at Washington. In England, the British government reports quite as much success in harvesting wild drugs as in cultivating plants. It must be remembered that England has a much more restricted flora than is the case in the United States. We have a long list of indigenous drugs and climate, latitude, altitude, etc., for the growing of many exotic plants.

Now, to be more personal, I bring home to you the duty we owe the Missouri Pharmaceutical Association, which secured our original pharmacy law of 1879 and for nearly forty years has had a hand in all pharmaceutical progress in Missouri. War or no war, we should continue to develop and expand the organization. Here we can solve practical questions in a practical way.

One form of recognition which our government has recently given pharmacy is to use the laboratories and faculties of certain colleges of pharmacy for testing medical supplies. This is done in lieu of establishing government testing laboratories.

Now, in conclusion, this horrible war is waged to make the world better and mankind secure from molestation. At the same time, let us gain for pharmacy a just position and recognition. We bewail the fact that our government is far behind Japan in using in war the talents of pharmacists. I quite agree with Hugh Craig, when he says, "The pharmacist has been so careless of his position in the social economy as to leave the public ignorant of his deserts."

I feel that we should not be satisfied after the war with a status *quo ante* but now look forward to better pharmacy after the war.

REASONS FOR SOME OF THE CHANGES IN THE FORMULAS OF GALENICALS MADE IN THE NINTH REVISION OF THE UNITED STATES PHARMACOPOEIA.*

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At the meeting of the Philadelphia Branch of the American Pharmaceutical Association held in November 1916, the writer presented a paper under the above title. As the program for that meeting was a symposium on the Pharmacopoeia and there was assigned to me the title, "Extracts, Fluidextracts and Tinctures," my communication was primarily restricted to the changes made in these classes of official galenicals. The favorable comments elicited by the publication of that paper appear to indicate that a continuation of the subject to the other galenicals of the pharmacopoeia would be an appropriate topic for presentation at this meeting.

The reasons for some of the changes made in the revision of the Pharmacopoeia are so easily understood as to be classified as "self-apparent," but for other changes it may be difficult to assign a tangible explanation.

The decision whether an article or formula shall be admitted to, retained in, or deleted from the official list of titles is presumed to be based upon the medical practice of the time and the general or extended use of such medicament. The late Professor C. S. N. Hallberg assiduously gathered statistics from all over the United States to determine the facts regarding the use of hundreds of drugs and preparations with the expectation that the statistics so gathered would be available and accepted by the Committee of Revision as the basis for deciding the admission, retention or dismissal of articles on the official list. The decisions of the committee seem to indicate that these data were not given the consideration it had

* Read at the meeting of the New Jersey Pharmaceutical Association, 1917.

been expected they would receive and that the decisions on such matters were largely based on personal practice and preferences. Consequently, it is hard to reconcile as consistent the changes made by the additions and deletions. It is, for example, difficult to explain why Acidum Camphoricum was dismissed and Acidum Phenylcinchonicum has been admitted, and why Apocynum and Fluidextract of Apocynum were deleted and Aspidospermum and Fluidextract of Aspidospermum have been introduced.

On the basis of American medical practice and use, it is even more difficult to explain the expulsion from the official list of such popular formulas as Cataplasm of Kaolin, Antiseptic Solution, Goulard's Cerate, Compound Resin Cerate, Compound Acetanilid Powder, Mixture of Rhubarb and Soda, Compound Spirit of Ether, Compound Syrup of Hypophosphites, and Ointment of Red Mercuric Oxide. How fortunate it is that we have in the National Formulary a second legal authority and that it has incorporated these formulas and so retained authoritative legal standards for these. It may be that the knowledge that the National Formulary would probably adopt these dismissed formulas may have influenced the decisions of the pharmacopoeia revision committee. Whatever may have been the cause, these actions demonstrate the necessity for the two legal standards and how fortunate it was that the National Formulary was systematically revised. The increased importance thus accorded to the National Formulary now makes imperative that it be permanently maintained on a high scientific basis.

The improvements in the directions for the preparing and the proper storing of galenicals in order to insure permanency and efficiency of the products is in evidence throughout the U. S. P. IX. As examples, chloroform water, creosote water, orange flower water and rose water are directed to be prepared with recently boiled distilled water.

In Aqua Hamamelidis, the impractical and inaccurate formula of the U. S. P. VIII has been omitted. The production of this preparation cannot be undertaken by the pharmacist and it can only be carried on as a commercial operation in favorable localities. The Pharmacopoeia has rightly eliminated the process and standardized the product so far as possible and supplied appropriate tests for adulterants.

The readiness with which the public accepts and the drug trade adapts itself to the legal pronouncements of the pharmacopoeia has been shown by the universal acceptance of the official standard for Poison Tablets of Corrosive Sublimate. The prompt disappearance from the drug stores of the formerly extensively used white disk shape of sublimate tablets has minimized the danger of accidental poisoning from this source which was for a time so prolific of fatalities.

The number of Cerates has been reduced from six to three and the formulas for two of those retained are notably improved. The U. S. P. VIII directed 20 percent of white petrolatum to be used in the formula for Cerate. Petrolatum in this mixture of wax and lard did not prove to be satisfactory or yield a uniform smooth product; hence, the return in the formula to white wax and benzoinated lard was decided upon.

In the U. S. P. VIII formula for Cantharides Cerate, the powdered cantharides was directed to be macerated "in a warm place for 48 hours with the liquid petrolatum." Liquid petrolatum is not a good solvent for cantharidin and no attempt was made by this formula to liberate the combined cantharidin or to obtain the

maximum effect from the cantharides used. In the improved formula of the ninth revision glacial acetic acid is directed to liberate the cantharidin and likewise to aid in its solution in the turpentine. The formula is very satisfactory and with good cantharides will yield an efficient epispastic.

