

ably, by forming the mass with the aid of glycerine, and rolling the pills into sifted arrow-root. A beautiful white pill is formed, which, by fastidious persons, is preferred to pills rolled in liquorice powder or lycopodium. Some authors object to the use of glycerine, on account of technical difficulties, but I have always found it the most convenient excipient for general pill-making, having seldom to resort to any other. Then its tendency to prevent the pills from becoming hard will fully compensate any additional labor that may now and then attend its use.

Several of our physicians prescribe sulph. quinia with tartaric acid, according to a formula published some years ago. Quinia pills so formed may possess some advantage over the simple quinine pills, being probably more easily dissolved and assimilated. The following is the formula:

Take of Sulphate of quinia, 30 grs.
Tartaric acid, 4 grs.
Water, 1 drop.

Mix, and make pills of the required quantity. The single drop of water is sufficient to form 30 grs. of quinia into a plastic mass, which must, however, be rolled into pills rapidly, else it becomes hard, and more water is required.

These pills, like the preceding, should preferably be rolled in sifted arrow-root: in fact all pills composed of colorless substances should be rolled in this powder, as it, apart from other considerations necessitates the utmost cleanliness.

Carbolic Acid in pills is occasionally prescribed. I have never met with any particular formula, and suggest the following as convenient and satisfactory:

Take of Carbolic Acid 1 part.
Powdered Elm Bark, 3 parts.
Gum Arabic, 1 part.
Tragacanth paste, a sufficiency.

Mix, and make pills with the required quantity, which may be coated with tolu or silver leaf.

Muriate of Ammonia, when required in form of pills, demands very careful handling, on account of its ready solubility. By adding about ten per cent. of powdered gum arabic, and sufficient tragacanth paste to simply moisten, pills are readily formed by the aid of glycerine.

Ammonio-ferric Alum is sometimes required in the form of pills. A handsome pill is produced by adding about one-eighth part of powd. gum arabic, and making the mass with glycerine, being careful to avoid an excess.

CAN PRACTICAL PHARMACY BE TAUGHT EFFECTIVELY BY LECTURES?

BY WILLIAM PROCTER.

The time has arrived when a definite answer to this question is of serious importance to the Pharmaceutical Institutions of the United States. Slowly the public mind is being educated to the necessity of the pharmaceutical Diploma. One State after another is passing laws compelling qualification, placing impediments in the path of incompetence, and preparing the way for the final triumph of the pharmacist. The sparsity of Schools of Pharmacy offers a great obstacle to the universal extension of college education of apothecaries, and

renders it doubly important that those who make the sacrifice to come long distances to attend lectures, and graduate, should be enabled to return freighted not only with stores of standard knowledge of the books, and the most expert practice of the shop, but with the latest ideas of the Journals not yet crystallized by pharmacopœial adoption. In this wise the graduate should become a true missionary in propagating the valuable and the elegant in pharmacy in his practice, by attracting the attention of physicians and the public to the contrast which his dispensing makes with pre-existing imperfection in the neighborhood where he may establish.

All will agree that no amount of tuition by lectures will be equivalent to that which the earnest student receives in the dispensing shop and practical laboratory, under the personal instruction of a well-qualified pharmacist, who takes an interest in his pupil; yet such opportunities are rare.

But the question to be met is in regard to the efficiency of oral teaching, where the teacher addresses himself to a roomful of hearers, impressing his ideas by such illustrations as will best convey his meaning to the thirsty young minds who come as to a fountain of knowledge to fill their vessels for future use. The depth of the impressions made on the minds of a score of students by the vocal announcement that *steam is a carrier of heat*, based on the property possessed by water of rendering a large quantity of caloric latent in the act assuming the elastic state, which it relinquishes again on condensation as sensible heat, will vary with their natural capacity and previous training; but if the lecturer at the same time exhibits a flask of water in active ebullition, over a lamp, connected by an elastic tube with a flask of alcohol on the other side of the room, so as to impinge on its exterior surface below and set it to boiling, he gives ocular demonstration of what he has said. In this way all the senses recognize size, form, color, odor, and even touch, may be called in to aid the voice in teaching.

