

before this desired end was accomplished. He had no doubt the same desire existed in other countries as in this, of bringing about greater uniformity. But, in the very nature of things, care must be exercised in a matter of this kind, and progress would necessarily be slow. No committee that could be appointed could successfully deal with a subject of such broad scope, and the only thing that could be done was to make recommendations to the International Congress as to this particular phase of their work; but not until the pharmacists of the world were gotten near enough together, by a conference, on scientific matters, would a remedy be found.

Mr. Wilbert responded that the pharmacists of America were extremely slow to adopt the recommendations of the International Congress. The Brussels Conference had suggested, not one name, but several for each article, and in a number of instances none of these had been adopted in this country. The International Conference could only suggest or recommend, and true uniformity could be had only when the necessity of such a thing became apparent everywhere. The trouble with the pharmacists of America was, that they were so provincial they were not willing to adopt the recommendations made by the International Congress, and put in the form of an international treaty signed by diplomatic representatives. This was one serious fault of the pharmacists of this country, they were over-conservative in making headway in such directions as this.

James M. Good, of St. Louis, thought it could be only pure selfishness that would deny the privilege of using the name "phenacetin." What one of the speakers had said did not apply with the same force to phenacetin that it did to diuretin, for instance. In many drug stores, it was not known that acetphenetidin was the official name for what was the proprietary product "phenacetin." He thought there was no necessity for the two names. Out in St. Louis, he said, a man could say, "I want to be called 'George Washington,'" and the courts would allow him to adopt the name; but it was a different proposition when it came to the United States courts. "Why, are we afraid of these people," he asked, "and hence not willing to give these synonyms?" He understood from what Mr. Raubenheimer had said that the probabilities were, that these people did not want any legal facts to be in the hands of the pharmacists of the country.

Mr. Wilbert, commenting upon this last suggestion, as to the legal phase of this matter, said that the American Medical Association, which was a responsible financial institution, had said that these names were applicable to the pharmacopœial articles. These facts had been published in the Journal of the American Medical Association repeatedly, and if these people had desired to do any fighting they had had ample opportunity.

Mr. Good suggested that it might be put up to the Pharmacopœial Committee as to whether or not these synonyms could be used. This was a subject that all pharmacists were vitally interested in, and he thought this Committee of Fifty could deal with it. Very few pharmacists were capable of acting intelligently on a proposition of this kind, but the committee should be able to give a good reason for whatever it did.

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### TABELLÆ DULCES, SWEET TABLETS FOR CHILDREN'S MEDICATION.

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Modern pharmacy boasts of many elegant and palatable preparations suitable for adults. But very little has thus far been done in this line for children, and yet attractiveness and palatability are even more important for the little ones than for the grown-up. Syrups have hitherto been our chief aids in making medicines more acceptable to children. Unfortunately, many a child has had its palate

offended by liquid medicine so that it abhors spoon-medicine of any kind, and will struggle even against the most palatable. It is especially for such children—and there are a great many of these—that another method of administration is needed. As all children love candy, this form would seem to be most desirable for children.

In name and in principle, "candy medication" is even now recognized by the Pharmacopœia. Have we not confections and troches? Unfortunately, the pharmacopœial conception of a confection does not coincide with the confectioner's. Have you ever seen Confection of Rose sold in a candy store? If it were a really delicious confection would not the confectioner be glad to take it up? Confection of Senna is far from being delicious. I know whereof I speak. In the early days of my experiments on "candy medication," I tried to put Confection of Senna into attractive dosage forms with the hope of making the youngsters think it was candy; but without the least success. Troches have been defined as "confections made into various dosage forms and dried." How many troches are real candy? How many of them are popular? Of course, I recognize that the chief purpose of troches is throat medication and not palatability; that they are intended to dissolve slowly in the mouth, so as to give prolonged contact of the medicament with the throat. Real "candy medication" is therefore not yet to be found in the Pharmacopœia.

The sweet tablets to which I desire to call your attention are—to use a phrase of the drug-store vernacular—"just as good as" candy; and they are the only candy form I know of that can be prepared extemporaneously by the pharmacist. These tablets, to be successful, must be perfectly pleasant, actually delicious sweets, free from any suggestion of medicinal taste or odor, as the ailing child is liable to be very critical. The tablet should disintegrate readily in the mouth, for a sick child usually will not chew or suck candy as a healthy one would.

