition that informed consent is a goal (not a definite endpoint) toward which the physician strives.

The important relationship of the law to the scientific and ethical policies of human experimentation is discussed. Since laws are the response of governing bodies to the pressures and demands of society, and society changes as it is led by the inventiveness and daring of advanced thinkers, a curious conflict arises. There are few, if any, laws to safeguard the investigator who attempts new studies and the doctrine that "the physician experiments at his peril" is established. Fortunate indeed is society that a few have dared to use the first vaccine, the first blood transfusion, the heart-lung machine for the first time, and to transplant an organ.

Confronted by this veritable maze of seeming conflict between scientific method and humanitarian approach, and faced with the obvious problem of informed consent and a multitude of legal opinions, what can we expect when human experimentation is considered? Since science has become more and more significant in the modern world, it is more and more important that it be a *trusted* activity. In society today the rights of the individual are more important than ever. And thus, the author suggests a solution, also expressed by others, that far more important than the scientific is the moral history of mankind—this is our best yardstick for human experimentation. One can never accept the pragmatic approach that the ends justify the method (risks).

The practical problems of transplantation are considered and many are the ethical questions in their solution. How does one obtain permission to remove a healthy organ from a healthy person; when is a person dead (enough) to remove an organ for use in another person; how much can the rights of the dying be curtailed to help the rights of the living? Obviously many of these and allied questions cannot be answered to the mutual agreement of all, but their consideration is mandatory.

To those readers who cannot accept that all problems cannot be easily solved, there is a gentle reminder in the quotation by Rilke: "That we must seek to do the difficult is a certainty that shall never leave us."

This book is a unique and valuable contribution. It culminates an interest that Dr. Beecher has had for many years in a relatively abstruse and generally-avoided subject. His efforts in making this information available will be appreciated by and gratifying to all concerned with health care.

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Principles of General Neurology, an Introduction to the Basic Principles of Medical and Surgical Neurology. By BAUVY WYKE. Amsterdam-London-New York, Elsevier Publishing Company Limited, 1969. Pp. 600. \$37.00.

Internists, surgeons, psychiatrists and anesthesiologists will warmly welcome a work on general neurology that deals clearly and systematically with the basic principles of clinical neurophysiology and neuropharmacology related to their fields. Whether they will extend such a welcome to the present volume is somewhat problematic. The author certainly writes lucidly and judiciously about his chosen topics—the individual neuron, central and visceral neuronal communication processes, the electrical activity of the brain, the neurologic basis of surgical anesthesia, the pharmacodynamics of central communication processes, neuromuscular communication processes, cerebral circulation and metabolism, and the cerebrospinal fluid. This group of subjects has great appeal to anesthesiologists, whose problems and methods Dr. Wyke discusses extensively and with much understanding. Unfortunately, these valuable features are marred by a decisive defect: hardly any reference is made to work later than 1963. The usefulness of the ample bibliography is further impaired by the absence of references to individual entries, as experienced publishers of scholarly works, Elsevier ought to know better.

To those who seek a grounding in the state of anesthesiological neuropharmacology and neurophysiology in the 1950's and the early 60's, this volume will be a valuable guide, but those who want a more up-to-date account will have to turn elsewhere. Unfortunately, there is nowhere else to turn.

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General Anesthesia and the Central Nervous System. By LEONARD C. JENKINS. Baltimore, The Williams and Wilkins Company, 1969. Cloth. Pp. 544 with illustration. \$17.50.

Understanding the anesthetic state and the mechanisms that lead to it is a formidable task. Description of the manner in which anesthetics affect centrally mediated functions, as well as the meaning of a given effect, is not only extremely difficult with our present knowledge, but a desperate race against numerous and contradictory reports coming from various disciplines. Against this background, Dr. Jenkins' book brings to the anesthesiologist a comprehensive study of "General Anesthesia and the Central Nervous System." He has organized the book in five self-contained parts, dedicated, respectively, to anatomy and physiology of the CNS, effects of anesthetics on