

Identification of norbormide, a new *Rattus* specific rodenticide

SIR,—A new rodenticide, norbormide [Shoxin, 5-(α -hydroxy- α -2-pyridylbenzyl)-7-(α -2-pyridylbenzylidene)norborn-5-ene-2,3-dicarboximide] has recently become commercially available. It is claimed that this substance is specific to *Rattus*, and has no harmful effects on domestic animals even when consumed in massive quantities (Roszkowski, Poos & Mohrbacher, 1964). As it seems likely to become widely used, its identification will become a matter of importance in forensic science, and it will be necessary to distinguish it from other alkaloidal compounds of more general toxicity.

Norbormide may be recovered from biological material in the alkaline-chloroform fraction of a Stas-Otto or similar extraction process. On a citrate buffered paper chromatogram (Curry & Powell, 1954) it gives a bright blue fluorescent spot at Rf 0.87, positive with iodoplatinate solution and with Dragendorff's reagent. On a thin-layer chromatogram [Silica gel-sodium hydroxide-methanol (Sunshine & Fike, 1964)] it gives a similar spot at Rf 0.84. The ultraviolet spectrum in 0.1 N hydrochloric acid shows maxima at 300 m μ and 240 m μ , a shoulder at 258 m μ and a minimum at 287 m μ . The compound gives a blue colour with ammonium molybdate/sulphuric acid (Clarke & Williams, 1955), and dense yellow rosettes, forming slowly, with platinum chloride solution (Clarke & Williams, 1955). These characteristics enable microgram quantities of norbormide to be distinguished from other basic compounds.

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Book Reviews

RESEARCH PROGRESS IN ORGANIC-BIOLOGICAL AND MEDICINAL CHEMISTRY. Edited by U. Gallo and L. Santamaria. Vol. 1. Pp. xvi + 583. Società Editoriale Farmaceutica, Milan, 1964. \$19.00.

This volume, initially planned as a single dedicatory volume to the first centenary of the "Bollettino Chimico Farmaceutico" (1861-1961), appears as such, containing contributions only by Italian research scientists. It serves, also, as the first of what is to be a series of volumes on "Research Progress in Organic-Biological and Medicinal Chemistry", inviting contributions on an international basis. Whilst the present volume is especially to be welcomed as a centenary volume, marking the contribution of Italian scientists to pharmaceutical research and to research in allied subjects, the wisdom of launching yet

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another international series of research reviews in this field is surely to be questioned. Unnecessary duplication of effort is already not unknown, and, regrettably, duplication of publication by the same authors in different series. Such repetition is wasteful of scientific effort and might well be avoided by restriction to a few strictly-controlled outlets for publication rather than their multiplication. It is to be hoped, therefore, that this new series will be marked by an insistence on originality and a firm rejection of material which has already appeared elsewhere in the same form.

The present volume contains eleven reviews covering a variety of aspects of Italian work in the field of medicinal, pharmaceutical and pharmacological chemistry. Biochemical studies are represented by a review of tryptophan metabolism in man, which includes a short and useful account of analytical methods, but which is mainly devoted to a consideration of the relationship between tryptophan metabolism and some pathological states. A useful survey of the absorption, distribution and excretion of vitamin B₁₂ covers not only intestinal absorption by simple diffusion and intrinsic factor-facilitated diffusion, but also considers in some detail the nature and behaviour of vitamin B₁₂ binding factors. Other reviews survey in considerable detail the isolation and chemistry of such naturally-important substances as the acid-soluble nucleotides of fungi, ethers of steroidal hormones, echinulin, and the rifamycin family of antibiotics. The review of Italian contributions to the chemistry of certain alkaloids of South American origin is disappointing; much of the work contributing to the structure of these complex compounds has been of an international character, and this no doubt accounts for the rather unfortunate scrappy appearance of an account which is very largely concerned only with Italian work in this field. In medicinal chemistry, Bovet and Rosnati's account of curarimimetics, whilst repetitive of many similar previous accounts, is both logical and acceptable in this context, and also delightful in its simplicity and clarity of exposition. Its concern in some detail, too, with the potentiation of curarimimetics by SKF 525-A, is both critical and useful in the new stimulus which it must give to those interested in the reversibility of curare-like drugs. The account is marred only by some confusion in nomenclature on pages 92 and 93, where C-curarine is occasionally referred to as curarine. A review of azetidines covers such important chemical properties as acid and heat stability and surveys a range of pharmacological actions exhibited by various compounds of this heterocyclic type. The survey of photodynamic substances, which are capable of producing damaging effect in biological systems under the influence of light, is extremely valuable, not only providing a chemical classification of substances known to produce such effects, but also selecting certain groups such as the furocoumarins, the phenothiazines and polycyclic hydrocarbons for fuller discussion. The mechanism of photodynamic actions and photodynamic sensitivity in cells and tissues are also discussed. The volume is completed by a contribution on analeptics, which is entirely pharmacological, including aspects of toxicity pneumokinetic action, cardiovascular effects and antagonism with C.N.S. depressants.

