

SECTION ON PRACTICAL PHARMACY AND DISPENSING, AMERICAN PHARMACEUTICAL ASSOCIATION

UNIFORMITY IN DISPENSING.*

BY J. LEON LASCOFF.

My object in presenting this paper on "Uniformity in Dispensing" is to impress pharmacists with its great importance—especially at this time, when the new editions of the United States Pharmacopœia and National Formulary have just become official.

The chief changes have been:

1. The dismissal of about 20 percent of the articles found in the U. S. P. VIII.
2. The transfer of certain galenicals from the U. S. P. to the N. F.
3. Official abbreviations.
4. Synonyms given after the official title.
5. The addition of 68 preparations to the U. S. P.
6. The changes of the strength and assay of drugs and preparations.

It is incumbent upon every pharmacist to acquaint himself intimately with these changes in order that he may comply with the law in the preparation of all galenicals as prescribed by the new regulations.

According to the law of the state of New York, a pharmacist must be in possession of the latest editions of both the U. S. P. and N. F. and when filing an application for registration of his Pharmacy, he must swear to that fact.

I have read with great interest the editorials and other contributions that have appeared in several pharmaceutical journals—by Professors Sayre, Scoville, and Diekman, Geo. M. Beringer and others. Their articles have dealt with the changes of this Pharmacopœia. While these résumés have been very exhaustive, they have passed over the changes made in the galenicals and it is my purpose to take these up and discuss them in detail.

For example, consider the Elixir Terpini Hydratis, N. F. The new edition prescribed double the quantity of tincture of sweet orange peel, the addition of the spirit of bitter almonds, the reduction of the quantity of syrup with the addition of a proportionate amount of water and the elimination of saccharin. The finished product will, therefore, differ markedly in taste and appearance from the old preparation.

Liquor Ferri Peptonati and the Liquor Ferri Peptonati et Mangani are prepared differently from the method laid down in the old N. F. I am thoroughly familiar with the changes in these preparations inasmuch as it was my great good fortune two years ago to be assigned by Prof. E. Fullerton Cook to experiment with these preparations among others.

As these changes are quite fundamental in many respects, the question at once arises—what will the pharmacists do with the stock on hand? What will they do with the repetition of old prescriptions? We must admit that very scant

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Atlantic City Meeting, 1916. It was requested by the Section that this paper be printed as early as possible, therefore, it appears in advance of the minutes of that Section.

time is given them to adjust themselves to the new conditions. Some discussion of this vital question would not be amiss. The same state of affairs arose when the U. S. P. VII became official. I may say, however, that to the best of my recollection, more time was allowed for adjustment. While these two books have already become official, I can safely state that few pharmacists are yet in possession of them, for the simple reason that it has been hardly possible to distribute the books to all who have ordered them.

Perhaps a label attached to the bottle of the repetition of preparations which differ in taste and appearance would solve the problem. It might read as follows:

NOTICE

This prescription was prepared according to the new Pharmaceutical Standards which became official September 1, 1916. (These books are revised every ten years.)

To facilitate matters, I have indicated all preparations, seriatim, trusting that my suggestion will serve as a useful guide.

CHANGES IN THE UNITED STATES PHARMACOPŒIA.

Collodium Cantharidatum.—Extraction with acetone and glacial acetic acid instead of chloroform of U. S. P. VIII.

Collodium Flexile.—Camphor is used in place of Canada turpentine of U. S. P. VIII.

Elixir Glycyrrhizæ (Adjuvans VIII).—Fluidextract glycyrrhizæ, 125 mils to 1000 mils, instead of 120 Cc. to 1000 mils.

Emplastrum Plumbi.—Lead oxide is used in place of lead acetate; olive oil and lard in place of soap.

Infusum Digitalis.—No alcohol is added.

Linimentum Ammoniz.—Alcohol and oleic acid are omitted; sesame oil is used in place of cotton seed oil.

Liquor Magnesii Citratis.—Hot water is used. Oil of lemon and syrup replaces syrup of citric acid. Two and one-tenth grammes of sodium bicarbonate in compressed form may be used instead of 2.5 grammes of crystal potassium bicarbonate.

