

ical of time is wasted and the students lose the sense of proportion and become careless prescribers and observers of therapeutic effects. Much of the knowledge that they have obtained in the medical school is of little practical use to them, because they memorize these drugs merely for examination purposes at the expense of definite training in the more important drugs.

It is unfortunate that untrained state board examiners should in this way influence the character of medical instruction. In New York a new departure has been made by the appointment on the examining board of men who are teachers and authorities in their respective lines, and who have as well a clear insight into the questions which bring out a practical knowledge of the subject.

In review of the criticisms that have been made of the teaching of materia medica, it is evident that many of the critics have not appreciated what is the function of the medical curriculum. It is not to turn out skilled pharmacists, but men well grounded in the principles of pharmacology and able to apply these principles to the correction of the pathologic physiology of their patients. It is therefore evident that the major portion of the course should be devoted to the thorough teaching of pharmacology, from both the laboratory and the therapeutic side. To what extent materia medica should be taught is still a matter of discussion. Medical botany and plant chemistry, at one time considered so important, are now of too little importance to be more than referred to in the course. The same applies to descriptive pharmacy and the recognition of crude drugs. If the number of drugs taught were sufficiently restricted, then it would become possible for the student to familiarize himself with the composition and physical characters, with the appearance, odor and taste, with the solubilities, miscibilities and incompatibilities, and with the methods of administration and dosage of those which are commonly prescribed in practice. It is not possible or necessary that the student should know all the preparations of even the more important drugs.

There is both a science and an art in therapeutics. The science of therapeutics should be taught in the medical school and form the basis for therapeutic application. The art of therapeutics is a life-long study and comes only with experience. The medical curriculum cannot turn out a finished subscriber. The effect on the student who studies a large number of useless drugs is that, after graduating, he finds that they are of doubtful value and he immediately begins to look for those of more definite effect. His imperfect training and careless observation cause him to turn to the newer drugs and to accept at their face value the statement of their manufacturers. He barely gets his diploma when his attention is called to these drugs, or rather old drugs with new names, and he is led to believe that they are superior to the standard forms.

The work of the student is increased largely by the want of correlation between materia medica, pharmacology and therapeutics. The present method of arranging the text-books in materia medica and pharmacology is defective. Those that are arranged alphabetically dissociate the drugs from their pharmacologic and therapeutic relations. When the drugs are arranged from the pharmacologic or chemical standpoint, an unnatural classification is adopted, so that the student, at the beginning of his course in therapeutics, has presented to him a new classification based on therapeutic action. This is confusing and entails an extra amount of work. With a more restricted materia medica,

a greater degree of efficiency can be demanded of the medical graduate; the instruction would be more definite, and he would also appreciate the fact that while not all of the drugs that are used in the treatment of diseases have been considered, those that are most important and have stood the test of time and experience have been brought to his attention.

That a recent graduate is not a skilled pharmacist—that he has but slight art in prescribing—is conceded, but the recommendation that the teaching of materia medica should be more extended, and that chemistry, toxicology, pharmaceutical laboratory work and prescription-combining should occupy the major time of the course is unwarranted.

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THE DRUGS WE NEED *

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We are fortunately, now, in the midst of an age of careful analysis and investigation of all treatments of disease, and especially of drug treatments. We have passed through the era of absolute faith in drugs and combinations of drugs and mystical mixtures; we have passed through the era inaugurated by some of our best clinicians who were enthusiastic pathologists but therapeutic nihilists, and who spread the belief that drugs had no value; and we have come to the era of pharmacologic research and the knowledge derived from such investigations, which show that many drugs are potent and as such have valuable therapeutic uses.

We have not yet eliminated mystery from medical practice, and still have a belief (unless we very carefully eliminate it) in a multiple mixture, although it may not be a mysterious mixture—we may know its contents. It is so easy to believe when we are told that a drug in this particular combination has a particularly pleasant and efficient activity; or that this particular kind of a drug or preparation will not cause the disturbance that the well-known and well-tried basic drug causes.

A thorough knowledge of the pharmacologic activities of some drugs, and an equal knowledge of the pharmacologic uselessness of other drugs are now necessary in the preparation of the medical student. Having such knowledge, he will not make the mistakes which have long been made in the use of drugs. It is being attempted by the state examining boards and by teaching institutions to limit the materia medica questions at state examinations to drugs that have positive value. Such questions cannot be made too strong or too difficult, as such knowledge shown by the applicant to practice medicine is the greatest possible protection to the public against the misuse of drugs, and would soon cure the use of multiple mixtures, and the use of mixtures, the ingredients of which are not known. In other words, instruction in, and examination on, useful drugs only will be a cure for the mistake of using nostrums, proprietaries, or even absurd and useless pharmacopial preparations.