Having conducted a study to determine to what extent the materia medica would lend itself to this form of medication, I was surprised to find that the list was quite extensive. Within the last few weeks I have been able to enlarge this list still further, thanks to the discovery by John Uri Lloyd, of almost tasteless compounds of the alkaloids, called by him Alcresta Alkaloids, which are obtained by precipitating alkaloidal salts with a reagent that, I am told, is essentially composed of hydrous aluminum silicate which combines with alkaloids possibly by reason of adsorption. These precipitates are insoluble in neutral and in acid liquids but soluble in alkaline fluids; hence may be expected to unfold their activity in the intestine. The slight alkalinity of the saliva does not liberate enough of the alkaloid to bring out the bitterness excepting in case of the strychnine and of the quinine compounds. These Lloyd has subdued practically to tastelessness by combining the strychnine with free tartaric acid, and in case of quinine by combining it with glycyrrhiza and a tannin. The first question that comes to one's mind is, whether by removing the taste, the activity is not likewise annulled. That this is not the case can be positively asserted in regard to strychnine, the Alcresta compound of which will kill a dog quite as readily as strychnine sulphate. It may be inferred that the other preparations will likewise not be impaired in their activity; though this remains to be demonstrated. By the use of these compounds, the alkaloids become available for administration

in candy form. Strychnine can be given to the extent of 1/200 grain per 5 grain chocolate tablet. The Alcresta compounds of morphine, of codeine, of cocaine, and of atropine, permit the administration of adult doses in five grain sweet tablets. I have also experimented with Alcresta compounds of cinchonine, cinchonidine, berberine, sanguinarine, gelsemium alkaloids; and have found all of them more or less suitable for this method of administration. It is evident therefore that sweet tablets are a form of pleasant administration of such wide applicability that it would rarely be necessary to inflict upon children less pleasant medicine.

I have found three fundamentally different formulæ of use: 1, Sugar tablets; 2, Chocolate tablets; 3, Licorice tablets.

1. *Sugar Tablets*.—There are quite a number of medicines sufficiently free from taste to be made pleasant by the mere admixture of sugar and of flavoring. The addition of a little of harmless coloring seems desirable, as pleasing color adds considerably to the attractiveness of the tablet for the little ones. The powder, after having been moistened with alcohol, may be moulded in a tablet triturate mould. Or else, it may be made into compressed tablets by the use of an inexpensive tablet machine. The addition to the powder of 3 percent of cacao butter or of paraffin causes it to retain the shape imparted to it by the machine; the paraffin being preferable if the tablet is to be kept for some time; cacao butter, if it is for immediate consumption. If the powder has a tendency to stick to the dies, the further addition of 3 percent talcum is advantageous. If a considerable amount of insoluble powder enters into the composition of the tablet, the addition of talcum is unnecessary. The following might be taken as a typical formula for sugar tablet:

TABELLAE TERPINI HYDRATIS DULCES, GR. ½.

SWEET TABLETS OF TERPIN HYDRATE.

|                                                    |            |
|----------------------------------------------------|------------|
| Terpin hydrate .....                               | 50 grains  |
| Paraffin, low melting point, in thin shavings..... | 15 grains  |
| Tincture of curcuma.....                           | 60 minims  |
| Spirit of rose, 10%.....                           | 5 minims   |
| Powdered sugar .....                               | 435 grains |

Mix the terpin hydrate with the sugar, the coloring and the flavoring by thorough trituration in a mortar, incorporate the paraffin by gentle trituration; and compress in tablet machine, using three-eighths-inch die and punches, to make 100 five-grain tablets.

It might be remarked in passing that these tablets of terpin hydrate, as well as quite a number of others, are not only suitable for children's medication, but for adults as well. Two of these tablets would be equivalent to a teaspoonful of the N. F. Elixir of Terpin Hydrate in a much more pleasant form.

2. *Chocolate Tablets*.—Substances that have a slightly bitter or otherwise slightly disagreeable taste can well be disguised by the addition of 10 to 20 percent of powdered cacao to the sugar. The addition of a small amount of Tincture of Vanilla, say 3 percent, is of advantage to improve the flavor of the cacao. So nicely does the cacao-containing powder lend itself to compression in a tablet machine, that the formula for the chocolate tablet might be considered the formula

of choice, if one general formula for sweet tablets were desired. The following might serve as a typical example:

TABELLAE ACETPHENETIDINI DULCES, GR. ½.

