

DRUG DOSAGE IN LABORATORY ANIMALS

Drug Dosage in Laboratory Animals

A Handbook. By C. D. Barnes and L. G. Eltherington. Pp. 302. (Berkeley and Los Angeles: University of California Press; London: Cambridge University Press, 1964.) 64s.

Drug Dosage in Laboratory Animals is an attempt to summarize doses which have been used in the common laboratory species, collected from a great many published papers in the pharmacological literature. Although costly, it is unsatisfactory in a number of ways.

The only parts of the book which are intended to be read are a two-page introduction and a nine-page account of some factors which determine drug dosage and its variability. The remainder consists of more than 200 tables, each devoted to a single drug and each divided to give columns for mouse, rat, guinea-pig, rabbit, cat, dog and monkey.

Doses are given simply as figures, one for each route of administration of which a record has been found. The tables are subdivided into horizontal sections, of which the top one in each case presents lethal doses and the others are devoted, when appropriate, to different effects of the drug in question.

The information thus presented is so highly abbreviated and so incomplete that it is hard to imagine what type of reader might find it useful. For example, anyone wishing to inject nicotine into a cat will learn only that 0.02 mg/kg intravenously is a "behavioural" dose and that 0.2 mg/kg by the same route is a "cardiovascular" one. Much of the classical work of Langley on indirect pressor and ganglion-blocking actions of nicotine was performed in cats and the doses he used would surely be appropriate here, but the only references are to a paper on "a nicotinic receptor in the CNS related to EEG arousal" (1961) and to another entitled "Homatropine Methyl-bromide: a Pharmacological Re-evaluation" (1952). Again, the only information recorded about the action of histamine in the cat is that 0.005 mg/kg intravenously is a "cardiovascular" dose. No references at all are given in this case, and one is left wondering whether the work of Dale and his colleagues on vasodilatation due to histamine and on its secondary pressor effect has been omitted from the text-books in California. Let it be added that no national bias can be detected in the matter of omissions of classical work. Doses used in the important papers of Eggleston and Hatcher on apomorphine, of Cattell and Gold on digitoxin and ouabain, and of V. E. Henderson on atropine are also absent and no references to their work are to be found.

It is, perhaps, unnecessary to point out that information does not exist to fill most of the empty spaces which the terse tabular presentation adopted creates; about 90 per cent of the table area consists of vacant duplicated rectangles. Yet, even when published dose figures do exist and are reasonably accessible from reviews and bibliographies, they have often not been included. Thus there are glaring omissions from the tables for angiotensin, digoxin, histamine, ouabain and noradrenaline (which is indexed under four names, but not as noradrenaline).

Most of the doses which are given carry a reference number, and one of the more valuable features of the book is its bibliography, which has 819 references, often to the recent literature. However, for a few drugs no literature references are given, all doses listed having been obtained from manufacturers (for example, digoxin and chlorothiazide). The selection of drugs in the 200 tables is comprehensive and includes unfamiliar recent compounds such as dibozane, hexacyclium, mebutamate, mepenzolate and prodrilidin. It is, therefore, surprising that oxytocin and vasopressin are omitted.

Further criticism must be made of the sections which list doses for use of some drugs *in vitro*. These give scarcely any information, even in the case of compounds which have been much investigated using isolated tissues, such as angiotensin, calcium chloride, carbachol, decamethonium, hexamethonium, methacholine, morphine, hyoscine and tetramethyl ammonium. When doses are given, they are often uncritically high and unsubstantiated by references. If these tables could not be made more complete and more critical, they would have been better omitted. A table in the appendix which sets out the composition of physiological saline solutions for isolated organ work also has important omissions, containing no mention of Krebs-Henseleit solution, of Ringer's solutions for frog tissues, or of de Jalon's solution.

A comprehensive and critical collection of drug doses for use in the laboratory when performing animal experiments would meet a real practical need and it is a pity that this handbook falls short in many respects of what is required.

J. A. PARSONS

TEACHING IMMUNOLOGY

Immunology for Students of Medicine

By J. H. Humphrey and Prof. R. G. White. Second edition. Pp. ix+498. (Oxford: Blackwell Scientific Publications, 1964.) 47s. 6d. net.

THE present-day medical student is fortunate in having available some informative and stimulating, and reasonably short, text-books on the pathological sciences, which not only set out basic principles but also indicate growing edges.

Immunology for Students of Medicine by two leaders in the immunological field (first published in 1963 and already now in its second edition) provides an excellent example.

The book has twelve chapters, starting with a succinct historical introduction. An account of innate immunity is followed by descriptions of the nature of circulating antibodies and how they are produced, and of the nature of antigens (with a useful amount of chemistry in both cases). Then comes a chapter on detection and measurement of antigen and antibody, followed by examples of practical uses of immunization in man. The scene then changes to hypersensitivity of the immediate and delayed types, succeeded by an account of immunological tolerance, and the final chapter on auto-immunity and its relation to human disease. Perhaps the most illuminating parts are those concerning the immunoglobulins; the mechanism of antibody production; delayed hypersensitivity; immunological tolerance; and auto-antibodies.

The style of writing is light and attractive, the production excellent, the headings and sub-headings well arranged. The inclusion of a glossary (a little expansion might be considered) is most considerate, indicating incidentally that immunologists are not averse to poaching where definitions are concerned.

The authors have wisely used detail mainly to illustrate principles (though allowing themselves more scope in their examples of prophylactic immunization and in their descriptions of diseases in which auto-immune phenomena are evident), thus avoiding a text-book on immunological diseases, and making their book very readable. Yet the human aspects are constantly emphasized. Recognizing the difficulties of the student (not to forget those of the writer) in this rapidly expanding subject, and his tendency to be scared away, they present him with conclusions where they are justified, but tell him at the same time what is not known; thus the student has stable platforms on which to rest his faith, though warned that these may be jumping-off stages for new advances. By this policy the authors should interest and instruct most of their