

BOOK NOTICES AND REVIEWS.

Applied Pharmacology. By A. J. CLARK. Published by P. Blakiston's Sons & Company, Philadelphia, 1932, x plus 590 pages. 4th Edition. 72 illustrations.

Foreign travel and study have definite value in scientific work in bringing changed views, other viewpoints and new visions of scientific possibilities. This book by Dr. Clark is as valuable a contact as a trip to Europe at the present time in evaluating continental opinions and developments in pharmacology. The American reader is struck by several differences in the concise and readable presentation of an enormous amount of useful and pertinent information. The general history of therapeutics and the necessity for biological standardization of drugs given in the introduction is followed by two chapters on the action and use of disinfectants, followed in turn by three chapters dealing with "Specific Therapeutics." A discussion of anthelmintics is then connected in a logical fashion. The next six chapters deal with the action of drugs upon the central and autonomic nervous system, and with local anesthetics. A thoroughly scientific discussion is given of the therapeutics of alcohol. It is regretted that a more adequate discussion of the higher members of the ethyl alcohol series was not presented. A very understandable presentation of the action of the sympathetic and parasympathetic nerves upon the chief organs of the body is a feature of one chapter.

Three chapters are then devoted to the pharmacology and physiology of the alimentary canal; emetics, sea-sickness, periodic activity, function of acids and alkalis, hyper- and hypo-chlorhydria, the gall bladder, intestinal activities, the effect of various types of purgatives, the action of astringents and opium and the treatment of diarrhea are all briefly discussed in about sixty pages.

The pharmacology of the heart and blood vessels is next presented, with suggestions regarding the differences in activity of glucosides of the digitalis group, and the nature of their action in various heart involvements as studied electrocardiographically. Succeeding chapters are devoted to the pharmacology of respiration, kidneys, liver, temperature regulation, the skin, endocrine glands, vitamins and inorganic metabolism. The last two chapters deal with the pharmacological action of X-rays and radium emanations, and with various immunity reactions. This last chapter also

touches on the production and activity of various vaccines and antitoxins, gives a brief discussion of non-specific vaccine therapy and touches on the mechanism of "Vaso-Motor Reactions" (a term suggested as a substitute for the term "anaphylactoid reaction").

The subject matter is presented to coordinate results obtained in experimental pharmacology in the laboratory with therapeutic observations in the clinic; a discussion of physiology and pathology connects the work in these fields. Modern work on the rôle of vitamin A in maintaining resistance against infection, and of the importance of the anterior pituitary gland in its action on growth and reproduction is presented. A rather unusual feature is the inclusion of the wholesale prices for various drugs and preparations which permits evaluation of relative costs.

It seems somewhat unfortunate that the rather limited bibliography following each chapter is devoted largely to work by European investigations and that, apparently, studies in the United States have not received a due share of attention. However, the references to general literature give an opportunity for further search by interested students and readers. The ever-growing literature of this field necessitates somewhat arbitrary selection of a bibliography for any current text and Dr. Clark has presented those references which gave recent general reviews of the subjection under discussion.

The student of quantitative pharmacology is somewhat disappointed in not finding methods of physiological standardization discussed or pointed out in detail. One feels a particular loss in not finding a discussion of the standardization of ergot upon the rabbit uterus, a method which was developed by Dr. Clark. It is hoped that a subsequent edition will touch on the quantitative phase of pharmacology to round out the very excellent presentation of qualitative pharmacology on normal and pathological men and animals.

The book is well edited, well printed and well bound. The detailed data given in 50 tables are clearly presented for quick reference. Very few typographic mistakes were found, which is a triumph in the publication of so technical a book.—JAMES C. MUNCH.

The Cost of Medicines. The Manufacture and Distribution of Drugs and Medicines in the United States and the Service of Pharmacy in

Medical Care. By C. RUFUS ROREM, Ph.D., C.P.A. and ROBERT P. FISCHELIS, B.S., Phar. D. The University of Chicago Press—Publication Number 14, The Committee on the Costs of Medical Care.

The major title of the book appears unfortunate. Much of the information included has but little relation to the cost of medicines. In addition, this title does not do credit to the comprehensive work of the authors nor to the value of the publication.

The book has three parts: Pharmacy and Medical Care; Pharmacy and the Drug Industry; Pharmacy and the Public. An idea of the scope may be gained from the chapter headings; (1) Medicine and Medical Care; (2) The Nation's Bill for Medicines; (3) The Profession of Pharmacy; (4) The Pharmacy, Its Business in Medicines; (5) The Pharmacy, Its Financial Organization and Operation; (6) Other Retail Distributors and Dispensers of Medicines; (7) Manufacture of Medicines; (8) Wholesale Distributors of Medicines; (9) The Advertising of Medicines; (10) Advertising and Promotion of Quack Medicines; (11) Public Control of Medicines and Pharmacy; (12) Medicines and the Medical Professions—Chapter 13 is devoted to Summary and Conclusions and closes with the author's four recommendations.