Massa Hydrargyri.—One gramme of oleate of mercury is used in preparing 100 Gm. of the mass. This was not used in U. S. P. VIII.

Mistura Glycyrrhizæ Composita.—Antimony and potassium tartrate replaces wine of antimony.

Mucilago Acaciæ.—Lime water has been omitted and 350 Gm. of acacia is used in place of 340 Gm. in 1000 Gm., in U. S. P. VIII.

Oleatum Hydrargyri.—Alcohol is employed for triturating the mercuric oxide, in place of the water, stirring constantly until the alcohol is evaporated.

Oleoresina.—Ether is used in extraction, instead of acetone, in preparing the oleoresins of aspidium, capsicum, pepper and ginger.

Syrupus Aurantii.—Purified talc replaces magnesium carbonate as triturate with the tincture of sweet orange peel.

Syrupus Calcii Lactophosphatis.—Glycerin is added to the syrup.

Syrupus Ferri Iodidi.—The amount of sugar has been reduced from 600 Gm. to 575 Gm.

Syrupus Hypophosphitum.—Tincture of lemon peel is omitted and glycerin is added.

Syrupus Pruni Virginianæ.—The wild cherry bark is percolated with a mixture of glycerin and water. Before, the glycerin was placed in the receiving bottle.

Syrupus Sarsaparillæ Compositus.—Methyl salicylate is used in place of oil gaultheria and alcohol is added. Syrup is used in the place of sugar and water.

Tinctura Cardamomi.—The amount of cardamom seed has been reduced from 200 Gm. to 150 Gm. to 1000 mils.

Tinctura Iodi.—Fifty mils of distilled water enter into the formula for making 1000 mils of tincture.

Tinctura Kino.—Glycerin is omitted and less alcohol is used and different *modus operandi*.

Tinctura Nucis Vomicae.—Made by percolation of powdered drug and not from the extract. Contents of alkaloids is changed to 0.237–0.263 Gm.

Tinctura Rhei.—The amount of cardamom seed is reduced from 40 Gm. to 30 Gm.

Tinctura Sanguinariae.—Hydrochloric acid replaces acetic acid.

Unguentum Belladonnae.—More lanolin and less lard is used as a base.

Unguentum Hydrargyri Dilutum.—Change in strength; less of mercurial ointment and more of petrolatum.

Unguentum Phenolis.—Strength reduced from 3 percent to 2.25 percent.

CHANGES IN THE NATIONAL FORMULARY.

Acetum Aromaticum.—The percent of alcohol and acetic acid is increased.

Cordiale Rubi Fructus.—Syrup of blackberry replaces blackberry juice and syrup.

Collodium Stypticum.—Alcohol and ether are omitted. Flexible collodion is used in the place of collodion.

Elixir Ammonii Bromidi.—A considerable amount of syrup and water is added to the aromatic elixir which was formerly used alone.

Elixir Buchu.—The amount of alcohol is reduced and the syrup is omitted.

Elixir Buchu Compositum.—The alcohol and syrup are omitted.

Elixir Calcii Bromidi.—Syrup and distilled water are added in considerable amounts.

Elixir Calcii Lactophosphatis.—Precipitated calcium carbonate and lactic acid replace calcium lactate. Compound spirit of orange is used in place of aromatic elixir; the amount of phosphoric acid is increased.

Elixir Catharticum Compositum.—Saccharin is omitted.

Elixir Cinchonæ Alkaloidorum et Hypophosphitum.—The amount of hypophosphorous acid is increased.

Elixir Cinchonæ Alkaloidorum Ferri et Calcii Lactophosphatis.—Syrup of calcium lactophosphate is used in the place of calcium lactate and phosphoric acid and potassium citrate in the place of citric acid. This preparation contains more syrup than that of N. F. III.

Elixir Ferri Hypophosphitis.—The solution of iron hypophosphite is freshly prepared.

Elixir Ferri, Quinina et Strychnina.—The aromatic elixir is made extemporaneously, glycerin is added to the preparation.