What drugs shall be used, and how? The only way to discuss the subject is to classify drugs under the objects at which they are aimed. It is advisable to

* Read in the Symposium on the Desirability of a More Restricted Materia Medica in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

classify drugs, not chemically or by some particular pharmacologic activity, but according to their therapeutic use. In other words, when we wish to meet an indication, what drug shall we use?

I do not think it longer profitable, although I have, as is known, done my share of it, to urge the use of many Pharmacopeial and National Formulary mixtures. There is no question that these books furnish formulas, and each druggist can well prepare such formulas, to satisfy the desires of every physician, and thus many times prevent the necessity of specifying some particular proprietary mixture. My desire is to go one step farther, and state that we need these mixtures, whether Pharmacopeial, National Formulary, or proprietary, very rarely. I do not say that such mixtures have no value, but I do say that the active drug of the mixture can generally be given in a very simple manner and the results obtained be perfectly satisfactory, and the treatment be much more scientific.

I will not discuss the long, ever-varying list of drugs used as antiseptics and dressings, nor those used as parasiticides and escharotics, nor those used for various conditions of the skin; but will take up for consideration the drugs that are to be administered internally. In the discussion which follows I take it for granted that we always desire the best drug to meet the indication, and never desire a second and third-best drug; also, that we want the best preparation of that drug, and would not often desire a second-best preparation. In other words, we need no second- and third-rate drugs, and no third- and fourth-rate preparations. It is immediately seen that I have eliminated about three-fourths of the Pharmacopeia from our discussion.

The drugs that we need to diminish secretions, viz., astringents, are: alum for local use, rarely as a mouth-wash or gargle, never internally; bismuth subcarbonate or subgallate (subnitrate may cause, in rare instances, poisoning); silver nitrate internally only intermittently for an ulcer of the stomach or for some chronic inflammation of the stomach, and there is no other use for silver internally. Copper seems to have no positive use internally, and the only valuable salt is the sulphate as an emetic or as a local astringent. Zinc sulphate is the only zinc preparation we need, and should be used as an emetic or locally. There is absolutely no use for zinc in any form whatever internally. Tannic acid is suitable for local use and some of the newer combinations of tannic acid for internal action; rarely, perhaps, gallic acid for action after absorption.

Of drugs to increase the appetite, i. e., stomachics, if we cut out the useless bitters of the Pharmacopeia and their preparations and the large number of proprietary mixtures said to be reconstructive, tissue-builders and appetizers, we have eliminated nearly one-third of the proprietaries that are brought to us, and that eliminates one-third of the National Formulary substitutes. In my opinion we need none of these. If it is desired to give a bitter alcoholic cocktail before a meal, the compound tincture of gentian of the Pharmacopeia is efficient. The compound tincture of cinchona, carrying with it a little more medicinal activity, is another similar cocktail preparation. These drugs furnish all the bitter that is necessary to start an appetite. Very much bitter has been found to inhibit gastric digestion rather than to promote it.

One drop of the tincture of nux vomica in a wine-glass of water, taken before a meal or during a meal, will answer all the bitter purposes of any preparation offered as an appetizer.

Now as for iron, let me first state my belief that there is no organic iron that will do as much good as a simple inorganic iron; also, that 0.20 gm. (3 grains) of an iron salt will present to the patient, who is not undergoing red blood-corpusele deterioration in his system, more iron than he can metabolize during twenty-four hours. Therefore, large doses of iron are not needed. The main point of the organic irons, ordered at great expense and furnishing enormous profit for pharmaceutical houses, is that they furnish less iron than the physician has been accustomed to order of an inorganic salt. The patient who could not take the inorganic salt does take such an organic preparation without unpleasant symptoms. If the dose of the inorganic salt is reduced to 0.03 gm. ($\frac{1}{2}$ grain), three times a day, it will be exceedingly rare to cause any symptoms that are noticeable or unpleasant.