The Committee on the Costs of Medical Care has spent almost five years of work and nearly a million dollars and has collected a vast amount of information which was available to the authors. However, much of the data is based on studies of more or less limited scope, when the whole country is considered, and must be so accepted.

Drs. Rorem and Fischelis, with the unusual facilities at their disposal, have made a valuable contribution to the work of the Committee on the Costs of Medical Care and to pharmaceutical literature. The book presents probably the most comprehensive and complete study of pharmacy in all of its branches, that has been made. It pictures in broad terms, the scope of pharmaceutical service, and demonstrates conclusively that pharmacy's part in medical care is a very important one, viewed as a necessary service or from the standpoint of cost. The treatment is frank, and agreement with the statements, conclusions and recommendations is not necessary to an appreciation of the evident work and study the authors have given to the publication.

It is in good form, well printed and com-

mendably free from errors. There is considerable repetition, possibly unavoidable, and in places a positiveness which the information referred to would not seem to justify. A note of pessimism about the value and the future of pharmacy runs through the text, which the long history of the profession and its present status does not warrant. A more sympathetic attitude toward the difficulties within pharmacy which are clearly set out, might have brought better results.

It must be evident to any one who reads this book carefully that the people show more deliberate judgment in securing and using drugs and medicines than the members of the medical professions usually credit them with, and that all drugs and medicines must be considered as within the scope of pharmaceutical service, whether taken with medical advice or not.

The opening sentence, "The use of medicines in the care of the sick is the oldest practice of the healing art" and the later statement that the public pays about as much for drugs and medicines as it does to physicians or to hospitals, indicate that drugs and medicines have not lost their appeal or their value during the years. It is stated that the words "medicines" and "drugs" are used interchangeably to include all chemical, pharmaceutical and biological preparations used in medical care, and that mechanical appliances are excluded. The definition given in the Pure Food and Drugs Act is more comprehensive and it is difficult to understand why it was not used; if so, a much better basis would have been established.

The authors classify drugs and medicines as prescriptions, home remedies and patent medicines. Of the total estimated annual expenditure of \$715,000,000, \$190,000,000 or 27 per cent is for prescriptions, \$165,000,000 or 23 per cent for home remedies and \$360,000,000 or 50 per cent for patent medicines. About 10 per cent of the drugs and medicines may be classed as "quack remedies."

The quality and purity of drugs and medicines appears to be satisfactorily controlled. The main criticism is that the claims for many of them are exaggerated and that the preparation of home remedies and patent medicines in large quantities is not as well regulated as is that of prescriptions.

Drugs and medicines are distributed through four channels; pharmacies or drug stores, other retail stores, physicians and hospitals.

General stores distribute about \$40,000,000 or 6%, physicians about \$25,000,000 or 3½%, hospitals \$25,000,000 or 3½% and pharmacies \$625,000,000 or 87%. As many of the hospitals employ pharmacists it may be estimated that 90% of all drugs and medicines are distributed under pharmaceutical supervision.

It is stated that "The pharmacy" or "drug store" dominates the sale and distribution of medicines in the United States; more than 87 per cent of all drugs and medicines are sold through drug stores. The supremacy of the drug store extends to all the different types of medicines shown in Table 1—"Meaning prescriptions, home remedies and patent medicines."

On the other hand, it is stated that about 70 per cent of all drugs and medicines are obtained and used without medical advice, which includes patent medicines and most of the home remedies. These latter classes are purchased to perform essentially the same functions as the medical professions and institutions.

Another very interesting observation is that "there has been no general complaint against the prices of drugs and medicines."

It would appear, then, from this information that the American people still spend on drugs and medicines for self medication about 60% of the amount they pay to physicians or to hospitals, and that they look to the pharmacy to supply them with above 87% of all the drugs and medicines they use.

In the discussions of the profession and industry that renders this pharmaceutical service, much interesting and valuable information is provided.

In education and training and through the adoption of a strict code of ethics, the pharmacist is well prepared for his part in supplying adequate medical care. In a large measure he dominates the distribution of drugs and medicines but he is not given complete control of the job since the preparation of drugs and medicines, other than prescriptions, can be carried on by persons with no pharmaceutical training or responsibility. In other words, a million pills can be made by any one, whereas a prescription for a dozen pills must be filled only by a licensed pharmacist whose competency has been determined by a state examining board. The conditions under which drugs and medicines are prepared, dispensed and distributed in many hospitals and institutions is not properly controlled.

The educational institutions and the machin-

ery for examining and licensing pharmacists are found to be reasonably satisfactory.

The laws regulating the practice of pharmacy for the protection of the public are inadequate and, as stated above, they are not applicable equally to those who engage in small and large operations. It does not seem reasonable to consider drugs and medicines as warranting control, from the public welfare standpoint, in small quantities and not in large quantities. The machinery for enforcing the laws regulating the practice of pharmacy is very inadequate and the public interest requires that this serious omission be remedied.

