Papers Presented to Local Branches

PALATABLE MEDICATION FROM THE MANUFACTURER'S POINT OF VIEW.*

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I am pleased indeed at this opportunity to express myself upon a subject which is of so great importance to the doctor, the pharmacist and the manufacturer. The subject, "Palatable Medication," is a very broad one and is of interest to all who may be engaged in the preparation of medicines.

The business success of the doctor, the pharmacist and the manufacturer depends, first, upon the dependability and accuracy of their medicines, and, second, upon the palatability of these medicines. Every patent-medicine manufacturer recognizes this fact and makes his remedies pleasant to taste above everything else, efficiency being to him a secondary (though not negligible) consideration. The fortunes made in patent medicines bear out monetary far-sightedness of this policy.

Many a child has allowed a dislike for the castor oil he knew he needed to keep him from telling his parents he was not well until this condition became serious. Many adults really feel just as these children do. Those of us who have stood behind the prescription desk know how often the remark is made, "I hate to take that stuff."

There are several methods by which medicines may be made more palatable, and I have classified these under the three following heads: (1) Disguising, (2) Enclosing, and (3) Purifying or Modifying.

Liquids are *disguised* in the form of emulsions, syrups, elixirs and mixtures; solids as troches, honeys, confections, effervescent powders and suspensions.

Liquids are *enclosed* in elastic capsules, and solids in cachets or wafers, hard capsules, tablets, pills and granules.

Drugs may be improved in palatability by *purifying or modifying,* through the removal and elimination of nauseous and unpleasant constituents; or by the complete separation of their active medicinal agents in a form or volume making possible their enclosure or administration in pleasant form.

Let me repeat: First, *our medicinal product should be absolutely accurate in dosage and dependable in quality;* second, presented in a permanent pharmaceutical form, and as attractively as possible; and third, capable of administration in a palatable shape. The whole aim of manufacturing pharmacy is to make drug products conform to these three rules. Evolution is along these lines, as a review of the work of the last few decades will show.

In glancing through our Pharmacopoeias, from the fifth to the eighth revis-

* Read at the December, 1912, meeting of the Chicago Branch.

ions, we find that the infusions, an imperfect and unpleasant form of medication, have been reduced in number of fifty-nine in the fifth to three in the eighth edition. Syrups have increased from eighteen to thirty; emulsions from none to six; elixirs from none to three.

The effort all along the line has been *improvement, either in permanency or palatability, or in both.*

Our modern pharmacist is a capable and versatile man. He is called upon, in the course of a business day, to pass upon dosage and compound medicines of high potency when a slight error may mean a loss of life; he must be ready at a moment's notice to supply proper antidotes for poisons, give competent advice upon all the accessories needed by the sick, also regarding toilet and household preparations and other matters quite foreign to his profession, and must needs do all this in a manner that will retain the confidence of the physician and the good will of his customer.

With these many duties it is clearly impossible for him, however great his proficiency may be, to conduct the experiments necessary to originate any considerable number of new formulas or devise the methods of manufacture necessary for the preparation of elegant and palatable remedies in the quantities his business requires, and to do it with the scientific accuracy equal to that of the manufacturer, and make a profit in so doing. His facilities are insufficient and as a rule he wisely prefers to depend upon the manufacturer to furnish him these remedies, while employing his own energies in the commercial and strictly professional sides of his business. Of course he must be able to make emulsions, honeys, confections and troches for extemporaneous use. He can profitably make syrups and elixirs, of which he uses considerable amounts. He also has the capsule, a most valuable expedient for the administration of extemporaneous mixtures.

But in making many standard pharmaceutical preparations in common use, he cannot equal the pharmaceutical manufacturer in economy of production or in uniformity of product. The latter's automatic emulsifying machines permit of regulation of temperature and speed, resulting in qualities unattainable otherwise. His elastic capsule machine encloses the disagreeable oils and balsams, The troche machine cuts its thousands with greater accuracy and less labor than the druggist cuts a dozen. The automatic capsule-filling machine accurately fills many thousands each day. The tablet machine permits of the accurate subdivision of much used remedies and their presentation in such a convenient form that their advantages are apparent to physician and layman alike, such remedies being turned out at very small expense. All of these things, and many others, the manufacturer can make and furnish to the pharmacist at a cost so slightly above that of the material used that the pharmacist loses valuable time and money not to employ them.

