

Book Reviews

Contractile Proteins and Muscle. Edited by Koloman Laki, with 14 other contributors. Marcel Dekker, New York, N. Y. 1971. xii + 606 pp. 16 x 23.5 cm. \$42.50

Muscle transduces chemical energy into mechanical work. It contains a succession of segments of thin and thick filaments. The thin filaments appear to make contact with the headpiece of myosin which bends out from the thick filaments, and these sections shorten while the unengaged filaments slide. The cycle is concluded by disengagement of the filaments and elongation of the shortened fibrils. We are at the verge of recognizing the role of individual proteins in these changes; this book is an account of the history of muscle research from A. Szent-Györgyi's early observations on the chemistry of muscle contraction to the present. The evolution of muscles may date back to ciliary and flagellar apparatus which are treated as suitable objects of study. Flagellin, actin, tropomyosin A and B, and myosin are discussed in individual chapters. The decomposition of ATP is tied to myosin and muscle work, and critical examination is accorded to these reactions. For the anatomist, chapters on the functional morphology and the development of muscle and the excitable membrane will be of value. Biochemists will profit from reading about the chemical changes in contracting muscle and about muscle as a fibrous protein system. Medicinal chemists will welcome an outline of muscle diseases (atrophy, dystrophies, myotonias, myasthenias, glycogenoses, etc.), and a chapter on the uterus as a model for medical understanding and therapy. The area of muscular disorders, treatable mostly only by methods which suppress symptoms, should now open up to causative cures. This book will do much to make available the literature and expert judgment of the background and status in this field.

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Alfred Burger

Annual Reports in Medicinal Chemistry, 1970. Edited by C. K. Cain and 6 section editors, 49 contributors. Academic Press, New York, N. Y. 1971. ix + 300 pp. 25.3 x 17.8 cm. paper-back. \$9.00.

The 6 major topics reviewed in this volume are CNS agents, pharmacodynamic agents (antihypertensives, platelet aggregation inhibitors, gastrointestinal, antiarrhythmic, and diuretic drugs), chemotherapeutics, and metabolic disease and endocrine function drugs. Drug metabolism and adenylylase and cAMP analogs are covered in Topics in Biology. The annual feature, Topics in Chemistry, contains a review of linear free energy and MO hypotheses in drug design, as well as lesser articles on pharmaceutical subjects.

All the reviews are well edited, well documented, and quite up-to-date. The selection of the topics reflects the general activity in medicinal research, particularly in the industry. Editor Cain now publicly avows the position this reviewer has taken for several years when he writes in the preface "... there were no real breakthroughs reported during 1970. This may well characterize the whole area of Medicinal Chemistry at present. Where are the new drugs?"

Many major companies now have promising novel drugs in clinical trial. If nothing happens to them on the way to the FDA, a reversal of the present pessimistic trend may be expected around 1976. However, the intellectual progress of drug discovery and design appears to be in a stalemate. The high hopes statistical and quantitative methods have held out are beginning to fade, and regression analysis aided by MO calculations now looks only like another tool of limited applicability which will save some time in routine molecular modification. No other exciting ideas have appeared on the horizon.

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Narcotic Drugs. Biochemical Pharmacology. Edited by Doris H. Clouet, with 29 contributors. Plenum Press, New York, N. Y. 1971. 16.5 x 23.5 cm. xxii + 506 pp. \$28.00.

The introductory chapters of this book deal with the structure of narcotic analgetics, their methods of chemical analysis, and structure-activity relationships among these drugs. They represent authoritative, stereochemically oriented, and up-to-date factual reviews of

the clinically used and a few major experimental compounds and offer historical views of the intellectual processes that led to their development. The chapter on analysis contains all modern spectroscopic methods used in the analysis of minute quantities of foreign substances in body fluids and tissues and should be useful far beyond the scope of this specific class of drugs.

But from Chapter 4 on, the subtitle of the volume, biochemical pharmacology, takes over and encounters all the vicissitudes of such studies. Metabolites of alkaloidal and synthetic potent analgetics have been identified, to be sure, but the explanation of the action of the drugs on tissues and enzymes is almost as hazy and inconclusive as it was 50 years ago, in spite of the herculean amount of work that has been done on these questions. Each major biosynthetic pathway (carbohydrates, proteins, lipids, catecholamines, ACh, etc.) is presented to the reader as background information, and these condensed reviews are followed by careful compilations of the effects of narcotic analgetics upon these processes and the enzymes involved. It is obvious that the potent analgetics disrupt many physiological functions, but it has not yet been possible to single out any specific enzyme system, CNS location, or interference with a metabolite biosynthesis as a decisive step. These difficulties are multiplied in the attempts to explain tolerance, dependence, and the withdrawal syndrome. The many conflicting hypotheses concerning these phenomena are reviewed skillfully but the authors have been careful not to propose experimentally unwarranted conclusions.

We have today analgetics thousands times more potent than morphine, others almost free from dependence liability, and some virtually free from side-effects at therapeutic doses. We have a dim outline of some three-dimensional regions of the analgetic receptors, we know the major metabolites of several of the drugs, and we possess compounds that can counteract heroin dependence or at least modify withdrawal therapeutically. But the intrinsic mode of action of analgetics still eludes us. This book is a capable review of all these facets and is full of suggestions for future researches.

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Lipid Metabolism. Edited by Salih J. Wakil, with 12 contributors. Academic Press, New York, N. Y. 1970. xi + 613 pp. 16.5 x 23.6 cm. \$28.50.

This is a timely and well-written book which is a formidable addition to the literature of lipid biochemistry. S. Wakil has done an excellent job in assembling a group of highly respected scientists to write on various facets of lipid metabolism and has provided a well-integrated book on topics ranging from fatty acid metabolism to the biosynthesis of polyisoprenoid quinones. Essentially the book can be divided into two major parts, the first of which encompasses fatty acid metabolism (S. Wakil), physiological-chemical aspects of fatty acid oxidation (R. Bressler), fatty acid metabolism of plants (P. K. Stumpf), phospholipid metabolism (E. E. Hill and W. E. M. Lands), and glyceride metabolism (G. Hübscher). The other major division, though not as closely interrelated as the first, centers on the following important topics: prostaglandins (B. Samuelson), bacterial lipids (W. J. Lennarz), steroid metabolism (P. W. Holloway), biosynthesis of polyisoprenoid quinones and related compounds (R. Bentley). These chapters are well developed and provide an in-depth description of progress in these fields to 1969. The authors are all experts in their respective areas of interest and this is certainly indicated by depth of understanding and coverage in each chapter. This is one of the few books recently published on lipids to which the term "significant" can be applied. Undoubtedly, it will prove to be an important guide-post for several years to come. Perhaps the only detracting factor is the cost of the book, which at \$28.50 will rule out many graduate students and postdoctorates and even some of the less affluent professors. It is hoped that the publishing companies in the near future will take a serious look at the best manner in which to provide texts and reference books at a reasonable price and also consider a new mechanism by which publication can be achieved in a shorter period of time.

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