While each individual physician has a pet iron salt which he prefers to use, still, there is no real chemical or physiologic reason why a certain few are not all that we need for internal use. These few are the reduced iron, the Bland pill, saccharated iron oxid (*Eisenzucker*) and the tincture of the iron chlorid. Except the last, these are but little astringent and are pleasant to take, and any one of them can do everything that any iron can do in the system. The strongest iron we can administer seems to be the tincture of the iron chlorid. It is never necessary to give enormous doses, and one drop of the tincture of iron, either in the syrup of citric acid and water or in freshly made lemonade, is of course not noticeable, and yet will give all the iron that is required for physiologic purposes. Five drops of the tincture of iron in fresh lemonade every six hours, even for a condition like diphtheria, is entirely sufficient, and even a child will rarely notice that he is taking anything disagreeable. The sugar of iron tablet is almost a confection; the child enjoys it. We can cut out of the Pharmacopeia, therefore, as far as our needs go, about thirty iron salts and preparations.

As to digestants, physiologists tell us that pepsin is rarely needed in the stomach, and that the starch digestion is generally sufficient. Therefore, pepsin and diastase are not needed. The physiologic chemists tell us that pancreatin is probably rendered inactive in the stomach. Certainly any starch digestant and pancreatin will act in the stomach only until free hydrochloric acid or a considerable amount of acid peptones are present, and this will occur anywhere from one to one and one-half hours after food has been taken. They tell us that proper chewing of the food, to mix the starchy food well with the saliva, is all the starch digestant that is needed. Dilute hydrochloric acid often is needed, and this is generally efficient. Pancreatin, then, is of value only as a predigester of food before it is taken. And again we have cut out a considerable number of Pharmacopeial preparations and a large number of proprietary preparations.

While cod-liver oil is, perhaps, one of the most easily digestible of oils, it is, nevertheless, so likely to cause indigestion that its value has been greatly overestimated. Butter and cream are generally sufficient, with, perhaps, olive oil added in some instances, to increase nutrition. And again we rule out the multiple proprietary emulsions of cod-liver oil.

The large number of glycerophosphate elixirs are probably not needed, neither are the lecithins; and there is practically no difference between a lecithin and a glycerophosphate. We do not need an elixir that contains alcohol or a lot of glycerin, and sodium glyce-

phosphate does not seem to be of value. Calcium glycerophosphate, ordered in dry capsule or in tasteless powder, will do all of the work that the various wonderful elixirs will do. It may supply a need to the body, while calcium is a sedative to the nervous system. This is again a touch of simplicity.

I am convinced that nothing will decrease the perspiration like atropin; therefore I see no reason, except for the local use of alcohol, for using any other drug.

To increase the amount of urine, nothing is better than water; next caffeine in some form, digitalis, buchu, broom and perhaps squill.

To render the urine alkaline there is nothing better than potassium citrate; and there is no wonderful action in the A B C mixture. Potassium citrate is the pleasantest, and, in a proper dose, efficient. We do not need the others.

As antiseptics for the genito-urinary tract, hexamethylenamin, methylene-blue, salol and salicylic acid are efficient.

As a stimulant to the genito-urinary tract, the oil of saffal is as satisfactory as anything yet discovered, and is as little likely to disturb the digestion, and we can do away, in my opinion, with the nasty copaiba, the unnecessary cubeb and the Pharmacopeial and proprietary legion of genito-urinary stimulants.

Outside of iron and thyroid there are no efficient emmenagogues. For the pains of menstruation, after studying all the various Pharmacopeial, National Formulary and proprietary mixtures, the valuable drug seems to be alcohol. I believe that almost every preparation offered for that purpose contains alcohol. It is generally ordered given in hot water; and the dose is sufficient to make any young girl or woman feel better, or at least be indifferent to her condition. In other words, the dilating effect of the alcohol, its slight anesthetic properties, and the mental indifference which it causes, I believe, give the keynote to the satisfactory action of all of our many and multitudinous dysmenorrhea mixtures. Therefore, let the patient have gin or alcohol, and color it, or fool her as desirable.

As for drugs used to act on the respiratory tract, and first, those used to increase the secretion of mucous membranes, i. e., expectorants proper, when we name ammonium chlorid given in small doses, ipecac and iodids, we have covered all that are of any great value. Ammonium carbonate is too irritant, and is not needed. If we need a cardiac stimulant of the ammonia type, the aromatic spirits of ammonia is better. If we wish to decrease the secretion of the mucous membranes of the upper air-passages, ammonium chlorid in fair-sized doses, atropin, terpin hydrate and opium, or any of its alkaloids, will be efficient. In my opinion all of the old so-called expectorants served up in miserable, bad-tasting syrups are not needed, are useless and are bad for the stomach. Nothing can be done in the expectorant line that cannot be done by the above-named drugs. Ammonium chlorid is best administered in a sour syrup, or given in lemonade.