SWEET TABLETS OF ACETPHENETIDIN.

|                          |            |
|--------------------------|------------|
| Acetphenetidin .....     | 50 grains  |
| Powdered cacao .....     | 100 grains |
| Tincture of vanilla..... | 15 minims  |
| Powdered sugar .....     | 350 grains |

Mix the ingredients by thorough trituration in a mortar; and compress in tablet machine, using three-eighths-inch die and punches, to make 100 five-grain tablets.

The taste of tablets containing some of the ordinary salts of alkaloids can be improved by the addition of a small amount (1%) of sodium bicarbonate; some need a little saccharin in addition. To the Alcresta alkaloids, on the other hand, alkali must not be added, as that would bring out the bitterness.

3. *Licorice Tablets*.—There are a few substances that are better disguised by extract of glycyrrhiza than by cacao. A formula for such a tablet would be:

TABELLAE ANTIPYRINAE DULCES, GR. ½.

SWEET TABLETS OF ANTIPYRIN.

|                                       |            |
|---------------------------------------|------------|
| Antipyrin .....                       | 50 grains  |
| Extract of glycyrrhiza, powdered..... | 25 grains  |
| Caramel, 50% solution.....            | 30 minims  |
| Spirit of anise, 10%.....             | 8 minims   |
| Spirit of coriander, 10%.....         | 4 minims   |
| Powdered sugar .....                  | 425 grains |

Mix the ingredients by through trituration in a mortar; and compress in tablet machine, using three-eighths-inch die and punches, to make 100 five-grain tablets.

These sweet tablets are so delightful in practice among children, that any one who has used them once would never again wish to do without them. Why should iron ever be given to a child in other form than that of some delicious sweet tablets of iron carbonate? Why should a little one suffering from cardiac weakness and in need of a heart tonic be permitted to struggle against medicine, and thereby jeopardize its life, when digitalin, strophanthin and even strychnine can be given in candy form? And quinine can be given in positively pleasant form as sweet tablets of aristochin, of saloquinine, or of Alcresta quinine.

If these sweet tablets are useful in medical practice—and it can readily be proved that some of them are—why should not one of our formularies, the Pharmacopœia or the National Formulary, help in introducing them? Why should not the pharmacists of the country be given the opportunity of preparing these tablets? There is no doubt in my mind that any pharmacist who will equip himself with the necessary apparatus, costing not much more than \$10, and who will busy himself to get the physicians of his district acquainted with these new preparations, would reap a rich harvest. Should pharmacists equip themselves to prepare these tablets extemporaneously so that physicians could prescribe them, the patient would receive a fresh product fitted exactly to his needs, for

the dose could be modified and several medicaments combined in the same tablet, as occasion may require.

My conclusions are:

1. There are a considerable number of drugs that can be administered in form of perfectly sweet tablets, particularly desirable for children's medication.
2. These sweet tablets can be readily prepared extemporaneously by any pharmacist equipped with an inexpensive apparatus.
3. A few sweet tablets, such as those of calomel and of phenolphthalein are now in extensive use.
4. These and a few others of undoubted desirability should be introduced into the Pharmacopœia or the National Formulary.
5. If this be done, a definite advance in pharmacy would be recorded, suffering childhood would many times be spared the hardship of having nasty medicine forced upon it, and grateful mothers and nurses would bless the day of the new medication.

#### DISCUSSION.

Mr. Wm. C. Alpers, calling attention to the use of the three colors, green, red and white, obtained by solutions of malachite green and carmine, and tincture of curcuma, respectively, suggested that green might more appropriately be applied to tablets that should be classified as poisons,—to drugs like arsenic, and antimony-potassium tartrate,—and expressed the opinion that some system should be observed in the coloring scheme. Comparing the two formulas for terpin hydrate and terpin hydrate with heroin, he pointed out the difference between the two, in that, with the latter, chocolate powder was used as the coloring-matter, whereas with the first-named tincture of curcuma was used. Again, as to flavors, the one was flavored with vanilla, while the other was flavored with spirit of rose. If any system was employed, he desired to be enlightened upon that point. He suggested that one would naturally think, as to these two formulas, that they would be in the same system. He thought it might be a question as to whether sugar should be used in all cases for children; but this was not a question for the pharmacist, but for the physician himself to answer.