The uses and methods of manufacture of troches, candies and elixirs, covering certain classes of medication, having been ably presented by Prof. Snow, Prof. Linton and Dr. Fantus, I invite you to consider the form used in the administration of potent drugs. This is a line of medication requiring the maximum of accuracy in dosage. These powerful drugs are used to meet serious conditions, and it is of vital importance that there shall be in their vended form neither the danger that comes from over-dosage or the inefficiency that attends insufficient

dosage. Our government through the Bureau of Chemistry, recognizes these dangers and is now testing the products of all manufacturers and demanding purity and uniformity. Such potent drugs must be permanent to meet these requirements and tests at any time.

In this field the manufacturer is rendering a great service to his retailing coworkers, especially in the preparation of such finished products as tablets, pills and granules in such a form that each and every dose is accurate, permanent and immediately usable.

The up-to-date manufacturer, that he may formulate and present this valuable class of preparations, has on his staff physicians who have had actual experience in treating the sick and in the administration of medicines; pharmacists with like experience in preparation and dispensing, and a corps of chemists, expert in research and analysis, as well as laboratories for physiological testing. These people have at their command an enormous amount of constantly growing tabulated information such as is required to produce this line of dependable medicines, and when it becomes necessary to produce a new product or to improve an old one they can do so at an expense that though large indeed in the aggregate, because of volume is trifling when reduced to the cost per dose.

His crude drugs and chemicals, whether made in his own house or purchased, are subjected to chemical or physiological tests, or both. He knows that his drug is right to start with. His formula is then carefully worked out, the nature of the drug being taken into consideration. Its solubility, disintegrability and the excipient best suited are all subjects of careful consideration. Then experiments are made to see if any of the processes required for its elaboration into the desired form are harmful to the drug, and if so, these are modified to meet conditions.

The formula being satisfactorily worked out, the drugs and excipients are weighed, checked for accuracy by another employe, then mechanically triturated for a sufficient period to completely mix them (sometimes 12 to 48 hours), then compressed into a tablet or rolled into a pill or granule, all the while being checked at each stage in its manufacture, and finally the resultant tested as to accuracy of dosage, disintegrability and solubility. The result is a nearly perfect pharmaceutical product, meeting the requirements of accuracy, permanency, dependability and palatability upon administration.

The granule made by the firm with which I am connected* is a product having the advantages of the pill and tablet without some of their faults. This form is especially useful in the exhibition of powerful alkaloids and other active principles in graduated dosage, for Dr. Fantus with his medicated candies cannot make strychnine sweet, or bad-smelling drugs pleasant. Here is where the granule has a special advantage—it can be crowded into such a small compass that taste and odor are matters of indifference. Even a baby can swallow one of these little pellets which can be "flipped" down the throat of a nursing infant, and being easily swallowed overcomes, for many people, the disadvantage of the pill and tablet. It is also readily soluble. It is certainly a portable, permanent and palatable form of medication.

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*The Abbott Alkaloidal Company.

The objection formerly raised against the pill and tablet, that they were insoluble, has been largely overcome by improvements in manufacture, the makers having eliminated (as in the case of the crude extract) everything except the part of actual medicinal value. For instance, we find in many drugs about 20% of extractive matter and this will contain medicinal elements running down to as low as 1-10 or 1% active principle. The non-medicinal portion of these extractives being largely gums, waxes, etc., is removed and is replaced to a certain extent by a completely soluble excipient, giving a product that breaks up readily and dissolves rapidly rendering the principle immediately available, thus reducing the volume of the product while increasing its efficiency. For illustration: Here is a sample of the extractive matter obtained from uva ursi, the source of arbutin, and here is arbutin as finished. It is a glucoside of value, but the drug itself and its crude extract have largely gone out of use because it contains so much tannin and valueless but unsightly and nauseating extractive matter that its physiological action is impaired and pharmaceutical elegance impossible.