To relax spasm in the respiratory tract, as in asthma, atropin, bromids, chloral, gelsemium perhaps, morphin, nitroglycerin or other nitrite, and scopolamin (hyoscin) are most efficient. Any combination that is of value for asthma generally contains one or more of these drugs. I cannot find any action of belladonna, stramonium, or hyoseyamus that is not that of either atropin or scopolamin; therefore with these two alkaloids, it seems to me we can do away with all of the other preparations of these three closely allied drugs. There are no activities

of these drugs that are not represented by one or both of the above alkaloids.

The greatest bugaboo in medicine is in the proper use of drugs that act on the circulation. These are probably more misused than most any other potent drugs.

It is well to subdivide the drugs that act on the circulation into those that are stimulants and have immediate activity, and those that are tonic and have prolonged activity. The stimulants are camphor, ammonia, strychnin and caffeine. Caffeine and strychnin have prolonged activities, and really are stimulo-tonics. Caffeine in any form acts positively on the circulatory and nervous systems. Strychnin is very much overused. Camphor is one of the best cardiac stimulants that we possess. Alcohol may be of great value in relaxing the peripheral circulation and the abdominal circulation and thus relieving a laboring heart.

As a cardiac tonic, nothing equals digitalis; and its second is strophanthin, given intramuscularly or hypodermatically. If the dose of digitalis is properly regulated, and the preparation is a good one, there is no need for, as there is no real physiologic value in, any of the other so-called cardiac tonics. They may all be eliminated from the Pharmacopeia.

To contract the blood-vessels, suprarenal active principle, pituitary active principle, ergot, atropin, and the drugs already mentioned may be used in proper manner and at proper times.

To dilate the blood-vessels, nitrites in some form, iodids, thyroid, aconite if needed, and chloral occasionally represent the drugs of value.

The so-called antispasmodics are really cerebral stimulants and excitors. The reason they are antidotes to spasmodic conditions, such as hysteria, is that they probably stimulate the brain to better control. Camphor is perhaps the best. The advantage derived from an asafetida or a valerian is probably either from the alcohol contained in many of their preparations, or else is psychic, from the disagreeableness of the odor. They are really of no positive value, and many other treatments, or no treatment at all, as Christian Science, would be of as much value.

To depress the central nervous system, so-called depressomotors, we have any of the coal-tar products, bromids and chloral and opium, if we must. As to coal-tar products, either for analgesic properties or for antipyretic properties, of all the large list presented we still have no better than acetanilid, antipyrin and acetphenetidin (phenacetin). Acetanilid, on account of the dose being small (and the dose should always be small), is the most valuable. It is a very useful drug when ordered and used by the physician for a particular condition. It is the most misused drug, on account of entering into so many nostrums.

Among drugs to produce sleep — hypnotics — there is still none better than chloral; all hypnotics must be graded from this old drug. Chloralid may be a little improvement on it in a way, but the dose must be larger, and its action is often not so efficient. Bromids are valuable when they are needed. Paraldehyd in certain cases may be used, and the hypodermatic injection of scopolamin has a powerful activity which we would not like to lose. The idiosyncrasy of some patients to scopolamin and atropin, however, must never be forgotten.

Of the newer hypnotics, veronal-sodium seems to be the best and safest. The dose of veronal is smaller than the dose of sulphonal, trional or other synthetics, and, therefore, it causes less irritation of the kidneys during its excretion. The sodium combination seems to be less

depressant than the veronal itself, and it seems the best of these preparations to use. If this is the best, then we need none of the second- and third-rate drugs of this class in the Pharmacopeia.

There seems to be no reason for the many bromids. The sodium bromid is the best; potassium bromid is distinctly more disagreeable; strontium bromid is expensive, and the reason of its lack of disagreeable stomach-effects is that it is absorbed less rapidly; and zinc bromid is unnecessary. This again simplifies the Pharmacopeia.

