

USEFUL DRUGS *

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Nearly ten years ago the Council on Pharmacy and Chemistry of the American Medical Association took up the discussion of the practicability of selecting a list of drugs on which teachers of pharmacology and therapeutics in medical schools might base their routine instruction, with which students and medical practitioners generally might be expected to be familiar and to which state examining and licensing boards might largely or entirely confine their examinations in materia medica subjects. The Council later secured the cooperation of the National Confederation of State Medical Examining and Licensing Boards, of teachers of pharmacology and therapeutics in practically all of the larger medical schools, and of a number of medical men in this country and abroad who were interested in the subject in a practical way. On the basis of the data secured from the criticisms and suggestions received from these various sources, a list of drugs was prepared. This list was further discussed, revised and finally adopted by the Council on Pharmacy and Chemistry and published in 1913, under the title "A Handbook of Useful Drugs."

The immediate object of the compilation was to have a selected list of drugs for use in medical schools and as a basis for examinations by state medical examining and licensing boards; the ultimate object was to develop a thorough knowledge regarding the uses and limitations of a few drugs rather than a smattering knowledge of many. A number of medical colleges have already adopted this little book as a text, and have found it very satisfactory. At least twelve examining boards, including Delaware, the District of Columbia, Hawaii, Kentucky, Louisiana, Michigan, Minnesota, New Jersey, New Mexico, Rhode Island, Virginia and West Virginia are now basing their examinations on the list of "Useful Drugs," and other boards will undoubtedly adopt the list in the near future.

The prospective publication of the ninth revision of the Pharmacopeia of the United States of America suggested to the Council on Pharmacy and Chemistry of the American Medical Association the desirability of preparing a revised edition of "Useful Drugs" to embody the requirements and standards of the new Pharmacopeia for the articles that are included in the list of useful drugs.

In connection with this proposed revision of the book an effort was also made to correct the composition of the list with a view of making the book represent as completely as practicable the present day status of drugs and preparations generally recognized as representative of the best in our available materia medica.

To secure the cooperation of men qualified to express an opinion on the subject, the Council directed that a circular letter and a dosage list of the articles included in the first edition of "Useful Drugs" be sent to teachers in medical schools and to a limited number of other practitioners who, it was thought, might be sufficiently interested to cooperate in a practical way.

The replies that were received to the inquiries included in the circular letter have been helpful in a

number of ways, and it is expected that the revised edition of "Useful Drugs" will reflect, even more than did the first, the best and most reliable of the available drugs and preparations that are offered to medical men at the present time.

Several teachers in commenting on the list of articles in "Useful Drugs" have expressed the hope that the Council in the very near future might see its way clear to issue a still more restricted list.

From a practical point of view it would appear that a comparatively small book which students can carry to their classes and which they could use to refresh their memories would have many points of advantage and would go far toward developing a more complete and more comprehensive knowledge of the drugs and preparations used as medicines.

Physicians and others who can remember the very deplorable conditions that existed in this country some ten years ago, when the work of the Council on Pharmacy and Chemistry was comparatively new, will appreciate the need for thorough and systematic training in regard to the action and uses of drugs.

The reason formerly given for the lack of practical knowledge of the nature, properties and uses of drugs was that the very large number of drugs described in textbooks involved so much detail that it was practically impossible to pass to the student a working knowledge of these drugs in the short time that was available for his instruction in this particular branch.

For many years, therefore, a frequently uttered and admittedly valid criticism on the medical profession was that the newly graduated physician did not have even a superficial knowledge of the possibilities and limitations of the substances that he essayed to use in the treatment of disease.

To bring about some degree of improvement in the conditions as they existed a decade or more since, the Council thought it desirable to discourage the use of the vast number of drugs in which most of the modern critical clinicians have little confidence.

It is generally agreed that while imperative drugging or the ordering of medicines in any and every malady is no longer regarded as the chief function of the physician, the use of drugs is nevertheless more firmly established at the present time than ever before, and the well trained critical clinician of today is characterized by a firm faith in a few good, well tried drugs, and little or none in the great mass of medicines, both actively nauseous or practically inert, that are still in widespread use.

