Book Reviews

GRUNDLAGEN DER ARZNEIMITTELFORSCHUNG UND DER SYNTHETISCHEN ARZNEIMITTEL. By J. Büchi, Pp. 744 (including 95 illustrations and Index). Birkhäuser Verlag, Basle, 1963. Sw. fr. 96.

In an era of increasing specialisation, it is a pleasant change to find a book which deals with research into medicinal substances as a unified whole. The scope of this book ranges through organic and physical chemistry, biochemistry, pharmacology and pharmacy; it is difficult to think of any scientific discipline involved in the discovery and development of a new drug which has been omitted. This diversity is the more remarkable when one considers that the entire book is the work of one author. Despite the complexity of his task, Professor Büchi has organised the widely varied material into a logical and lucid form, using the chemistry of medicinal substances as a broad framework but diverging widely as the occasion arises.

The text is divided into six chapters. After a brief introduction, including an outline of the history of research into drugs, there is a long but very well organised chapter on the practical aspects of developing a new medicinal substance. This deals with the broad principles governing the synthesis and isolation from natural sources of potentially active materials, and the possibilities of modifying these materials chemically or physically to increase their pharmacological activities, lower their toxicity or make their formulation more effective. It also covers chemical and biological testing, and some aspects of formulation.

The physical properties of drugs in relation to their pharmacological actions, the biological transformations and excretion of medicinal substances, and the vexed and thorny problems of structure-action relationship are treated with great clarity and reasonable detail in succeeding chapters. The inevitable compression required to deal with such a range of material in some 300 pages is offset by the wealth of references to original literature (up to 1960 and in some cases 1962). The inclusion of lists of reference in the middle of chapters is confusing, since the same reference numbers may be repeated five times in a single chapter. This is, however, offset by the provision of a complete author-index at the end of the volume.

The final chapter deals in some detail with pharmacology at the cellular and molecular level, particularly the nature of the bonds between molecules of the drugs and their tissue receptors, and their steric relationships.

All the chapters are divided systematically into sections, subsections and sub-subsections each classified numerically for ease of reference. This is typical of the admirable tidiness of the author's approach to a subject which is not in itself particularly orderly. The printing and general presentation are uniformly good, with clear explanatory diagrams and graphs.

The only adverse criticism which may possibly be made is that the author has attempted to put a quart into a pint pot, and the specialist may feel that some aspects have been treated too briefly. This problem is, however, insoluble in any book which attempts, within a reasonable number of pages, to span a wide range of research, and the author has done an excellent job of arrangement and condensation, including the wide use of tabulated information. The danger of producing a catalogue has on the whole been averted and the book is consistently readable. It fills most ably a gap between the undergraduate textbook and the specialised research review, and is to be recommended particularly to the specialist in any aspect of drug research who wishes to extend his knowledge of related fields of investigation.

J. CHILTON.

STATISTICS FOR MEDICAL STUDENTS. By R. G. Hoffman. Pp. xvi + 197 (including Index). Charles C. Thomas, Springfield, Ill., U.S.A., 1963. $7.50.

Some knowledge of statistical methods must soon become an essential part of a doctor's training, since he must as a practitioner or research worker be able to assess critically the merits of papers he reads in the journals.

The average medical student possesses only a limited ability to think mathematically, and how best to introduce and teach statistics in medical schools presents a problem. It is clear that the position could be eased if classes in mathematical statistics were to be included in the school syllabuses for those pupils who intend to take a University course in biology or medicine. In the medical schools statistics should go hand in hand with the practical work; biochemical, physiological and pharmacological experiments provide ideal material for statistical analysis.

Any book which helps to overcome the problem of teaching statistics to medical students is to be welcomed. Dr. Hoffmann's book was written to help the student overcome real problems requiring "decisions where uncertainty exists". There is a brief introduction, dealing with measurement, accuracy and precision, leading up to Section I which contains the information on statistical methods proper. This section contains seven chapters, each of which deals with a specific topic such as "the comparison of averages" or the "statistics of the straight line". The theory of each chapter is neatly summarised and then applied to real problems such as those encountered in laboratory experiments.

Part of Section I will be of little or no use to the medical student. I doubt very much, for example, whether he will ever need to know about the statistical design of experiments, which is dealt with at some length, but those students who later become involved in postgraduate work will perhaps find this aspect to be of use.

There is an odd error in the mathematical example of p. 12 ($\bar{x}$ (coded) = $\frac{1{\cdot}1}{4}$ not $\frac{0{\cdot}11}{4}$ and I disagree with the use of L.D.50 instead of E.D.50 in the chapter on dosage-response problems. But these are details, and must not be allowed to distract a would-be buyer.

Dr. Hoffmann has had several years' experience working alongside medical practitioners, and in the second and last section of this book he outlines some of the uses of statistical methods in private practice. These include chapters on storing and retrieving information and on the construction of hospital record abstracting systems. Most of the examples and information in this section are taken from the Teaching Hospital of the University of Florida.

As both a postgraduate research worker in pharmacology and a medical student I have found this book useful in evaluating my own experimental results. I think it is a good book, and I recommend it to all those who require a fundamental knowledge of statistical methods.

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