In Cantharidal Collodion, we note another improved formula based upon our knowledge of cantharides and the proper solvents for its constituents. In the U. S. P. VIII formula for this, the cantharides were directed to be exhausted with chloroform and the extract so obtained mixed with flexible collodion. The resulting product usually gelatinized or precipitated in a short time and became worthless. The extraction with a mixture of acetone and acetic acid now directed yields an active and permanent preparation.

In Flexible Collodion of the Revision, by the use of camphor and castor oil in appropriate proportions, a closely adhering stronger and more flexible film is produced than that yielded by the old formula with larger quantities of Canada turpentine and castor oil and does so at considerable saving in cost.

Elixir Glycyrrhiza is now the official title instead of Elixir Adjuvans, the slight increase in the amount of the fluidextract of glycyrrhiza directed only rounding out the proportion of 1 to 7 of elixir.

In modern pharmaceutical practice, Emplastra do not play a very important role. The preparation of Adhesive Plaster and Belladonna Plasters now used can only be attempted on a large scale and with special machinery; hence, formulas for these are omitted.

Lead Plaster instead of being prepared by decomposing soap by lead acetate, as in the U. S. P. VIII, is now directed to be made by boiling with water equal weights of lead oxide, olive oil and lard. If ingredients of proper quality be used, the resulting product will no doubt be satisfactory.

In Infusion of Digitalis, we note a change of doubtful propriety, namely, the omission of alcohol. The argument used in favor of this change was that the alcohol played no part in the extraction of the drug or the therapeutic activity of this preparation and that it gave a false impression as to the stability so that the infusion probably would not be made and used as fresh as it should be. While it must be acknowledged that the alcohol is not necessary for the making of the infusion, it is nevertheless uncertain if it did not serve a useful purpose in the formula. Infusion of Digitalis is not administered while freshly made and warm and in large doses as are many of the common infusions. The physician usually directs a dose of from one to four fluid drachms[1] several times a day and prescribes sufficient for several days. The 10 percent of alcohol formerly directed was sufficient to preserve the infusion for this limited period and I am not convinced that it did not likewise exert some therapeutic action by stimulating the absorption of the digitalis. Complaint has already been made that the infusion made by the new formula, without the alcohol, very soon spoils. Our experience with the other digitalis galenicals proves that the glucosides of this drug are readily hydrolized even in a menstruum of diluted alcohol, and to avoid rapid deterioration in the tincture and fluidextract, the Pharmacopoeia has increased the alcoholic content of these preparations. Yet on theoretical grounds, not substantiated by

[1] It is to be noted that in the U. S. P. VIII the average dose was given as 2 fluid drachms and the U. S. P. IX now states: Average dose 1 fluid drachm.

either practical experiment or therapeutic testing, the alcohol was stricken from the infusion, one of the most important of diuretic and cardiac remedies.

Ammonia Liniment is directed to be made by agitating 1 volume of ammonia water with 3 volumes of sesame oil and this simple procedure yields a perfect preparation. The U. S. P. VIII patriotically endeavored to utilize in this formula an American product, cottonseed oil, and in order to saponify this added oleic acid and alcohol thus presenting a wasteful and ridiculous formula.

In Mucilage of Acacia, the Eighth Revision directed the use of 33 percent of lime water in order to overcome the natural acidity of acacia. The lime water content at times created incompatibility as, for example, when the mucilage of acacia was directed to be used to suspend calomel. The revision rightly omits the lime water and directs that this mucilage should be frequently made and not dispensed if it has deteriorated.

In Oleate of Mercury, the use of alcohol in place of water will shorten the time required and diminish the danger of reduction of the mercury.

The change made in the formula for Soft Soap, cottonseed oil being directed in place of linseed oil has, likewise, been dictated by economic reasons rather than by scientific. The new formula is defective and the product is deficient in that very necessary property of a soap, namely, detergency.

In the Mint Spirits, the respective peppermint or spearmint, used for coloring and clarifying, is first washed with water which removes the brown and yellow colorings as well as much extraneous dirt and the resulting spirit is more uniformly of a bright green color.

The acid content of Syrup of Hydriodic Acid was slightly increased so as to make the official syrup not below the strength claimed for some proprietary syrups.

In Syrup of Calcium Lactophosphate and in Syrup of Hypophosphites, the addition of 50 mils of glycerin to the liter adds materially to the stability of these.

In Syrup of Wild Cherry, we note a return to the method of adding the glycerin to the first portion of the menstruum instead of to the percolate. While this procedure may yield a deeper colored syrup that may be richer in tannin, it is doubted if this should be the proper aim and it is questioned whether the hydrocyanic acid content is not actually diminished.

In the Ointments, a few changes are noteworthy. Such minor changes as those made in Belladonna Ointment and in Diluted Mercurial Ointment are readily understood and will cause little comment. In Diachylon Ointment, white petrolatum is substituted for olive oil which yielded an ointment of too fluid a consistence. Ointment of Phenol is reduced from 3 percent phenol to about 2 percent and ointment is directed as the base instead of white petrolatum. The changes made in this formula may cause some trouble with customers to whom it may be difficult to explain the difference in the appearance of carbolic ointment.

The elimination of all Wines from the Pharmacopoeia was probably due to a misunderstanding of the requirement of the Brussels International Protocol. Physicians will continue to prescribe the Wines of Antimony, Colchicum, Ipecac, etc., and pharmacists will furnish these as heretofore. In the formula for Compound Mixture of Glycyrrhiza, the substitution of the equivalent amount of tartar emetic dissolved in water for the wine of antimony is directed and this was the only change in the official formulas necessitated by the deletion of the class of wines from the Pharmacopoeia.