It is generally recognized among well informed practitioners that to secure uniform results from the use of drugs the physician must be assured that the preparation he is using complies fully with the requirements that have been established as necessary to secure the results that are to be expected. From this point of view the endorsement of the list of useful drugs as here outlined would offer possibilities for a decided improvement in the nature and purity of the drugs and preparations used in the treatment of disease. From the available reports on conditions existing in the drug trade at the present time, it is evident that the average pharmacist cannot well be expected to examine systematically or control all of the thousands of articles carried in stock by him as medicines. A more widespread recognition of the possible uses of the drugs included in the list of "Useful Drugs" would make it possible to develop the systematic control of a limited number of articles and thereby assure physi-

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cians and others that the articles included in this list will uniformly comply with the official requirements.

As further argument for restricting the number of drugs to be generally discussed in textbooks or in medical schools, it may be reiterated that many of the available textbooks on pharmacology and therapeutics are mere compilations containing false statements, unproved theories and unverified clinical evidence representing the guess work of ancient uncritical observers. Many drugs have been and still are vaunted in textbooks as valuable in a variety of conditions for which scientific investigation and carefully controlled clinical observation have long since proved them to be totally worthless. Many other drugs have been shown to be of value only in an extremely limited number of conditions, and the Council feels that the sooner writers of textbooks realize this fact and enter into the spirit of the new era, the better for the public and for scientific medicine generally.

In compiling the list of useful drugs, particular attention was given to the reports of pharmacologic research and the application of scientific methods in the study of the physiologic action of drugs.

The list of useful drugs as now constituted is elastic, and there is no reason why new and valuable additions to the available *materia medica* should not be promptly included in the list, provided laboratory studies and the observations of critical clinicians agree that the new drug really represents a decided improvement or is in effect a specific for any given disease.

The list of useful drugs as now compiled is intended to include only such drugs and preparations as are generally used or are accepted as having a well established value either as medicine or as a necessary vehicle for more active substances. For practically all of the drugs and preparations now included in the list of useful drugs, methods of assay are available so that the purity and strength of the substance can readily be determined and, as suggested above, physicians can, if they will, secure practical uniformity by insisting that the pharmacist apply the comparatively simple tests that are included in the Pharmacopeia or other books of standards in which the composition and properties of the several articles listed in "Useful Drugs" are further described.

In round numbers, the present list of useful drugs includes 450 titles, of which 220 may be classed as drugs and chemicals, 175 preparations of these drugs, 42 as definitions of forms of drugs, and 13 as cross references.

The following articles included in the first edition of the book have been deleted from the present list: *spiritus aetheris compositus calcii hypophosphis*, *calcii phosphas praecipitatus*, *cannabis indica*, *extractum cannabis indicae*, *magnesii sulphas effervescens*, *oleum rosae*, *tinctura cannabis indicae*, *resina*, *sparteinae sulphas*, *viburnum prunifolium* and *fluidextractum viburni prunifolii*.

The drugs and preparations added to the list include: atophan and novatophan, chenopodium oil, emetine hydrochloride, hypophysis and solution of hypophysis, novocaine, picric acid, sodium biphosphate, staphylococcus vaccine and typhoid vaccine.

These additions and deletions have been endorsed by a number of practitioners, but the Council on Pharmacy and Chemistry would be pleased to have comments and criticisms from all who are in any way interested, so as to make this list all that it really should be: a truly representative reflection of the best

practices in American medicine at the time of its publication.

CONCLUSION

1. Among the advantages to be derived from a general endorsement on the part of medical practitioners of the principles represented by the compilation designated "Useful Drugs" are:

(a) A proper knowledge of the possibilities and limitations of drugs as factors in the treatment of disease on the part of all ordinarily well informed persons.

(b) The thorough and systematic training of medical students in regard to the action, nature, properties and uses of drugs that are included in the list.