Elixir Gentianæ.—Solution of ferric sulphate, ammonia water and aromatic elixir are omitted, sodium citrate, glycerin and syrup are added, amount of compound spirit of cardamom reduced.

Elixir Gentianæ Glycerinatum.—The amount of acetic ether and phosphoric acid has been reduced.

Elixir Glycyrrhizæ Aquosum.—Compound spirit of cardamom, stronger orange flower water, syrup, glycerin and water are used in place of aromatic elixir.

Elixir Hypophosphitum.—The amount of compound spirit of cardamom has been reduced from 30 to 0.6 mils for 1000 mils.

Elixir Hypophosphitum et Ferri.—Ferric hypophosphite is used in place of ferrous sulphate; potassium citrate is added, amount of calcium hypophosphite reduced.

Elixir Lithii Bromidi.—A considerable amount of syrup and water was added to this preparation.

Elixir Pepsini et Bismuthi.—Tincture of caramel was added to this preparation, changing its color.

Elixir Pepsini et Rennini Compositum (Essentia Pepsini N. F. III).—The amount of tincture sweet orange peel, alcohol and glycerin is increased; wine is not used at all; oil of myristica is added.

Elixir Phosphori.—The spirit of phosphorus is freshly made and so is the aromatic elixir.

Elixir Potassii Bromidi.—A considerable amount of syrup and distilled water is now added.

Elixir Sodii Bromidi.—A large amount of syrup and water is added.

Elixir Sodii Salicylatis.—There is an addition of a large amount of syrup and water.

Elixir Terpini Hydratis.—The amount of tincture of sweet orange peel is doubled; the amount of alcohol is increased; solution of saccharin is omitted; spirit of bitter almonds is added.

Elixir Terpini Hydratis et Diacetylmorphina.—The amount of diacetylmorphine hydrochloride is considerably reduced (from 0.75 to 0.27).

Elixir Terpini Hydratis et Codeina.—The amount of codeine is reduced.

Emulsum Olei Morrhuae Cum Calcii Lactophosphate.—More cod liver oil and acacia used; calcium lactophosphate replaces calcium lactate and lactic acid replaces phosphoric acid.

Emulsum Olei Morrhuae Cum Malto.—The amount of cod liver oil is reduced; extract of malt increased. Tragacanth and water displace mucilage of dextrine.

Emulsum Olei Morrhuae Cum Pruno Virginiana.—The amount of cod liver oil and acacia are increased.

Emulsum Olei Ricini.—The amount of castor oil is slightly increased.

Emulsum Petrolati.—The amount of petrolatum and oil of almond is greatly increased; acacia only is used as an emulsifying agent.

Linimentum Opii Compositum.—Fresh egg albumen is added.

Linimentum Saponato-Camphoratum.—Soap is replaced by monohydrated sodium carbonate, stearic acid and water.

Liquor Alumini Acetatis.—Lead acetate is used in place of acetic acid and calcium carbonate.

Liquor Antisepticus.—Sodium benzoate replaces benzoic acid; sodium salicylate and menthol are added; the amount of alcohol is increased.

Liquor Antisepticus Alkalinus.—The amount of sodium benzoate is reduced and the amount of sodium borate increased. Cudbear is used in the place of its tincture and the amount of glycerin is reduced.

Liquor Bromi.—The amount of bromine is greatly reduced to almost one-third.

Liquor Ferri Albuminati.—Fresh egg albumen is used in the place of dry albumen and sodium citrate in the place of sodium hydroxide.

Liquor Ferri Hypophosphitis.—Ferric hypophosphite is used in the place of ferric ammonium sulphate and sodium hypophosphite.

Liquor Ferri Oxylchloridi.—Glycerin is added.

Liquor Ferri Peptonati.—In the place of dry peptone, fresh egg albumen is converted by means of pepsin and hydrochloric acid into peptone. Aromatic elixir is omitted. Flavoring agents are added and the quantity of alcohol is increased. This, however, contains less alcohol than the same preparation of the N. F. III.

Liquor Ferri Peptonati et Mangani.—The peptone is prepared similar to that of liquor ferri peptonati. Solution of ferric oxylchloride is used. Sodium citrate and flavoring agents are added and aromatic elixir omitted.