Considerable credit is due to the skill of the translators who have produced the English translation, which, apart from a few minor errors which give away its Italian origin (page 114 "schema" for "scheme"; page 158 "oxigenated" for "oxygenated"; page 59 "o.Aminohippuric acid" for "*o*-Aminohippuric acid"—both forms are used on this one page) is very well presented, interesting, and easy to read.

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MEDICAL PHARMACOLOGY. Principles and Concepts. By Andres Goth. Second edition. Pp. 585 (including Index). Henry Kimpton, London, 1964. 88s.

The remarkable developments in the chemical and biological sciences during this century have led to the synthesis and clinical use of large numbers of potent drugs giving a measure of control of disease to an extent undreamed of even 30 years ago. So complex is the present-day picture in terms of biochemistry, biophysics and physiology, that the task of relating what he is taught of the basic biological sciences to the rational, selective, clinical use of a synthetic drug is proving increasingly—and understandably—beyond both practitioner and student.

It would be wildly optimistic to suggest that today, a course of pharmacology could be given, or a book written which would enable the student to predict the therapeutic and toxic actions of a compound he has not met before. It is, however, possible to enable similar-acting drugs, especially those closely related chemically, to be compared and the claims of manufacturers to be logically assessed. Unfortunately the task is too seldom attempted. Dr. Goth obviously has this objective in view and he meets with a measure of success. His book is, however, too short for him to be able to set out adequately what is known of the mode of action of drugs and at the same time discuss as fully as he does their clinical pharmacology and toxicology. The compass is only 547 pages which includes bibliographies, some of which are quite lengthy, and numerous well-drawn formulae and diagrams.

The layout and choice of subject-matter are disappointingly conventional, but chapters on poisons and antidotes and prescription writing, and sections on clinical pharmacology together with the general emphasis upon clinical application indicate the bias towards practical medicine. The commonly used drugs are all included and many new compounds are mentioned. The style is economical and the text clearly written.

There is a certain unevenness in the treatment. Thus adrenaline and nor-adrenaline receive adequate detailed discussion, histamine gets a chapter to itself, and 5-hydroxytryptamine most of another. Yet acetylcholine, a knowledge of the properties of which is the surest foundation for a study of the pharmacology of the autonomic nervous system, is dealt with only scantily, and the information is scattered about the text. Too little attention is paid to the increasingly important biochemical and physicochemical theories of anaesthesia; it is not sufficient to refer the reader to a review published some 14 years ago or even to the recent original papers. It is surprising, too, that more is not said about the mode of action of the salicylates, while structure-activity relationships are given little space. Thus although the clinical aspects of the subject matter get due consideration, the reader is too often sent to the original literature or to a review article if he shows an interest in mechanisms of action. One other criticism is, that although the diagrams are well reproduced and show evidence of careful selection they are not always adequately dealt with in the text, and the legends frequently need expansion and clarification.

Nonetheless this book has a very great deal to commend it to the reader. It contains a surprising amount of information. It is readable and interesting, while the author takes a forthright but balanced view of the use of drugs. As a text it will appeal most strongly to the student of medicine in search of a short book. American nomenclature is used throughout, but British approved and official names are included and can be found in the index. It is well worth a place on the bookshelf.

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