2. Training as here suggested would be a guarantee that coming generations of physicians have at their command a *materia medica* sufficiently comprehensive to meet all requirements. It would also insure more rapid and at the same time more rational progress in matters relating to the treatment of disease by the development of competent and critical observers.

3. The widespread use of a limited number of drugs would make possible the efficient control of all widely used drugs and preparations on the part of the pharmacist and thereby insure to physicians and their patients a supply of drugs and preparations of uniform nature and purity.

4. A thorough knowledge of the possibilities and limitations of drugs in the treatment of disease would naturally entail a proper appreciation on the part of the lay public of the fact that medicines to be really useful as medicine are physiologically active, and that misapplied they may disarrange normal metabolism and thus bring about untoward results.

ABSTRACT OF DISCUSSION

DR. O. T. OSBORNE, New Haven, Conn.: On going critically through "Useful Drugs," I find very little to criticize. Last year the Connecticut Medical Society instructed its examining board to use this book for the state examinations on drugs. A radical step was taken this last year by the Yale Medical School in allowing the students to write prescriptions in English. Latin is not now required for entrance into most medical schools, and the mistakes in Latin on prescriptions are frequent and ridiculous. Also, if we decry the secrecy of proprietary mixtures, it is hardly advisable to be mysterious in prescription writing. For instance, let "aqua gaultheriac" be written "wintergreen water." The State Examining Board of Connecticut will accept these English prescriptions.

DR. N. P. BARNES, Washington, D. C.: About five years ago I recommended to the American Therapeutic Association a form of proved drugs of proved value, standardized and classified. The association did not take it up, but I am glad to see that this section took it up. I am glad to hear what Dr. Osborne said about prescription writing. We spend too much time on prescription writing. We hammer at this year after year—the combining of four or five drugs in a prescription written in Latin. One of my students copied a prescription from a book. I do not know whether he copied it correctly or not, but he failed. It has only been a few years since we could educate doctors, as the majority went through in a two-year course. I think the question now is not so much to educate the public as to educate the medical profession in the matters of therapeutics. Any man you meet on the street can give you therapy—the whole public is full of it—you can get remedies suggested for anything that ails you from any person you meet. When I go into families I can tell how good a physician the family has had before. When you see a family well informed on hygiene and sanitation you can depend on it the family physician before me was a good doctor. After all,

it is the matter of educating the profession. After we get through teaching how to write prescriptions we should follow the students into the clinics because there is where they have the demonstration of their knowledge. The other day in a hospital in Washington one man wrote for 2 ounces of sodium sulphate in 4 ounces of elixir! Think of it.

DUODENAL CULTURES IN TYPHOID FEVER AS A MEANS OF DETERMINING COMPLETE CONVALESCENCE *

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Some statistics¹ regarding typhoid fever will show the object of this work:

1. Of every 10,000 apparently perfectly healthy residents, 2.3 are typhoid carriers.

2. Fifty-five per cent. of all typhoid cases are due to carriers either directly or indirectly; 17 per cent. are due to direct contact with carriers; in exact numbers, Gaeltgens² found that out of 386 cases, seventy-seven, or 20 per cent., could be traced to chronic typhoid carriers.

3. Park³ has estimated that one in every 500 adults who never knowingly had typhoid is a typhoid carrier.

4. Of every hundred typhoid cases, from three to six become typhoid carriers.

Naturally, it must be remembered that typhoid carriers may be either permanent or temporary. Thus one can apply the expression *omnis typhus ex typho*. The ideal of prophylaxis in typhoid is therefore detection of typhoid carriers.

It should be the duty of hospitals and physicians taking care of typhoid patients to be certain on discharging their patients that the latter are not typhoid carriers. The usual way of determining this, when it is done at all, is by examination of urine and stool. The examination of the urine for typhoid bacilli is simple, the disadvantage being that as a general rule only a small percentage of cases continue to show typhoid bacilluria; usually the excretion of the bacteria is by the feces.