We find in our experimental work that many tablets and pills fail in disintegrability and friability and are not soluble because the drugs from which they are made are not carefully prepared. They have not been handled properly in making; the extracts being especially unsatisfactory because of impurities left in them. Many are spoiled in drying and for this reason we use the active principles and other drugs of our special make.

In conclusion I would say that there are many reasons why the preparation and administration of medicine in pleasant form should be considered, alike, by the doctor, the pharmacist and the manufacturer and if their cooperation is consistent and sincere, they may give medicine the position it so justly deserves.

Christian Science, osteopathy and various other cults have been taken up by many people because of their lack of faith in and their dislike for medicine as it has been administered. The propaganda of various newspapers and magazines against patent medicines and quack medicines have caused many people to lose faith, and these things must be borne in mind by the doctor and the pharmacist who should prescribe and dispense only those things which can be depended upon to give results, not forgetting that they must also be pleasant to the consumer to win his favor.

I really believe that the pharmacist who would make it a point to let it be known among his patrons that he "specialized" in marketing remedies that are pleasant to take—or easy to take which is better—who advertised that fact and lived up to it, would find it exceedingly profitable. After all, people want to be cured, and cured *pleasantly,* and if they found that Dr. Fantus's candy lozenges or Dr. Abbott's sugar-coated granules "did the work" expected of them better than the bad tasting stuff, they would come to his store by preference, and not object to paying reasonable prices for the things that baby would take without a fight.

Our government is doing a great deal of fine work in the examination of medicinal preparations and because of it the doctor and pharmacist must eventually depend upon the manufacturer to furnish products which are permanent and accurate because of his superior facilities for chemical and physiological

testing and because of the increasing necessity for special machinery and men of scientific training in work of this kind.

I believe that it is the desire of every reputable manufacturer and I know it is of the Abbott Alkaloidal Company, to get into closer touch with the retail pharmacist. Accordingly I take great pleasure in inviting the members of the Chicago Branch of the A. Ph. A. to come and see how we extract alkaloids and other proximate drug principles, and how we make our own active principle granules—how we do our work.

PRINCIPLES AND OBJECTS OF PHARMACY LEGISLATION.*

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In general discussions of the question of legislation, the popular idea prevails that all one has to do to bring about desired results, is to draft a bill, get some friendly member of the legislature to introduce it and then sit down and wait for it to be enacted into a law and receive the approval of the Governor of the State. But if one pursues this course, in ninety-nine times out of one hundred the desired result will not be accomplished.

There are many constitutional and legal requirements and rules of the General Assembly that must be complied with in the preparation and introduction of a bill, and its passage through the various stages of legislation. Many meritorious measures fail of passage for the reason that at the last moment some fatal error is found in the title or the body of the bill, which it is then too late to correct. Others pass both branches of the General Assembly, are approved by the Governor and are then declared unconstitutional by the Supreme Court for the reason that the constitutional requirements have not been complied with.

But it must not be presumed, from what I have said, that every bill which is introduced in the General Assembly reaches the order of passage. A very small percentage of the measures introduced ever reach this order. The rules of the General Assembly provide that every bill must be referred to a proper committee. Scores upon scores of bills have no particular merit in them and are not taken up for committee consideration until the closing hours of the General Assembly, when they are reported back to their respective houses without recommendation. Others receive careful committee consideration and are reported back either for or against passage. If the recommendation be favorable, then there are many other stages through which the bills must pass before a vote can finally be taken upon them. Many bills that have been acted upon favorably in committee do not get beyond that state, for the reason that in the great multiplicity of measures upon every conceivable subject there is not sufficient public interest or sentiment to push them along. I mean no reflection upon the members of the General Assembly when I say that many good bills are not enacted into laws. The members can hardly be expected to study care-

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