Liquor Hypophosphitum Compositum.—The amount of glycerin is increased.

Liquor Pancreatini.—Sodium chloride and chloroform are added and the amounts of compound spirits of cardamom and alcohol are reduced.

Liquor Phosphatum Acidus.—Calcium carbonate and magnesium carbonate are used in the place of bone ash and phosphoric acid in the place of sulphuric acid.

Liquor Sodii Arsenatis, Pearson.—Exsiccated sodium arsenate is used in the place of crystals.

Liquor Strychninae Acetatis.—Strychnine alkaloid is used in the place of the acetate and acetic acid employed.

Mistura Guaiaci.—Tincture of guaiac takes the place of resin, honey replaces acacia and sugar.

Mistura Pectoralis, Stokes.—Ammonia water is omitted.

Mistura Rhei Composita.—Under this title comes *mistura rhei et sodæ* U. S. P. VIII while the N. F. III had under the same title Squibb's rhubarb mixture.

Oleatum Aconitiinae.—Fifty percent of olive oil is used in the place of oleic acid.

Spiritus Cardamomi Compositus.—Oil of cloves, oil of orange, and anethol are added; glycerin and water are omitted; the amount of oil of cardamom and cinnamon increased.

Syrupus Codeinæ.—The amount of codeine sulphate has been considerably reduced (from 1.0 Gm. to 0.2 Gm.).

Syrupus Ferri et Mangani Iodidi.—Sodium iodide is used in the place of the potassium salt; diluted alcohol is added.

Syrupus Ferri Saccharati Solubilis.—The process of making this preparation was simplified; saccharated ferric oxide is used, while in N. F. III it had to be recently prepared.

Spiritus Acidi Formici.—The amount of formic acid is increased.

Syrupus Glycyrrhizæ.—The amount of the fluidextract was doubled and the glycerin omitted.

Syrupus Papaveris.—Poppy capsules replace the tincture of poppy.

Syrupus Pini Strobi Compositus.—The morphine sulphate is omitted, cudbear is added.

Syrupus Quinidinæ.—Mucilage of acacia and solution of saccharin are omitted. Oil of orange and syrup is used in the place of syrup of orange flowers.

Syrupus Rhamni Cathartica.—Fluidextract of rhamnus cathartica is used in place of the juice; oil of cinnamon and oil of fennel are added.

Syrupus Stillingiæ Compositus.—Glycerin is added.

Tinctura Amara.—The amount of gentian, centaury and bitter orange peel is increased, orange berries are omitted.

Tinctura Capsici et Myrrha.—The amount of capsicum and myrrh is slightly reduced.

Tinctura Ferri Citro-chloridi.—The amount of sodium citrate is increased.

Tinctura Persionis.—The amount of cudbear is reduced, menstruum is more alcoholic.

Tinctura Pimpinellæ.—The amount of pimpinella root is increased.

Tinctura Rhei Aquosa.—The sodium borate is omitted.

Unguentum Resorcinolis Compositum.—Rectified oil of birch tar is used in the place of oil of cade; yellow wax in the place of paraffin, anhydrous wool fat and glycerin in the place of hydrous wool fat.

Vinum Carnis.—The amount of alcohol is reduced.

Vinum Carnis et Ferri.—Iron and ammonium citrate is used in the place of the tincture citrochloride of iron.

The cry of the pharmacist is—why does the physician call for the ready-made preparation of some manufacturing house in preference to writing combinations