Of all the iodids the sodium iodid seems the best. Potassium is always depressant; sodium is rarely so. Therefore, other things being equal, where the drug must be given for a considerable length of time, the sodium salt is the one which should be preferred. All the various new iodids (iodids without their sting) put on the market only mean a smaller dose of iodid; that is all. If the dose administered of the straight sodium iodid is diminished to what the patient would absorb from one of the proprietary preparations, the unpleasant symptoms will be found not to be caused. The sodium iodid should be given either in water or camphor water, or a saturated solution may be given in milk or water.

Of the colchicum preparations we need only the best liquid, which is probably the wine of the root, and the alkaloid, colchicin. We certainly do not need the number of preparations of it in the Pharmacopeia.

Of the very many preparations of mercury in the Pharmacopeia, at least half could be abolished. I will not designate which half or which third I would deem most valuable, because the differences in opinion are so very great I would simply start an unprofitable discussion. But there is no difference in mercurial action. It is only a question of dose and which preparations, and a few, as soon as one learned how to use them, would have the same action as have the many.

Of all the salicylic acid preparations offered, it is simply a question of regulation of the dose. If any of the proprietaries furnish salicylic acid without its sting, this means that the substance is absorbed very slowly, and the dose given is very much smaller. If the dose of the sodium salicylate is made smaller, the absence of unpleasant symptoms would be the same. If, on the other hand, in rheumatism it is necessary to push a salicylic acid preparation, these preparations that are said to not cause symptoms will cause symptoms. It is only a question of dose.

I am not a drug nihilist. I believe thoroughly in the activity of drugs and thoroughly in their value, but I deplore the profession being fooled by promoters of so-called new drugs and new synthetics, when, if the reliable Pharmacopeial drug is properly used, it is perfectly satisfactory.

I do not for one moment wish it understood that I do not believe in looking into and investigating every new single drug (not mixture) that is offered. Every little while we find something that is of great value, such as hexamethylenamin, phenolphthalein, veronal, salvarsan, perhaps the new synthetic suprarenal principle; but I wish to stimulate a criticism, an honest criticism, of every drug or preparation that is presented. If it is a mixture, we should analyze the formula and draw a line through every ingredient that is of no value, and see what is left. It is many times the very drug of the Pharmacopeia that we have all been long using. The rest are veils to beguile our discovery that the only active drug of the mixture is such a simple, common, every-day affair.

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THE WORK OF THE COMMITTEE ON USEFUL REMEDIES*

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The Council on Pharmacy and Chemistry of the American Medical Association has been repeatedly though erroneously criticized for being destructive rather than constructive in its work, and not a few medical practitioners have pointed out the difficulty of consistently following the efforts that are being made to improve on the conditions now existing in relation to the use of drugs as aids in the prevention or the treatment of disease.

The difficulties that would be encountered by a physician in active practice in any attempt to differentiate between useful and useless articles will suggest themselves to any one who will take the time to look over one or more of the current price-lists of drugs and proprietary medicines. The many thousands of meaningless names found in such a list are disconcerting to even the best-informed medical practitioner, and to one who can give only a limited amount of time and thought to the subject they must be quite as confusing and meaningless as the names of so-called patent medicines are to the ordinary layman; since this is so it need not surprise us that the physician absorbs much of his incentive to use a given drug or preparation in much the same way that the layman does—from the say-so of others in advertisements or the so-called standard works on the subject of materia medica.

The present-day status of the use of medicines has been designated as consisting of series of vicious circles: Patent medicines are used by the laity because they are advertised by manufacturers, and they are advertised by manufacturers because they are used by the laity. The closely related proprietary medicines are prescribed by physicians because they are advertised in medical journals, and they are advertised in medical journals because this leads to their being prescribed by physicians. Official remedies are official because they are endorsed by text-books, and are endorsed by text-books because they are official.

Up to the present time little or no attempt has been made to classify systematically the more useful or more promising medicaments. Even the teachers of materia medica in medical schools are helpless in this respect because of the fact that the several state medical examining and licensing boards are likely to ask questions on all sorts and kinds of medicaments, and teachers of materia medica of necessity feel that they must teach at least something about all of the different official articles and many of the more widely advertised non-official preparations.

In the past the Council has endeavored to exercise its influence with the revisers of the Pharmacopeia and the National Formulary and has striven to induce the compilers of these books to restrict their scope to articles of established value. These efforts have, however, been futile, largely because of the fact that both the U. S. P. and N. F. are accepted by law as the standards for the articles which they contain, and it is felt that physicians who use obsolete or inert drugs have an equal right to

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