The examination of the feces is under ordinary circumstances attended with marked difficulty. The overgrowth by colon and other bacteria makes it necessary to have special mediums, of which great numbers have been advised. But even then success is difficult and not assured. The varied opinion and mode of procedure that different institutions all over the country have adopted for the discharge of their typhoid patients with special regard to urine and stool examination is indicated by statistics of Dr. F. S. Graves of the University of Louisville Medical Department. A year ago Dr. Graves sent the following question to the various institutions: Are repeated routine examinations made of (a) the urine and (b) stool from typhoid patients before their discharge from the hospital?

Answers were received from twenty-four of the leading hospitals in this country. Of these, only nine institutions examined the urine and stool of their

typhoid patients before discharging them from the hospital. Eleven institutions disregarded such examinations entirely, five definitely stating that the technical difficulties associated with the inaccuracies of the findings in stool examination did not warrant the time spent.

One institution intended to take up the examination.

One examined these excretions only when the occupation brings the patients in contact with foods.

One examined the urine and not the feces.

One discharged patients even with bacteria in the urine, if these persistently remained there.

Thus is seen the difficulties which all have with the stool examinations.

The gallbladder or bile is the source of entry of the bacteria into the intestines, and numerous observers have attempted in various ways to get larger collections of bile for such examinations. For example, massage of the liver and then examination of the stool have been advised.

Foster and Moritz⁴ gave cholagogue cathartics and then examined the stool.

Weber⁵ advised cultures from the bile by means of the Volhard oil breakfast.⁶ From 250 to 300 c.c. of sterile olive oil are introduced through a sterile tube after lavage of the stomach with sterile water. The oil is removed from the stomach in half an hour through a sterile tube. This incites a bile entrance into the stomach. In three cases of typhoid fever, the bile showed typhoid bacteria (Királyfi⁷).

I attempted the direct examination of the bile removed from the duodenum, as thus the difficulties from the great number of contaminating bacteria present in the stool are excluded, no special mediums are essential, and the bacteria are present in great numbers.

The bile was collected in the following manner:

Just before retiring, the patient swallowed the Einhorn duodenal tube. Next morning he received a fluid breakfast to assure the passage of the tube into the duodenum and stimulate the secretion of bile. About one and one-half hours afterward, the tube and duodenum were washed out with sterile water or saline solution by injecting 8 to 10 ounces of sterile water or saline solution through the tube, and in half an hour to an hour, aspiration with a sterile syringe brought forth large quantities of bile. I was surprised in several instances to be able to get as much as 20 or 30 c.c. of pure, clear bile. With the gravity duodenal tube of Palefski, it would not be necessary to introduce the tube the night before, as the heavy weight of this tube traverses the stomach rapidly, and enters the duodenum in from one to two hours.

Cultures of the bile were made in plain broth and on ordinary agar plates. Growths were identified as usual by fermentation tests and specific agglutination. At the same time that the bile was thus examined, cultures of the urine and stool were also made as controls. It was interesting to find that out of twelve typhoid convalescent patients thus examined, we were able to detect two in whom the bile still contained numerous typhoid bacteria, but the urine and stool examinations proved negative. The typhoid bacteria were present in almost pure growth.

Repeated examinations in both of these cases in two weeks showed the bile also free of typhoid bacilli.

* Read before the American Association of Immunologists, Washington, D. C., May 11, 1916.

1. Fürchheimer: Vaccines and Serums, v, 224; *Ergebn. inn. Med. u. Kinderh.*, 1913, xi, 203.

2. Gaeltgens: *Deutsch. med. Wchnschr.*, 1909, xxxv, 1337.

3. Park, W. H.: Typhoid Bacilli Carriers, *THE JOURNAL A. M. A.*, Sept. 19, 1908, p. 981.

4. Foster and Moritz: *München. med. Wchnschr.*, 1908, lv, No. 1.

5. Weber: *München. med. Wchnschr.*, 1908, liv, 2443.

6. Volhard: *München. med. Wchnschr.*, 1907, liv, No. 9.

7. Királyfi: *Berl. klin. Wchnschr.*, 1912, xlv, 1985.