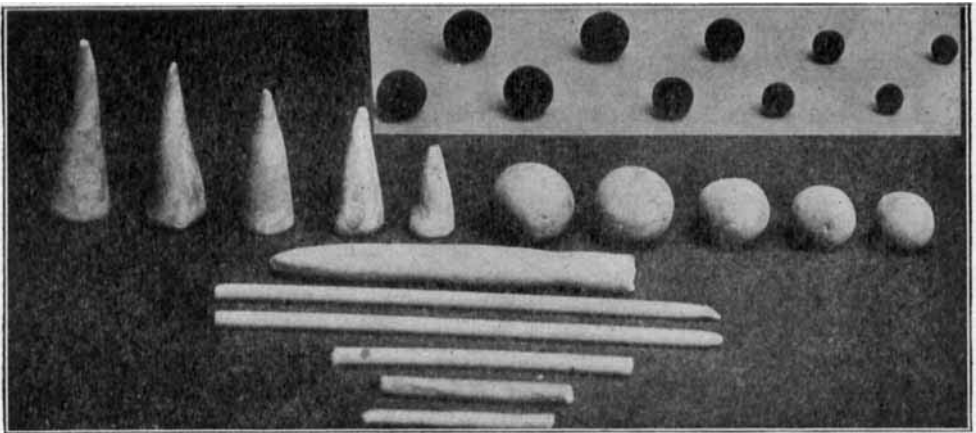


FIG. 1.—Showing various sizes of pills, suppositories, boluses and bougies prepared from the same prescription in different drug stores.

of his own? Why has the art of prescription writing fallen into disuse? Why do compounded prescriptions, when prepared in one store, differ in size, shape and appearance from that prepared in another?

It is extremely desirable to have a rigid uniformity in the dispensing of prescriptions not only for *U. S. P.* and *N. F.* preparations, but in individual prescriptions written by the medical profession.

It is true that some physicians do not know how to write a prescription without giving some difficult problem to the pharmacist to solve. There are, however, a good many prescribers who do know how to write prescriptions and therefore expect the finished product to meet their wishes in every way and be put up in all stores alike. I have in mind especially pills, capsules, suppositories, globules, bougies, mixtures and tablets, etc. These usually differ within wide limits as to size, shape and consistency when compounded by different pharmacists.

I have collected a good many samples at several examinations in practical pharmacy and I have observed the extraordinary lack of uniformity in this regard. This was so noticeable that out of 75 examinations only a small percentage turned out preparations that were in any way uniform as to size and appearance. The Pharmacopœia distinctly prescribes the amount of cacao butter to be used (unless otherwise specified) and there is no reason why one suppository should weigh twice as much and sometimes even four times as much as another. The same applies to pills, etc. As a matter of fact, every *text-book contains full directions* about these elementary matters. Why not consult these? They are always or should always be on hand. Why should the same preparation dispensed in one store differ from that dispensed in another? Why should there not be a uniformity? Horace quotes as follows on uniformity: "*Servetur ad inum qualis ab incepto processerit, et sibi constet.*" "From first to last work should maintain its character and in all things be consistent."

DISCUSSION.

JACOB DINER: This paper is of practical value to the pharmacist, and of practical value now, and not in the future. It should be most interesting to every retailer in the United States, to have a brief synopsis of the changes made. The retailer is confronted with a problem that is difficult of solution. The Pharmacopœia is official, but only few pharmacists have a copy (at time of meeting). Of course, that is a theoretical question only; for no one can expect a man to have preparations corresponding to formulas with which he has no means of becoming familiar. It will soon be in his hands, however; and it will probably remain there, and not in his head. He will put it on the shelf; and when he comes to prepare a galenical, he will probably follow the new Pharmacopœia; but he may not investigate how this differs from the old. Nor will the physician know the difference. So I suggest that some means be found to bring this paper to early publication—if necessary, in one of our pharmaceutical journals; and that a reprint be sent to at least every member of the American Pharmaceutical Association.

CURT P. WIMMER: Would it not be just as important to bring the changes to the attention of physicians? Possibly some way could be found of circularizing physicians, or seeing that the paper is printed in the medical journals, as well as the pharmaceutical.

J. LEON LASCOFF: I think that physicians should be acquainted with the fact that there has been a new Pharmacopœia published. In New York State, we have a book printed called "*Formulas for the Busy Doctor.*" It contains fifty-nine formulas, and is going to be distributed among the physicians. Each pharmacist can purchase as many copies as he wants to. This has been done with the permission of the Revision Committee. While this book does not cover all the changes, this paper might be sent along with the booklet and in that way notify the physicians of the changes that have been made.