Doctor Fantus said he appreciated the remarks of Doctor Alpers, and that there was a certain amount of system observed in the coloring scheme he had used. He had tried to use green or deep red for poisonous substances. For instance, there was elaterin, a substance that might be considered rather active. He had used as deep a red for that as he thought desirable. Then, there was hyoscine, which was colored a rather deep red. And again, green was used for some poisonous tablets. He confessed that he had not carried out this idea as consistently as might be desirable. He had found green was attractive to children, and he had also used it for other tablets, that were not poisonous for instance with acetylamidosalol. The idea advanced of marking poisons by a particular color seemed to him to be a good one, and it would be carried out more definitely in future work.

The difference in color between terpin hydrate tablets and those of terpin hydrate with heroin, was due to the bitterness of the heroin, which was best disguised by chocolate. He called attention to the fact that the heroin tablets were also chocolate tablets.

As to the question whether sugar might not be, at times, objectionable in the treatment of sick children, he confessed that it had also given him considerable concern. However, the conditions in which the small amount of sugar given with the medicaments in this form would be objectionable must be very rare indeed.

These tablets were not intended for babies. They were intended for children, from the ages of three years to nine; and the doses were calculated for a child of three, although some of them could be given in larger doses. Children of that size he did not believe would be harmed by the amount of sugar given them in connection with the remedy. Anyhow, actual experience with many of these had shown that was not the case.

This work was merely experimental, and more to show how many different medicaments

could be put up in this form. Some of them would probably be useless. Experience would show how many could be successfully used. He had found his own practice to increase to a marked degree since he had been using this form of medication.

Dr. Fantus concluded by saying that he had brought this subject before this body of representative pharmacists of the country for the reason that he wished their coöperation in keeping this form of medication in the hands of legitimate pharmaceutical practice, instead of having it forced upon the market as a new line of proprietary medicines.

W. R. White, of Nashville, said he was particularly interested and pleased with this paper. It bore on a subject that he had given some attention to heretofore, in a paper that he had read before the Los Angeles meeting, in which the subject of chocolate and its uses in pharmacy were considered. In that paper he had referred to the use of chocolate in disguising the taste of a great many different medicines. One question that presented itself to his mind and which was not brought out here was the fact that some people did not swallow tablets, and in such cases a powder was necessary to be administered. In these cases he thought a powder consisting of chocolate and sugar might be prepared and used in many instances, instead of the aromatic and other powders used. The value of chocolate was being more and more recognized, continually. A good many pharmaceutical houses were using it in preparations that were elegant, and they had become very popular.

J. L. Lascoff, of New York, called attention to the fact that Doctor Fantus had said that there were certain manufacturers putting on the market strychnine and other poisonous substances in tablet form, and stated that several cases of poisoning had occurred with children, where they had mistaken these tablets for candy. He thought all poison tablets should be of a certain color, for distinction. For instance, terpin hydrate tablets should be of a distinctive color. He said he had found a tablet machine costing \$30.00 to give good results.

F. E. Stewart, of Philadelphia, said that he was very much interested in this subject when Doctor Fantus presented it to the meeting of the American Medical Association. He feared, however, that if the idea was logically carried out it would ruin the pharmaceutical business. He thought pharmacists were doing all they could to put themselves out of business by encouraging such things as this, and expressed the opinion that, if this kind of medication became very popular, it would be a question as to whether the pharmacist would have anything to do.

W. C. Alpers, speaking again on this subject, thought that if these tablets should become popular there was no doubt but that the manufacturing houses would make them; that they would not be made in the store of the pharmacist, but every manufacturer would take advantage of the opportunity, and offer them for sale. He thought it would be manifestly desirable in such case that tablets of the same kind should be turned out of the same color by the different houses, and right at the beginning the inventor should lay down certain rules as to the coloring. He could foresee that the failure to do this would lead to all sorts of trouble. The patient buying a tablet of a certain kind and color at one store would immediately raise objection if he was offered the same thing at another store in a different color. He thought that this question should be well-considered and determined by creating right at the start a well-defined system as to color. He was decidedly of the opinion that one distinctive color should be adopted for poisons; the rest could then be arranged in other ways. This would not apply to those articles where chocolate was used for the outside coating, but the rest should have a definite color-scheme. By following out this idea, a great deal of confusion, which would inevitably arise otherwise, would be avoided.