The number of licensed pharmacists, about 115,000, is fully adequate for all branches of pharmacy and the number being graduated and registered annually, about 2700, does not seem to be excessive, considering the population to be served, if the whole job, so far as safety is concerned, were put under the control of licensed persons only.

The number of pharmacies is not excessive if they could be more evenly distributed. Even if so distributed, there is not sufficient pharmaceutical service required to adequately support them. So they have to engage in other activities, more or less related, or be seriously reduced in number with the result that pharmaceutical service would not be available to the people, especially in less populated areas.

Pharmacy is considered to be a profession but because all of the pharmacist's attention is not given to the practice of it, pharmacy is practiced as a "part time profession," in most pharmacies. This condition is magnified in most states by the provision that pharmacies may be owned and operated by others than pharmacists, provided a licensed pharmacist is employed to fill prescriptions and to sell poisons and narcotics. In these establishments, particularly the chain stores, drugs and medicines are merchandise to be disposed of.

In keeping with the machine age and with the tendency to combinations and control by capital, a large industry in the wholesaling, manufacturing and advertising of drugs and medicines has grown up and is largely without pharmaceutical advice or control. The industry is directed, in a large measure, by those to whom drugs and medicines are commodities to be sold and to pay dividends. The extensive and intensive advertising of drugs and medicines in order to pay profits and not necessarily to benefit the public, has introduced a very disturbing factor in pharma-

ceutical service and should be more carefully regulated by law. "The growth of 'patent medicine' sales illustrates not so much improvement in the quality of medicine as improvement in advertising technique." Public control has been directed more toward the purity and quality of drugs and medicines than toward their therapeutic value. It is incongruous that the members of the medical professions should be controlled by strict laws and rigid codes of ethics while the manufacturer of drugs and medicines should be free to use the methods of ordinary business enterprise, and to freely distribute secret remedies.

It is felt that self-medication by the people should be limited to the treatment of simple and minor conditions, understood by patient and pharmacist, with non-secret remedies and that the laws regulating the manufacture and distribution of drugs and medicines, both federal and state, are inadequate. The most effective control now is through the educational activities of medicine, pharmacy and dentistry with the public. The importance of drugs and medicines in relation to public health would seem to warrant complete and not partial regulation of them in the interest of the public welfare.

The annual expense for medicines is too large. It might be reduced by \$300,000,000, assuming that the costs of prescriptions and home remedies cannot be materially reduced; and that only about 20 per cent of the secret-formula products are actually useful in medical care. The present system of the manufacture and distribution of secret-formula preparations can be justified only on the assumption that the public is qualified to diagnose its diseases and to select suitable remedies.

The authors submit four recommendations. In brief they are: (1) that there should be more adequate use of the professional knowledge and skill of the pharmacist; (2) that selected lists of home remedies, prepared by a committee of physicians and pharmacists, should be distributed by agencies established for the purpose and that self-medication be rigorously discouraged; (3) formula disclosure of the kind and quantity of medicinal ingredients; (4) federal licensing of all the manufacturers of drugs and medicines based upon satisfactory conditions as to personnel, equipment, sanitation and standardization of products. Although some of these recommendations are in keeping with the thoughts of many who have studied the situation, they do not, as a whole,

seem to cover all of the requirements the authors have indicated as desirable and necessary. Possibly it was felt that their adoption or even partial adoption, would mark a long step in pharmaceutical advancement.

The public have so far reserved the right to purchase and use drugs and medicines, as a part of their medical care, without the advice of physicians or the services of hospitals and clinics. This applies, in increasing proportion, to prescriptions, through refilling, to home remedies and to patent medicines. That the public continues to exercise this right and that the exercise of it constitutes a very important phase of medical care is apparent. Until, through education or some other process, the public decides to adopt a different attitude to drugs and medicines, it is the manifest duty of pharmacy to prepare and distribute them and to see as far as possible that the people are not imposed upon.

The authors of "The Cost of Medicines" are to be commended for so frankly and fully discussing the situation as they see it and for raising questions which relate as much to public policy and to the other public health groups as to pharmacy.—E. F. K.

The Structure and Composition of Foods. By Andrew L. Winton, Ph.D., and Kate Barber Winton, Ph.D. Volume I. Cereals, Starch, Oil Seeds, Nuts, Oils, Forage Plants. 710 pages, with 274 illustrations by the authors. John Wiley & Sons, Inc., New York, 1932.

In view of A. L. Winton's earlier contributions to the scientific literature on foods, the appearance of Volume I of the above titled work has been awaited eagerly ever since the announcement of its preparation. Now that the book has been published it is at once evident that the authors have produced a valuable treatise and that it is no mere revision of a few sections of earlier publications enlarged by the mechanical interleaving of data compiled from the literature in the interim. We are dealing rather with a perfected work of scholarship.

Among the questions which the reviewer likes to answer first about a new book are those of scope and content. Or, to phrase it humanly, what did the author try to cover, what did he actually put into his book? They may be answered in this instance by quotation:

"Appreciating the lack of a comprehensive work in the English language, comparable with, yet differing from, the