It is essential that the preliminary lectures on manipulation should be thoroughly demonstrative and well furnished with apparatus, diagrams, models and every instrument pertaining to the shop and laboratory. The next best thing to doing it himself is for the student to see the professor perform an operation, and when important operations can be performed before the class without too serious a loss of time, they should be done. But when it is not possible, by showing the manner of using the apparatus, pointing out any difficulties that are apt to arise and how they may be avoided.

Some have questioned the propriety of giving preliminary lectures on manipulation, believing that apparatus and manipulation should be explained *pari passu* with the preparations requiring them; but this is certainly a mistake as regards the leading elementary processes, such as comminution, filtration, the generation and applications of heat, the modes of solution, evaporation, distillation and sublimation, etc. If the teacher has been fortunate in conveying his meaning these preliminary lectures will have laid the groundwork for his subsequent teaching, so that he can use the verbs percolate, digest, distil, filter, sublime, neutralize, fuse, etc., without fear of being misunderstood.

Teachers differ in their views of classification and arrangement in Pharmacy, as well as in regard to its importance. Some prefer

the artificial grouping in classes of similar preparations, as extracts, tinctures, pills, distilled waters, etc., while others prefer systematic arrangement, based on a botanical alliance of plants yielding drugs, all the simple preparations of each drug being together. The most simple plan is that of the Pharmacopœia. The most rational, and that which appeals most forcibly to the reflective mind, is that of groups based on the similarity of active principles, the preparations of each drug being together. Thus, the starches, the gums, the saccharine drugs, the acids, the alkaloids, the neutral principles, the fixed oils, the volatile oils, the astringents, etc.

We hold that the lecturer on Pharmacy should exhibit a fair specimen of each drug the preparations of which he is speaking about, and in important cases deteriorated samples, not to trench on *Materia Medica*, but to serve as a practical test in his remarks upon preparations. He should have the powder of the drug and each of its official preparations, when these are at all important. When the drug is much employed in infusion or decoction, these preparations should be at hand, as the infusion of digitalis or the decoction of cinchona, so as to point out their peculiarities. Before speaking of the preparations of a drug, its proximate constitution should always be stated, and when several principles have been isolated for medical use, the mode of preparing these should be first dwelt upon. This acquaints the student with the nature of the principles entering the preparations discussed, and the precautions necessary to insure their solution or to avoid their injury.

Where preparations are likely to deteriorate by age, it is well to have samples for illustration, a point easy to accomplish after several years of experience, and in relation to tinctures, extracts, syrups and the volatile and fixed oils, a valuable museum will soon accumulate, illustrating some curious points in relation to the action of light, oxygen, eremacausis, together with the influence of insects and cryptogamic vegetation.

It remains to say a few words in regard to the manner of treating the subject experimentally, so as to carry out the ideas above stated. In chemical preparations requiring distillation or involving the condensation of gases, like the ethers, chloroform, oil of wine, water and spirit of ammonia, the dehydration and rectification of alcohol, the preparation of the oil of cloves, copaiba, cubeb and the distilled waters and spirits all may be shown without difficulty and with safety by suitable preliminary preparation and the help of an assistant in a few cases. The Pharmacopœia processes for hydrocyanic, valerianic and benzoic acids may be performed by starting the processes before the lectures, without materially wasting the professor's hour.

It is quite possible, by mixing powdered galls with ether and moisture beforehand to express the liquid tannin, and desiccate it on tin plates before the class in a very few minutes, so as to produce good commercial tannin. There is no difficulty in making collodion cotton, washing and drying it by aid of alcohol, and dissolving it in ether while describing the process and substance.

The rapid preparation of hydrated sesquioxide of iron, fit for an antidote, should be shown to encourage the student to do it dexterously. The processes for many metal-

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