Continuing, Mr. Alpers called attention to the fact that a chocolate quinine tablet was being sold on the market, and suggested that a quinine tannate was formed from the tannin in the chocolate, which, being insoluble, had no taste. He said a great many physicians would not allow their patients to use these quinine chocolate tablets because of this insolubility, which they regarded as making them worthless. According to them, the presence of chocolate in the quinine tablets would make them objectionable.

Otto Raubenheimer, of Brooklyn, said that all knew how hard it was to administer medicine to children. Doctor Fantus had certainly taken a step in the right direction, in originating a scheme of preparing tablets which was intended for the pharmacist, and not for the

manufacturer. Of course, if the pharmacist remained ignorant and lazy, and did not prepare these tablets, the manufacturer would do it. These tablets could be made by the pharmacist by an inexpensive machine, and he had something here that he could make some money out of.

He did not agree that there was tannin in chocolate. The quinine chocolate tablets were prepared with quinine tannate. He thanked Doctor Fantus for originating these tablets; and expressed the hope that some standard work like the Pharmacopœia or the National Formulary would take up some of these formulas.

Doctor Fantus thanked the members very heartily for the interest taken in this work, and for the ideas brought forward. He regretted that he was not familiar with the paper referred to by Mr. White, in regard to the use of chocolate in disguising the taste of medicine, as he should have given him credit if he had known of it. It should be understood that these tablets should always be dissolved in the mouth; they were not intended to be swallowed whole. He saw no reasons for tablet-making, excepting for the purpose of either hypodermic administration or to be dissolved in the mouth. A pill could be swallowed much more readily than a tablet. A tablet was made in imitation of candy, and that was the reason it was attractive to children. He had found that powders were of no advantage, because children rebelled against them.

He admitted that the possibility of poisoning was probably the most serious objection to candy medication. There was undoubtedly danger that a child might get hold of a quantity of such poisonous tablets and eat them. However, that danger could be readily overcome by not prescribing, and not permitting to come into the house, any more than could be safely taken at one dose. Thus, if the physician prescribed only a few morphine tablets, and the little patient got hold of them and ate them all, no harm would be done. And the same with aconitine, and so on.

Referring to Mr. Alpers' suggestion that he should systematize a color-scheme for these tablets, Dr. Fantus agreed that this was an excellent idea, and he would profit by it.

A tablet machine, that would satisfactorily turn out prescription quantities of tablets, could be obtained from Whitall, Tatum & Co. at about \$10.00. Doctor Fantus could see no reason why pharmacists should not take up tablet making.

F. W. Nitardy, of Denver, said that, some years ago, he had experimented with putting up castor oil in the form of candy, and had met with fair success. He had not done much with it of late, however. He put up the castor oil in the form of chocolate creams, each containing a teaspoonful of castor oil; and they were sufficiently disguised to deceive the clerks in the store to whom he handed around these creams; at least, none of them found out it was castor oil or that the candy was medicated, until they had been told. The process consisted of making an emulsion of castor oil, with condensed milk, sugar and flavoring, so that the finished product was of proper consistence and contained 50% castor oil. This was divided into lumps of about  $\frac{1}{4}$  oz. each, which were then dipped in chocolate.

Doctor Fantus said he had worked with chocolate creams himself, but his experiments with cod liver oil in this form had been a failure—although in his early studies in this form of medication he had taken the pains to go to a candymaker for instruction, that he might find out what forms of candy would be most suitable for various forms of medication. He was not the first, however, to use chocolate cream in medication. Sir James Sawyer had published a process in *The Lancet* in 1911 for making medicinal chocolate creams, for which he had proposed the name "Cremulæ."

In response to a question by Mr. Lascoff, Doctor Fantus said that any process that required drying was practically excluded from extemporaneous pharmacy, for this reason, lozenges were excluded. The granulation ordinarily prepared for tablet making also required drying. A. Schleimer suggested, in 1909, the use of cacao tablet making. Three percent of cacao butter would do, but some tablets made with it would not keep well. He had endeavored to find some substance to substitute for cacao butter, and found that paraffin did just as well, using the same percentage. There might be some objection to paraffin, as it was insoluble and indigestible. He thought cacao butter should be preferred for tablets that are not to be kept for any length of time.